CHAPTER 3

THE PROPOSAL

3.1 INTRODUCTION

Nepal is divided into 5 development regions, which comprise 14 zones. These zones consist of 75 districts, which are further sub divided into 205 constituency. These are further divided into towns and villages. According to Central Bureau Of Statistics (1991), the projected population of Nepal in 1996 was 21,126,636 ; total female population was 10,527,158; woman of reproductive age (15-49 yrs) was 4,961,836; expected pregnancy was 927,224; expected live birth was 834,502; pregnancy at risk was 370890. Maternal mortality rate was 515 per 100,000 live birth. Maternal death was 12 per day and the crude birth rate was 39 per 1000 (Malla & Pradhan, 1994).

Nepal has a fairly comprehensive infrastructure for the delivery of health and related services. The health infrastructure of Nepal according to the Ministry of Health is broadly divided into 1) Zonal hospital 2)District hospital 3) Primary Health Centers 4) Health Post and Sub health post 5)Community level - Trained birth

attendants and health volunteers 6) Family and decision makers level. The Zonal hospital covers the population of 4-500,000; District hospital covers 200,000 population; Primary health center covers 100,000; Health post covers 30-40,000 population and at community level the population covered is 4-7,000.

In 1987, the International Conference on Safe Motherhood was held in Nairobi, Kenya. This was the first time that the attention of the international health community was clearly focused on deaths of women due to pregnancy and childbirth. A second important moment was the 1990 World Summit for Children, sponsored by the United Nations. In the World Summit of Children Declaration and Plan of Action, one of the seven major goals is the reduction of the maternal mortality rate by half between 1990 and 2000. This means that every one of the 166 countries that signed the Declaration and the Plan of Action is committed to this goal in formulating a national program of action appropriate for national realities. The conference on " Safe Motherhood in South Asia" discussed the challenges for the nineties. The developed policies and programs under Safe Motherhood to reduce maternal mortality and morbidity promote action in many front, one of it, is improving the quality and accessibility of treatment for obstetric emergencies and complications. This study has the objective of strengthening the obstetrical care and it's quality at selected health institutions in Nepal.

The next important landmark was the International Conference on Population and Development (ICPD) in Cairo, in September 1994. At the ICPD, a global consensus was reached that only by advancing women's full and equal participation in all spheres of life will human development objectives be achieved. In terms of maternal mortality, the ICPD program of Action affirmed the "right of access to appropriate health-care services that will enable women to go safely through pregnancy and childbirth..." (Maine et al., 1996).

Maternal mortality is a serious public health concern in Nepal. The causes of which are mainly due to direct obstetric causes; postpartum hemorrhage, abortion, pregnancy induced hypertension, puerperal sepsis, obstructed labor, other obstetric causes (Malla, 1992). Nepal has an estimated MMR in 1994 of 515 per 100,000 live births which is about 100 times higher than the level of maternal mortality in Northern Europe. Every two hours a mother dies in Nepal leaving 3 to 4 children helpless (Malla, 1992). This expresses the seriousness of the problem. Maternal mortality is an important indicator to assess the health status of a woman and it also reflects many things such as quality of obstetric care as well as the socio-economic status in an area. These, quite apart from injuries of various kinds to the genito-urinary tract, impair the woman's physical and social state. When not fatal, these conditions lead to prolonged ill health. Emergency obstetric care (EmOC) is needed and it is an important measure in reduction of maternal mortality. Many complications are due to unknown factors which cannot be identified at the time of pregnancy and have an important impact on MMR.

The district hospital is the first static facility where EmOC are available. Next comes the Zonal hospitals. The availability of services between levels varies and this variation is present even within each level. However, there is no clear documentation of the situation of the service delivery points in particular regard to EmOC.

The Ministry of Health of Nepal is in the process of finding ways to face the challenges of the changing environment, demands and health care system. This study, can contribute to identify certain key factors to prepare for the change for improvement. This study is a part of research and development activity encouraged by the Ministry of Health and Overseas Development Agency (ODA) to find out basis for priority setting and resource allocation. Ministry of Woman and Social Welfare of Nepal is in process of empowering women and is trying to increase the awareness of maternal health in women of rural areas in Nepal thus this study would be beneficial for improvement in maternal health and decrease the disability and discomfort caused by obstetric complications.

This study strengthens the capacity of the Ministry of Health in Nepal to design, implement EmOC in Primary health center and evaluate the ongoing process; informs the decision makers about the importance of maternal mortality and shares information on the most effective strategy to reduce it.

The purpose of evaluation is to test whether the program is effective in achieving the desired results, which has to be initiated from the beginning of the interventions process. Oaldey et al. (1995) defined evaluation as "the determination of the effectiveness, efficiency and acceptability of a planned intervention in achieving stated objectives."

From the need assessment and data exercise it is clear that we need a better record keeping system to evaluate EmOC. Hence, a record keeping system has been provided which will facilitate the EmOC provider the capability to record the events in the health facilities.

3.1.1 Need of EmOC

During the past few years, there has been a growing clarity about which are the most efficient ways to prevent maternal deaths. Some complications can be prevented by appropriate management of pregnancy, labor and delivery (e.g., by clean delivery practices). But most life- threatening complications cannot be prevented. Furthermore, they cannot be actually predicted either (Maine, 1993). During pregnancy, delivery or the postpartum period, any woman can suddenly develop a serious problem, at which point prompt, adequate medical care is needed. Therefore, all pregnant women need access to care for obstetric complications. With timely, adequate obstetric care, almost all maternal deaths can be averted. And the same services that prevent maternal deaths will also prevent the most serious kinds of

maternal morbidity (e.g., urinary fistulae), pelvic inflammatory disease, impair physical and social state. Maternal mortality cannot be reduced unless women have access to EmOC (Haque and Mostafa, 1993).

The Government of Nepal with the assistance of international agencies have initiated activities for the reduction of maternal mortalities by promotion of programs such as, family planning, antenatal care (TT immunization and identification of high risk pregnancies), TBA training and promotion of safe birth practices.

These activities can influence maternal mortality by reducing the number of unwanted pregnancies, decreasing the incidence of puerperal sepsis through the promotion of "clean birth practices", reducing birth trauma by promoting the services and availability of trained birth attendants.

However, relatively few actions, have been taken to provide EmOC for woman who develop complications during pregnancy, delivery and postpartum period. Hence the maternal mortality still remains high in comparison to other developing countries.

3.1.2 Identification of the level in which Basic EmOC service can be provided

The World Health Organization addressed this issue in a publication entitled "Emergency Obstetric Function at First Referral Level to Reduce Maternal Mortality. The First Referral is defined as "The district or sub-district hospitals or health center to which a women is usually sent when she is in serious difficulty" (Maine, 1993). Unfortunately in Nepal these functions can be performed only at the teaching hospitals, central hospitals, Zonal hospitals and few district hospitals, to which most women do not have access.

Even if it is not possible for the primary health center (PHC) to carry out the comprehensive obstetric functions, there is still much that could be accomplished at this level. Most importantly Health Centers could provide basic EmOC. This care could include such measures as starting antibiotics for women with obstructed labor or premature rupture of the membrane; starting a drip of plasma expander and oxytocic drugs for women with hemorrhage; and administering sedatives for women with eclampsia. These relatively simple measures would mean that women would reach the hospital in better condition and thus have improved chances of survival.

Ninety percent of women in Nepal deliver at home and 93 percent of people live in rural area (HMG/WHO, 1986). PHC is the closest facility in the community where obstetric emergency can be tackled, stabilized and referred to district hospitals. It is estimated that first level (i.e. PHC) obstetric care could result in a reduction of

80-85 percent in maternal mortality (Marilyn, 1996). To achieve this reduction, Safe motherhood initiative and Child Survival Revolution have emphasized on shifts in the delivery of health care from tertiary to primary levels.

Functioning EmOC services in Nepal are at present only in the Zonal hospitals and few district hospitals. Goal of Reproductive health targets by the year 2001 (9^{th} plan period) is to have functioning EmOC services in 30 district hospitals and to reduce maternal mortality rate by 20 percents (from 515 per 100,000 to 400 per 100,000 live births) (Malla & Pradhan, 1994).

Majority of obstetricians in Nepal i.e. more than 90% are located in the district capitals. By contrast, the proportion of the population living in urban areas is estimated at 11 percent (Malla, 1992). The finding of "Research Report on Prevention of Maternal Mortality in Hospital of Nepal" conducted by HMG/WHO (1992) shows that intervention program for reduction of maternal mortality concentrated only in the Zonal and District level do not reduce maternal mortality. In fact the research results shows that in Koshi Zonal Hospital of Morang District the maternal mortality rate after intervention rose from 207-1278 per 100,000 live births.

The reason for this rise in MMR was shown to be due to factors such as, in post intervention group patients were more from the rural area and were brought in very poor condition or in late stage of obstetric complications. Thus from this we can draw an inference by saying that EmOC at PHC would have taken care of the patients

from rural area for the management and stabilization of obstetric complications, since PHC is located in vicinity of the rural people.

3.1.3 Demographic background of Morang district

Nepal is divided into 5 development regions, which comprise 14 zones. These zones consist of 75 districts, which are further sub divided into 205 constituency. Morang district is in the Koshi zone which is situated in the Eastern Region. The demographic, health and socio-economic situation of the Eastern region is unique by itself. Population of Nepal increased by 30% in 1970's decade and by 23% in 1980's decade whereas the population of eastern development region has increased by 32.6% in 1970's decade and 20% in 1980's decade. Population of the country increased from 15,022,839 in 1981 to 18,491,097 in 1991 with an annual growth rate of 2.01 percent. Likewise the population of the eastern development region increased from 3,708,923 in 1981 to 4,447,496 in 1991. However, the proportion of population in this region has remained 24% of country's population. The density of population in this region is 156 per square kilometer whereas it was 130 and 98 in 1981 and 1971 census period, respectively.

The age composition of population of this region is slightly different from other region. As of 1991 census, the proportion of less than 1 year age population of

the country is 3.1% of the total population, whereas this figure for eastern region is 2.99% only.

Literacy has significant impact on health behavior of a person. The literacy rate in eastern development region for both sexes is 39.6 which is a bit higher than national average. (MOH, 1996)

Eastern development region (EDR) comprises of 16 districts with 906 village development committees (VDCs) and municipalities. Out of 16, 5 districts are in Terai, 8 in hill and 3 in mountain region. Morang district is in the terai region.

There are 605 Sub-Health Post (SHP), 163 Health Post (HP), 20 Primary Health Care Center (PHC) and 22 Hospitals in the Eastern Development Region.

The population of Koshi zone is around 1,730,932 according to Central Bureau of Statistics (1991) and its area is about 9,669 sq. km. It comprises six districts as Morang, Sunsari, Dhankutta, Bhojpur, Tehrathum and Sankhuwasabha. Morang district has population of 676,417. Its area is 1855 sq. kilometers. Morang District has one Zonal hospital, Koshi hospital; one district hospital, Rangeli Hospital; three PHC Mangalbari, Haraicha and Jhurkiya; and 14 health posts. Koshi Zonal Hospital has 300 beds, out of which maternity beds are 15. Rangeli has 15 beds, out of which maternity beds are 2, the health centers have 5 beds each, and Health posts do not

have any bed facility. The distance of the heath centers to the district are Mangalbari PHC-2 hour, Haraicha PHC- 2 and 1/2 hour and Jhurkiya PHC- 3 hours.

In the Koshi zonal hospital and Rangeli Hospital comprehensive EmOC and ambulance facility exists. In the PHCs of Morang district basic EmOC facility can be introduced. Since manpower is already there they only need basic training. Unlike hilly region of Nepal, Morang district has very good transportation infrastructure hence delay in reaching the facility is minimized. In addition education level of this district is better than in the hilly region hence delay in deciding to seek care can also be minimized by minimum effort by the community participation.

Community studies in maternal mortality in developing countries show that most maternal deaths happen outside the medical system, either at home, or on the way to the hospital (Maine, 1993). Reaching women in time to prevent such deaths must be a major focus of efforts to reduce maternal mortality. It is also true, however, that large numbers of women die in medical facilities after they have overcome all the obstacles of distance and poor transportation (PMM network, 1996). Some of these women die because they arrive at the facility too ill to be helped. Many others die for lack of prompt and adequate care. The first task of a program to reduce maternal mortality must be to ensure that existing facilities provide life-saving services to women in their care.

The idea that, when a woman has obstetric complications, the key to her survival is how long it takes for her to receive adequate emergency obstetric care (EmOC). The 3 Delays Model has pointed out the delay can occur: 1) delay in deciding to seek EmOC. 2) delay in reaching an EmOC facility. 3) delay in actually receiving care after arriving at EmOC facility. It is critical to address the last delay first. Only after health facilities at PHC are capable of treating complications does it make sense to address community level barriers, such as lack of information or mistrust of health services.

It is apparent that EmOC is a promising way to reduce the prevailing high maternal mortality rate in Nepal. Hence, I propose EmOC to be implemented at the level of PHC in Morang, for which a model has been provided. To evaluate the ongoing process various evaluation indicators are proposed and discussed.

3.2 Objectives Of The Proposed Study:

3.2.1 General Objective

1. To implement basic EmOC in the PHC of Morang District and incorporate evaluation as an ongoing process in the delivery of basic EmOC service after six months.

2. To disseminate the result of these studies and to share the information, experiences and application of the research results.

3.2.2 Specific Objectives

1. To provide components needed for the establishment of basic EmOC i.e. inventories of staff, facility , supplies and record keeping.
2. To provide guidelines for referral of cases to district hospitals.
3. To provide training for the staffs of health center in the management of emergency obstetric cases.
4. Evaluate input, process and output indicators after six months of implementation.
5. To take corrective actions if the indicators do not satisfy the international standard recommended.

3.3 Proposed EmOC model

The present situation of primary health center of Morang District is discussed followed by the ideal situation as recommended by WHO/UNICEF for the developing countries, which is proposed to be implemented in Morang district. The activities needed to reach from the present situation to the ideal situation is described in the following section 3.4.3.

3.3.1 Present situation of Primary health center in Morang District

The primary health center at present has the following functions as documented by Ministry of Health of Nepal :

1. To provide curative and preventive services to the community.
2. Maternal and child health services, family planning services, and promotion of family planning.
3. Prevention of communicable diseases and epidemics.
4. Health education
5. Training of nurses and Paramedical staff and community volunteers in various family planning and other preventive measures.
6. Collection of vital statistics and reporting to the higher level.
7. Referral system

Table 3.1: Present Manpower in the PHC

Obstetric Facility	Obstetric Care Providers	Present EmOC service
Haraicha, Mangalbari and Jhurkiya PHCs	Medical officer-1 Staff nurse-1 Health assitant-1 Auxiliary nurse midwife-2 Auxiliary health worker-2 Sub accountant -1 Lab technician-1 Junior assitant-1 Peon-2 Sweeper-1	No Basic EmOC

The following infrastructure, equipment and drugs exists at present in the PHC;

The infrastructure of PHC consists of outpatient department, inpatient department with 5 beds, labor ward, operation theater, postoperative unit, rest room, laboratory, store room, dispensary, staff room, doctors room and residence room.

The PHC provides service for 24 hr. One residential doctor, nurse and paramedics are on duty for 24hrs. When a female patient is brought to the PHC, first

of all in the nurse on duty determines emergency and non emergency cases. The non emergency obstetric cases such as nausea, vomiting and loss of appetite so on and so forth are given the necessary treatment and discharged. If admission is needed the doctor is informed, who then examines and manages the patient. For emergency obstetric cases such as Hemorrhage, Obstructed labor, Eclampsia and so on and so forth the nurse informs the doctor immediately. But due to lack of drugs, equipment and training in diagnosis, management and referral there is delay in every stage. These are the reasons, at present in the PHC when a patient after overcoming the barriers in deciding and reaching the facility is not able to overcome the barrier in receiving appropriate care.

Equipment Family planning equipment, immunization accessories, equipment for conducting normal delivery, refrigerator and safe water supply.

Drugs Oral antibiotics, sedatives, iron capsules, folic acid, calcium injections., and Tetanus toxoid.

Coverage For 676,417 population of Morang district, three health centers and two hospitals provides health service.

Patient Load The PHC provides antenatal care for 200-300 women, normal delivery 100-150 and refer 50-60 cases per month.

Record keeping Data on obstetric complications are the basis of evaluating the ongoing process and monitoring maternal mortality interventions. A review of record keeping procedure was studied at the facility in the study area which revealed that information on obstetric complications was inconsistent or missing. The PHC records were not designed to collect such information at all.

Referral system As documented by MOH out of the various functions of PHC; referral is important. At present PHC is providing ANC to 200-300 cases which are screened and high risk cases are referred to district hospital. The cases with normal pregnancy have delivery in the PHC or at home and if these cases develop complications or if any other woman who had no ANC develops complication are brought to PHC where immediate management and referral is needed. But inadequate funds and transport causes delay in reaching the district hospital for care. There is no referral form which can give a complete idea of the complication and any intervention done in PHC which causes delay in further management of the patient in district hospital. Due to these reasons the maternal deaths of referred cases are more in the district hospital.

Data on referral is extremely limited and efforts to ascertain how well referal system works has been abandoned. Tracking referrals was extremely difficult since the data on the receiving end were rarely available. Where data was available, the referral systems do not seem to be functioning appropriately.

3.3.2 Ideal situation for PHC to have EmOC

Following the guidelines proposed by WHO & UNICEF (Maine et al., 1996) the ideal situation for PHC with Basic EmOC is proposed for Morang district;

Manpower: One medical officer who can provide the following EmOC service:

1. Administer parenteral antibiotics.
2. Administer parenteral oxytocic drugs
3. Administer parenteral anticovulsants
   for preeclampsia and eclampsia
4. Perform manual removal of placenta
5. Perform removal of retained products
   (e.g., manual vacuum aspiration)
6. Perform assisted vaginal delivery

Staff nurse, auxiliary nurse midwife and auxiliary health worker should be able to diagnose obstetric complications and inform the doctor immediately. Emergency drugs and equipment should be ready in hand. Other supporting staffs who should be competent in the work carried out in PHC.

Drugs

1. Antibiotics injectable.
2. Oxytocic drugs
3. Anticovulsants for preeclampsia and eclampsia
4. Nifidepin capsules
5. Dextrose saline, Normal saline, 5% and 10 % dextrose

Essential equipment

1. Forceps and vacuums/ventouse
2. Suction/curettage
3. Sterile gloves
4. Disposable syringes
5. IV drips

Coverage For 500,000 population there should be one comprehensive EmOC and four Basic EmOC.

Record keeping Records for data required for calculating the process indicators. This monitoring effort will help facility managers to perceive the need for maintaining good-quality, complete records, and will help them to improve recordkeeping systems. The attached sample register head is provided as a model for administrators or managers to adapt for local use.

Referral Primary Health Center staffed by general medical doctor, nurse, midwife or assistant nurse; equipped with basic EmOC facility i.e. no cesarean section and blood transfusion available and staffs having training in management of obstetric complications as discussed later should refer pregnant women with the following condition immediately:

a) Antepartum hemorrhage

b) Ruptured uterus

c) Obstructed labor (transverse lie, cephalopelvic disproportion)

- Give intravenous fluid either 5% dextrose or plasma volume expander like plasmex or haemacele.
- Give injection pethedine 50 mgm intramuscularly.
- Transport patient in horizontal position.
- Give referral slip.
- If possible she should be accompanied by a medical personnel.

Referral Slip from Health Center to District Hospital

Name:	Symbol:
Age:	Name of health center:
Address and telephone No:	Regd. No:
Husband's name:	Date and Time:

Diagnosis:

Reason for referral:

Treatment given in Health Center:

Transportation for referral For timely referral from PHC to district hospital arrangements of mode of transportation should be considered and such a transport system should be established, in which delay in referral can be avoided.

First of all the distance of PHC to the district hospital should be taken into consideration. In case of Morang district these are as follows:

a. Mangalbari PHC-2 hours.

b. Haraicha PHC- 2 and 1/2 hour.

c. Jhurkiya 3

Table 3.2 shows time interval between the onset of obstetric complication and death. Within this time period, if these complications are managed, the life of a woman can be saved. Hence, in the ideal situation, when patients come with these complications, these should be stabilized, managed and referred to the district hospital. Case management for each of the complication is described in appendix G.

3.3.3 Activities needed to reach from present PHC situation to the ideal situation

From research it has also been found that interventions to improve EmOC need not be costly (Maine, 1987). By

- using existing resources.
- developing creative solution to local problems
- paying attention to management issues.

Variety of Activities:

1 Training of staff; Since the doctor at the PHC has already received basic training in management of obstetric complications during the internship course in his medical school only refresher course in emergency obstetric skills (recognition and management of obstetric complications) of one week has to be provided. Nurses should be trained in life- saving skills; the training should consist of 1 week of classroom instruction and 1week of practical training in local government hospital.

2 Improvement in Equipment & drug supplies as described in section 3.3.2 in heading ideal situation for PHC to have basic EmOC.

3 Record keeping: The registers at facilities have to be revised to collect information on complications and time of treatment. Doctors, nurses, midwives and clerks have to be trained to record, compile, and analyze data. Data collection and analysis have to be regular and timely. Doctors can use the data for morning meetings. Nurses and midwives should compile monthly summaries of data showing complications by type.

4 Transportation for referral: As advised by the doctors, community leaders and health volunteers of Morang district - contact the various offices such electricity office, irrigation office, agriculture office, so on and so forth and fix the day to respond to calls for emergency transport and charge a set fee. From data exercise in Panathnikom District of Chonburi province, it has been found radio communication is an effective means for the referral system.

3.4 Evaluation

A plan has been designed for the evaluation of the ongoing process of the implemented EmOC in PHC of Morang district. The evaluative study in which achievements in relation to objectives, input, process and output of the EmOC is planned and indicators based on WHO and UNICEF is used.

3.4.1 Methodology

Research design:

After the implementation of basic EmOC in PHC of Morang district in Nepal I propose to evaluate the ongoing process in terms of input, process and output. Thus evaluation research technique will be used. Functions of the evaluation are firstly to provide data on the extent to which programs objectives are achieved. Secondly, it answers questions about a program's activities and offers insight into a program's implementation and management.

This study will be conducted for a period of 12 months. A mid term evaluative study will be done after six months of the implementation of EmOC. From the result obtained necessary corrective measures will be taken and at the end a second evaluation will be conducted.

For the evaluation the indicators based on UNCIEF/ WHO and input-process-ouput framework as adapted from Starfield will be used which are described in the following sections 3.4.2 and 3.4.3

Study Site:

The study site for evaluation is Morang District of Koshi Zone of Nepal, where the EmOC will be implemented as a pilot project.

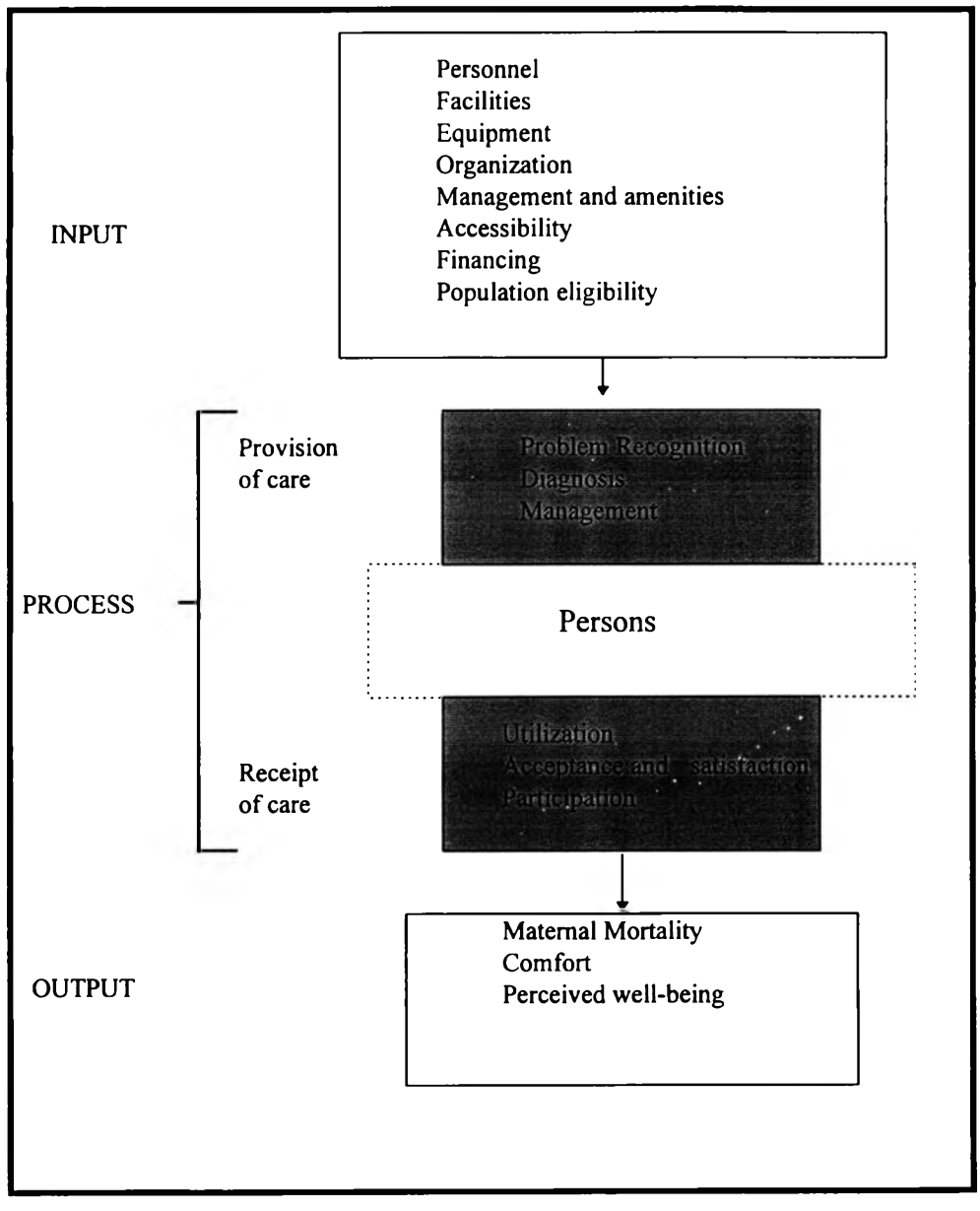
Study Population:

The women who are pregnant, come for delivery and come after delivery within 42 days to the PHCs of Mangalbari, Jhurkiya and Haraicha.

3.4.2 Input-Process-Output Framework

The framework described by Starfield (1973) will be used. This framework is depicted in figure 3.1.

Figure 3.1 A basis for evaluating Implemented Emergency Obstetric care service.



(Source : Starfield, 1973)

For the evaluation indicators of table 3.2 will be used which are based on UNICEF and WHO guidelines.

Table 3.2 List of Indicators that will be used to evaluate EmOC facilities.

Indicators	**Descriptions**	**Evaluated Component**
Indicator # 1	Number of EmOC facilities per 500,000 population	Input
Indicator # 2	Geographic distribution of EmOC facilities	Input
Indicator #3	Proportion of all births in EmOC facilities	Process
Indicator #4	Met need for EmOC: proportion of women with complications treated in EmOC facilities	Process
Indicator #5	Cesarean Sections as a % of all births	Process
Indicator #6	Case fatality rate Infant outcome Maternal Outcome	Output

For convenience of evaluation research the input-process-output framework and the indicators as proposed by WHO and UNICEF will been used.

3.4.3 Input component and indicators

Input consists of the resources needed to provide service. As figure 3.1 shows there are the following main components;

Personnel: involved in providing the services, their education and their training.

Facilities and equipment: the buildings, including the hospitals, health center and offices, as well as the physical components of the facilities, including such elements as laboratory instruments and technology for diagnosis or therapy.

Organization of services: Do the personnel work in groups or alone? What are the mechanisms for ensuring accountability, and who is responsible for providing the different aspects of care ?

Management and amenities: including characteristics of services other than those directly related to clinical care. For example, are laboratory results reported in a timely fashion. Are patients treated with courtesy and respect ?

Accessibility: There is no point to having personnel, facilities and equipment if they cannot be reached by persons who need them. There are several types of

accessibility: accessibility in time (i.e. , the hours of availability), geographic accessibility (adequacy of transportation and distance to be covered).

Financing: what is the method of payment for services and how are the personnel remunerated of their work ?

Following indicators are used to evaluate the elements of input components.

Indicator #1 : Amount of EmOC Services

These indicators evaluate the accessibility.

a. Number of Basic EmOC facilities per 500,000 population

=(Total Basic EmOC facilities in area/Population in Area)×500,000

Accepted level = 4 per 500,000 population

b. Number of Comprehensive EmOC facilities per 500,000 population

=(Total Comprehensive EmOC facilities in area/Population in Area) × 500,000

Accepted level = 1 per 500,000 population

Indicator #2 Distribution of EmOC Facilities

This indicator also evaluates the accessibility. When planning activities to improve access to medical treatment for obstetric emergencies, it is useful to think in terms of time. If a woman develops an obstetric complication, her chances of survival

are excellent if she receives adequate medical care in time. Furthermore, for most complications, "in time" is a matter of hours or days, not minutes. While a serious hemorrhage can kill a woman in less than an hour, in many cases women arrive at hospitals alive after bleeding for much longer. And for the other common complications- infection, obstructed labor, eclampsia- there are usually several days between the time the condition becomes obvious and death. Estimates of time between onset of the complication and death are presented below:

Table 3.3 Estimated average interval from onset to death for major obstetric complications

Complication	Hours	Days
Hemorrhage		
Postpartum	2	
Antepartum	12	
Ruptured Uterus		1
Eclampsia		2
Obstructed labor		3
Infection		6

Table 3.3 shows only rough estimation. For most complications, there is usually a substantial amount of time in which to obtain medical care and save the life of the woman. For this indicator to be acceptable indicator #1 should be met and the accessibility of EmOC should be within 2 hours of coverage.

3.4.4 Process Component and indicators

The process has two components: those that represent activities of the providers of care and those that represent activities of the population.

The following are related to the provider side.

Problem recognition: implies awareness of the existence of situations requiring attention in a health context.

Diagnosis: After recognizing the problem, the health professional generally formulates a diagnosis.

Management: This is necessary to move to the next step in the process of care, to institute an appropriate strategy for treatment or management.

The following are related to health seeker side.

Utilization: refers to the extent and kind of use of service. It may be initiated by the patient or be at the request or direction of a health professional.

Acceptance and satisfaction: The process of care that reflect how people interact with the service are also important. First, people decide whether and when to use the service. If they do use it, they come to an understanding of what providers offer them, and then decide how satisfied they are with their care and whether or not they will accept the providers recommendations or instruction.

Participation: Subsequently people decide on the extent to which they participate in the process. They can decide to carry through the recommendation, to modify them in ways they see fit, or to disregard them partly or completely.

Indicator used to evaluate process components are as following:

Indicator #3: Proportion of all Births in Basic and Comprehensive EmOC Facilities

This is an estimation of utilization as well as acceptability of the facility. It is estimated that 15% of pregnant women develop an obstetric complications serious enough to require medical care. Thus, if the number of women receiving care in an EmOC facility is not at least 15% of all women giving birth in the population, then it is certain that some proportion of obstetric complications are going untreated. EmOC facility should be used by the women who really need them for life saving obstetric care. If all of the women in the population who develop obstetric complication receive EmOC services, the proportion of the need for EmOC that is being met in the population is 100%.

Proportion of all births in Basic and Comprehensive EmOC facilities

= (Total deliveries in all EmOC facilities in area/Total annual births in area) ×100 %

Minimum acceptable level = 15%

Indicator #4: Met Need for EmOC

This indicates the problem recognition, diagnosis and management elements of Process component. In the previous indicator #3 15% of all births takes place in EmOC facilities does not mean that women with complications are receiving care. It might be that most of the births in the EmOC facilities are normal deliveries. In that case, the women with complications would still be outside EmOC facilities and not receiving treatment. This indicator, therefore, is a more refined measure of the utilization of EmOC services because it takes into account the type of activities occurring in the EmOC facilities.

Proportion of women estimated to have complications who are treated in EmOC facilities = (Total complicated cases in all EmOC facilities)/ (Total annual births in areas× .15) ×100 %

Minimum acceptable level = 100%

Indicator #5: Cesarean Sections as Proportion of all Births

This also indicates the problem recognition, diagnosis and management elements of Process component. An indicator of whether EmOC facilities are, in fact, providing lifesaving obstetric services is the number of cesarean section as a proportion of all births. Of all the procedures used to treat the major obstetric

complication, cesarean section are the easiest to study. This can be done using existing data, such as the operating theater log books, which are often the most complete records available. In setting acceptable level for cesarean section, both a minimum and a maximum level is appropriate. These levels have been adopted for global use by the Technical working group assembled by the WHO (WHO, 1994). If the data shows that less than 5% of births are by cesarean section, this means that some women with life threatening complications are not receiving necessary care and if it is above 15% then it means overuse or misuse of cesarean sections.

Cesarean sections as a proportion of all births= (Total cesarean sections in all EmOC facilities) /Total annual births in area×100%

Minimum = 5%

Maximum =15%

3.4.5 Outcome component and indicator

Comfort: this includes pain or other sensation that interfere with work and pleasure. As a consequence of lack of proper care. E.g. pelvic inflammatory disease as a consequence of sepsis, dyspareunia as a consequence of prolong labor, urinary incontinence in the form of fistula as a consequence of obstructed labor, induced abortion.

Perceived well-being: this characteristics connotes how people view their own health. This is the result of proper care and belief in care.

Indicator #6: Case Fatality Rate

This indicates the outcome. The case fatality rate among women with obstetric complications in EmOC facility should not exceed one percent.

Case fatality rate = (Total direct obstetric deaths in all comprehensive EmOC facilities / Total complicated cases in all Comprehensive EmOC facilities studied) ×100%

Besides case fatality rate for evaluation of output the following will also be considered:

1. Condition of newborn baby:

- Immediately after the delivery of the baby, the baby's condition in terms of physical observation, any injury caused by instrumental delivery such as forceps/vacuum or still birth will be noted.
- On follow up the growth, activities, and sign of abnormalities should be considered. Such as stunted growth, any sign of facial palsy can be considered as an improper delivery procedure.

2. Mother's condition

- Immediate: After giving birth the condition of the mother should be observed in terms of blood pressure, the amount of blood loss, any injuries inflicted to the genital tract in the form of fistulas.
- Delayed: On follow up the general condition of the mother in terms of anemia, any signs of infection such as pelvic inflammatory disease, condition of breast so on and so forth should be considered.

Thus the immediate and delayed conditions of both the mother and the infant are important indicators to evaluate the output.

3.5 Lesson learned from data exercise

Community studies of maternal mortality shows that most maternal deaths happen outside the medical system, either at home, or on the way to the hospital (Maine,1991). Reaching women in time to prevent such deaths must be a major focus of efforts to reduce maternal mortality. Large numbers of women die in medical facilities after they have overcome all obstacles of distance and poor transportation. Some of these women die because they arrive at the facility too ill to be helped. Many others die for lack of prompt, adequate care. The first task of a program to reduce maternal mortality must be to ensure that existing facilities provide life-saving services to women in their care. This is true not only because these deaths are the most easily preventable, but because of the ability of medical facilities to treat complications will be the cornerstone of other efforts to prevent deaths. For example,

it is pointless to conduct education programs about risk factors for and symptoms of obstetric complications if adequate EmOC is not accessible.

Indicators are useful for evaluating the functioning of EmOC and referral mechanisms. Many hospital studies have looked primarily at two indicators; deaths and number of normal deliveries,usually expressed as maternal mortality rate. This gives less accurate picture of what is happening at the facility and could in some instances have been misled. The examination of the complication and case fatality rates provides more insight into what is happening in an EmOC facility than the numbers of normal deliveries and deaths. Functioning of referral systems, time before treatment at the facility and availability of staff and supplies can provide additional information on the care provided at the PHC.

One indicator which is considered for use is proportion of deliveries which are complicated cases. However, this indicator is misleading since a substantial number of women with some complications arrive after delivery (e.g. with post-partum hemorrhage or puerperal sepsis) or never deliver (women with abortion-related complications). Thus, it is more appropriate to use the proportion obstetric admission that are complicated cases, than the proportion of deliveries.

The data collected is used to assess the functioning of EmOC facilities. These data are useful for a number of purposes, for example, indicator of performance by case fatality rate. If any of the indicators are unfavorable e.g. case fatality rate goes

up then simple interventions could help to pinpoint the problems and design remedies. The data on utilization of the facilities also provides useful information. The increase in the number of complicated cases and decreases in normal deliveries attended points for increased attention to the provision of EmOC as levels of demand have increased.

3.6 Delimitation

As a pilot project I have chosen Morang district. The findings of this study may not be generalized as the specific factors are different in different regions in Nepal.

Limitation of the study

Time is the main constraint for this study. Misreporting may occur, i.e. death is reported but the death is incorrectly classified. Other constraints which may be faced during the implementation is the extra workload to the staffs of PHC. Thus the perspective of the staffs should be considered for this matter.

Extracting information from hospital logbooks which list all obstetric admissions, deaths, deliveries,etc or using patients charts to obtain information on complications, time of treatment, and other measures have potential limitations. The data reflect an unknown proportion of the number of deliveries, complications and deaths which occur in a population (WHO, 1987). The incidence and proportion of complications seen in a hospital is probably very different from what occurs in the community. Changes in external environment may affect hospital utilization patterns

in many ways. For instance, a new road or transport service can dramatically alter hospital utilization patterns.

3.7 Work Plan

Table 3.4 : Work Plan for 12 months period

Activities	1 Mon	2 Mon	3. Mon	4. Mon	5. Mon	6 Mon	7 Mon	8 Mon	9 Mon	10 Mon	11 Mon	12 Mon
1. Present Proposal to MOH and ODA												
2.EmOC training of staff												
3.Supply equipments and medicine												
4. **Implementation**												
Evaluation												
5.Data Collection												
6.Data Analysis												
7. Consultation with Experts												
8.Final Analysis and correct.												

3.8 Budgeting (for pilot project in Morang)

Housing and man power already exist. At least one midwife would be on duty at all times. Drugs and equipment are supplied by government. Salary of most of the staff is also provided by the government.

Table 3.5 Budgeting for the pilot project

Budget Items and Descriptions	Year(US$)
PERSONNEL	
• Investigator	3000
• one Secretary	1200
• Advisor	3000
OPERATING EXPENSES	
-One week refresher course for basic EmOC (6Xperson)	
-Data Collection	1500
(5 persons X 7days)	
-Computer and Xerox	1000
-Transportation	800
Grand Total:	1000
	11500