

CHAPTER 3 : PROPOSAL

3.1 Introduction

The study that is proposed here is an action research proposal for the establishment of EMS system in MRRH. There is no functioning EMS system in MRRH that will coordinate all emergency medical care activities. Presently, emergency medical care is provided by all health care providers as and when they are called upon to do so, irrespective of their level of knowledge and skill in terms of effective management of emergencies. But when major emergency medical situation occurs, for example, passenger bus accidents, the shortcomings of current system of delivering EMS surface because the hospital authority is not prepared to provide prompt and proper emergency medical care even at the hospital, leave aside taking EMS at the site.

The study gives a brief background of current EMS delivery system at MRRH, and inherent shortcomings that exist within the system. It provides rationale for the need to improve the situation. Problems in the system are to be identified by gathering information on problem perceptions about EMS from relevant stakeholders. The findings from the study will be used to base the decisions in planning and implementing corrective measures.

The proposed study looks at finding ways and means within the given situation for improving EMS at MRRH. It explores for improving medical services by providing in-service EMS training courses for health care providers including Village Health Workers (VHWs); developing pre-hospital emergency care by instituting pre-hospital team; improving in-hospital emergency medical care by upgrading facilities like establishing Emergency Room/Casualty Unit; and developing injury surveillance system at MRRH. In short, the proposal makes an honest attempt to establish an EMS system at MRRH within the existing problems and constraints of manpower, finance and technical expertise with the ultimate aim of reducing death and disability through providing improved EMS.

3.2. Background

(i) Present Status of MRRH: MRRH is the referral hospital for the eastern region of the country. It was upgraded to referral status since early 1996. The hospitals of the five neighboring districts now refer the cases to MRRH.

The present bed strength of the hospital is only 58. Since it started functioning as full fledged referral hospital there has been a rapid increase in admission and bed occupancy rates due to referrals from the referring hospitals of the five districts in the region. The hospital administration is finding it difficult to cope with this new situation, and this problem will continue until the new 100 bed capacity hospital

complex is commissioned. The construction has already started. According to Mr. R.C. Sharma, site engineer of the construction project, the new complex is expected to complete by the year 2000.

As of February, 1997, the total hospital staff strength was 58 including medical and non-medical staff of OPD, IPD and administrative section. According to uncompiled 1996 annual morbidity reports, the OPD sees about 90 to 150 patients per day. The inpatient admission register for the year 1996 shows a total of 830 emergency admission (emergency patients admitted after outpatient hours) of which 114 were referrals from the referring district hospitals. In the same year 18 referrals were made to JDWNRH in Thimphu, and 7 cases were referred to India.

(ii) Current EMS System: Emergency medical care is currently rendered together with the ambulatory care and inpatient care (see Figure 3 on page 27). Since consultation chambers are all in OPD, mixed patient load (emergencies, referrals, and general outpatients) is taken care during OPD hours by the specialists, DMO, and GDMOs. Emergency cases are usually managed in the IPD by the doctors and IPD staff, and those requiring continuing emergency care are admitted in wards, Intensive Care Unit (ICU), labor room or in observation unit as the case may dictate. There is no intensive care facilities in OPD for managing emergencies. All non-emergency cases requiring invasive medical and surgical interventions including minor surgeries are also taken care in the IPD.

The referred cases who are not in serious condition are received and examined in OPD before getting admitted into the wards. Not all referrals need to be admitted.

After the OPD is closed and during off days, all emergency visits including the referrals are managed in IPD by the nursing staff on ward emergency duty and doctor on call if needed. Ambulatory patients who are on daily injection medications and those who have minor complaints are also seen by the nursing staff on ward emergency duty. They perform this duty in addition to their regular inpatient care activities.

Emergency medical care during major emergency situation is managed by mobilizing on ad hoc basis all health staff that can be contacted. But there is no guarantee as to how many health staff can be contacted and mobilized after outpatient hours and off days. The staff on call for emergency duty includes one GDMO, one laboratory technician and one x-ray technician only. The rest of the staff are not expected to stay in station.

3.3. Aims

- (i). Short-Term: To improve EMS response to emergency situations in terms of both pre-hospital and in-hospital emergency medical care.

- (ii). Long-Term: To reduce death and disability through the development of an EMS system in MRRH.

3.4. Objectives

A. Pre-Hospital:

- (i). To improve the quality (prompt & proper) of EMS
- (ii). To increase EMS coverage of the population

B. In-Hospital:

- (i). To improve the quality (prompt & proper) of EMS
- (ii). To improve emergency referrals

3.5. Justifications

(i). Problems In Present EMS System: There are inherent problems in the present system of delivering emergency medical care. Since there is no ED/ER or Casualty Unit, the emergency patients during outpatient hours are first seen in the OPD. Depending on the seriousness of the patient condition, the arrival of this category of emergency patients creates commotion in the OPD waiting area. This

disturbs general ambulatory care as prior attention has to be given to the emergency cases.

After outpatient hours and during off days, all types of emergencies are taken care in the IPD by the nursing staff on emergency ward duty and by the doctor on call when necessary, and this additional emergency duty hampers the regular inpatient care. The focus group discussion with the nurses using Nominal Group Technique conducted in MRRH on 4 March, 1997 as part of data exercise, although with much limitations, indicates the difficulties faced by the nursing staff in coping with the emergency visits in the IPD.

The present EMS system does not call for prompt response to emergency situations. The response is affected on ad hoc basis, thus resulting in delayed emergency care and poor coordination among responsible authorities. (See Chapter 2 for details of current EMS problems in MRRH).

Therefore, the provision of emergency medical care through present EMS system is deficient both in quantity and quality, thus causing preventable death and disability, patient dissatisfaction, and bad reputation to the health care providers in general.

(ii). Emergency Room: There is no Emergency Department in MRRH, and there is no need for it anyway. The size of the hospital and the present emergency

case load does not justify for ED. For a full fledged ED there should be an annual case load of 20,000 patients (Mills, 1978), which is about half the annual case OPD case load of MRRH (Annual Health Bulletin, 1994).

However, EMS problems due to non-existence of ED are being faced more and more as people become health conscious with the pace of the country's economic development, and there is the need to start an improvised Emergency Room (ER) that will serve the present EMS needs of the people. It should be mentioned here that ER is not the same as ED. ER is meant for small rural hospitals.

MRRH can start an ER with 3 to 5 beds and resuscitation facilities, to be staffed by a nurse or Health Assistant (HA) who will attend to emergencies after outpatient hours and during off days. He or she will be assisted by a helper. When the manpower situation improves the ER can be run 24 hours. According to Hooker (1996), Physician Assistants (PA) and Nurse Practitioners (NP) can be used to man ED in the rural situations where there is shortage of physicians. Similar situation exists in MRRH, and hence it is appropriate in Bhutan context to utilize nurses and HA in staffing ER after getting them trained in EMS. Since HAs work as clinicians in BHUs they can easily be trained to work as Physician Assistants. In fact some of the senior HAs are already working in JDWNRH as PAs in OPD. They screen the outpatients, and make referrals to GDMOs and specialists. This practice has been instituted in JDWNRH as a stop-gap measure due to shortage of doctors.

The establishment of ER will lessen the problems faced by the nursing staff on emergency ward duty. It will also facilitate the coordination of EMS response during major emergencies.

(iii). Pre-Hospital Emergency Care: The present EMS system does not call for providing emergency medical care at the site. In any EMS system, pre-hospital care is an important component of emergency care which saves lives and prevents disability. Providing emergency life support in sudden cardiac arrest and traumatic cases, saves lives (Lilja & Swor, 1996). Therefore, it is time to make a beginning from MRRH of providing pre-hospital emergency care. The need is even felt by Dr. Chench Dorji, DMO of Tashigang Hospital (see Appendix I on page 205).

In US pre-hospital care is provided by a team of well trained Emergency Medical Technicians (EMT). EMTs are non-medical professionals who are well trained in pre-hospital emergency medical care, and they provide pre-hospital EMS independently but with medical direction. For Bhutan there is no need for such a team. But the hospital administration should have a system whereby a medical team can be immediately mobilized and dispatched to the scene at short notice.

(iv). Road Traffic Accidents: The Road Traffic Accident (RTA) report of 1996, maintained by the Crime Section of Royal Bhutan Police Headquarters in Thimphu, shows 315 RTAs with 248 people injured and 69 killed which is 4.13 per

1000 morbidity rate and 0.12 per 1000 mortality rate. This RTA mortality ratio is much lower than the U5 mortality rate which is 96.9 per 1000 (Eighth Five Year Plan Document, 1996, p.170), and it still tops the mortality rates. However, judging from the RTA trends, the RTA mortality is expected to increase in the coming years while the mortality due to infectious cause is decreasing sharply.

Therefore, in the light of the present and expected RTA situations in the country, hospitals need to institute ER or Casualty Unit for providing prompt and proper trauma care. The fast pace of country's development process has made the population highly mobile.

(v). Increased Coverage: Since the upgradation of MRRH to the regional referral hospital status, it has to provide referral services to the people of 5 neighboring districts in the region. Most of these referrals come as emergency referrals. There is also influx of migrant population due construction of the biggest hydro-project at Jepshing which is 29 kilometers from MRRH. The construction of the new referral hospital complex will also bring in large migrant laborers (see chapter 2).

(vi). Trauma Care Center: Government has identified Monggar Hospital for establishing Trauma Care Center. This was decided before the hospital was upgraded to referral status. Therefore, establishing an ER will suffice for Trauma Care Center.

(vii). EMS Training: Training is an essential component of EMS system. The nature of EMS being a highly technical medical care, it is very important that the input of human resource element is well planned and implemented in order to sustain the functioning of EMS system in MRRH.

Warner (1978) stated that the lack of requisite knowledge and skills for delivering emergency medical care by the medical professionals results in preventable death and disability. Having chosen to become a health professional, it is his or her responsibility to provide the patients the best of health care possible, equipped with updates of latest medical knowledge (Basic and Advanced Pre-Hospital Trauma Life Support, 1994). Even with trained manpower, providing quality EMS demands much more than qualified providers. It requires a “dedicated team of individuals with complementary skills and expertise” (EMS Agenda for the Future). Therefore, EMS training needs to be pursued with high degree of priority.

Although all health care professionals possess basic knowledge and skills in emergency medical care, the deficiencies remain because of lack of updating in knowledge and skills. Therefore, training must be conducted on regular basis.

(viii). Injury Reporting System: The injury surveillance system does not exist in Bhutan. In the morbidity reporting format there is one column for reporting injuries. It does not specify the type of injuries. The morbidity pattern of 1995

reported under injury column in most of the districts stands at an average of 3% (Annual Health Bulletin, 1995), which appears to be a gross under reporting. The RTA report of police does not include minor injuries because they are not reported to the police. In hospital too, after OPD hours, injury cases who are not admitted in wards are not reported in the morbidity reporting format.

Some details on the types of injuries needs to be incorporated in the morbidity reporting format so as to give a picture of injuries taking place in the country. This is essential for planning and evaluation of EMS.

3.6. Research Questions

- (i) What EMS should be provided, considering the community's needs and the various view points of stakeholders ?
- (ii) What EMS is currently provided in response to emergency situations ?
- (iii) What gaps exist between that which is needed and that which is provided ?
- (iv) What, in the view of stakeholders, should and can be priority

strategies/techniques for improving EMS ?

- (v) To what extent can these strategies/techniques be credited with reducing death and disability ?

3.7. Research Approaches

(i). **Sample Population:** The population sampling is done on the basis of non probability sampling method with the aim to obtain information from major stakeholders. It, therefore, will not be representative of the whole population. Moreover, because it is an action research, there is no time and resource to go for probability sampling.

The sample population for the study will consists of doctors, nursing staff including nurse anesthetist, HA, GNMs, technicians and administrative officer of MRRH; the Dzongda (District Administrator) and Dzongrab (Deputy District Administrator) of Monggar District; Superintendent and Officer-in-command of Royal Bhutan Police; District Development Committee called District Yargay Tshogchung (DYT) members; and VHWs.

The hospital staff are included in the sample population as health care providers because they are directly involved in the development of EMS system.

There are three different categories of nursing staff, namely- GNMs, ANMs and ANs. GNMs are better qualified group while ANMs are less qualified than GNMs, and ANs are the lowest category of nursing staff. But the nature of the job is such that they all do the same job. And in most of the emergency situations, nurses are the first group of EMS providers. Technicians are also involved no less than doctors in EMS system, specially the Operation Room staff including nurse anesthetist, laboratory technicians, pharmacy technician and x-ray technician. Administrative officer plays important managerial role in regard to logistics and staff mobilization.

Dzongda and Dzongrab are important stakeholders in EMS system because during emergency situations they are answerable to the Government as to how emergency medical care is provided. They can assist the hospital administration by providing logistic support specially in regard to arranging transportation. However, it is not an uncommon experience in that their enthusiastic involvement creates interference in the technical management of emergencies. This is where a coordinated response system needs to be in place.

Officials from District Court and RBP are also significant stakeholders because of the medico-legal implications in the emergencies. Like in other parts of the world, the role of law enforcing agencies in EMS system is very crucial. Police and hospital authorities can work together to come up with a communication system

whereby emergency calls are relayed to each other effectively. In terms of communication facility, the RBP is better equipped with mobile wireless sets.

VHWs are health care providers at the grass root level. They are an important bridge between the hospital and BHU health staff and the villagers. VHWs provide preventive and promotive health care packages. As for curative component, they provide first aid. That is why they are to be trained in EMS. Ultimately, in far flung villages, VHWs may be the only saviors in times of emergencies. Their knowledge of basic emergency medical care at home and during transport will play very important role in saving lives of his fellow villagers.

DYT members are included in the sample population because as representatives of the village blocks they are important in informing the public about how to gain access to EMS, and also assisting VHWs in evacuation of emergency cases to the hospital. Their support can be solicited if Government approval is needed for EMS development plans and activities. They can provide the hospital authority with information about people's perceptions and expectations of EMS, and suggest alternative solutions to improve the situation.

(ii). Sample Size:

The sample size for the study will include doctors except DMO who is the researcher and the Ophthalmologist who will assist DMO as facilitator, administrative officer, 10 nurses, 1 HA , 1 NMS, 1 technician each from x-ray, laboratory, pharmacy, dental & ophthalmology units, and nurse anesthetist of MRRH; Dzongda and Dzongrab of Monggar District Administration; Superintendent of Police (SP) and Officer-in-Command (OC) of RBP, Monggar branch; 9 DYT members representing one each from 9 blocks in the district; and 27 VHWs selecting 3 from each of the 9 blocks.

Although 10 nurses are identified for the sample size, it might be possible to include 5 more nurses because additional nurses are expected to be posted.

Out of the total of about 40 DYT members, 9 members selected will be Gups (Block Heads) of the 9 blocks. There are about 100 VHWs, out of which 27 are included in the sample size. They will be chosen 3 each from the 9 blocks on the basis of their knowledge in health care delivery system. It is hoped that the sample population, thus identified, will express the views of the public they represent.

3.8. Research Techniques

In this study, qualitative research methods is used. To increase the validity and reliability of the study, 3 different qualitative methods are used. They are: In-depth

Interviews, Focus Group Discussion and Nominal Group Technique. The main objective of using these techniques is to find out from various stakeholders of the EMS system about their problem perceptions and ideas for improvement. This will provide a basis for planning and implementing EMS intervention programs.

(i). In-Depth Interviews: In-depth interview method will be used for interviewing Dzongda, Dzongrab, SP, and OC. The topic for interview, although on EMS, will differ for each interviewee according to the specific areas of involvement in the EMS system in order to ensure obtaining holistic and comprehensive understanding of the problem under study. Therefore separate interview guides containing 3 to 5 questions for each interviewee, will be developed and used. These questions will introduce the interviewees to the topic for interview. The sub-questions that will be asked in the process of the interview will depend on the interviewees' answers as the interview progresses.

The interviews will be conducted in the offices of the interviewees on the date and time agreed by the interviewees. Not more than one interview will be conducted in one day. This is essentially to make sure that sufficient time allowance is given for preliminary analysis of the data collected on the same day. This process will also help to refine subsequent interviews and/or identify gaps in the interviews. Permissions will be sought from the interviewees for the use of portable cassette player to tape the conversations.

Interviews will be conducted in the language which is comfortable to the interviewees. Interviews with Dzongda and OC will be taken in English, and with Dzongrab and SP in Tshanglakha (Language spoken by eastern Bhutanese).

The interview guide for this in-depth interviews is given in the Appendix on page . It introduces the interviewees to relevant topics in EMS system which are of concern both to the interviewee and the researcher. But it is subject to changes in the course of subsequent interviews.

(ii). Nominal Group Technique: - Nominal Group Technique will be used for focus group discussion with the hospital staff (see chapter 4 for details of Nominal Group Technique). There will be 4 sessions with four different groups. The groups will consist of members from homogeneous background with similar experiences and job responsibilities. The groups are as follows: (1) Doctors and administrative officer, (2) GNMs and HA, (3) ANMs and ANs, and (4) Technicians. The nurses are grouped into GNM and AN groups because the GNMs by virtue of possessing higher qualification status tended to dominate the session as was found out during the data exercise. Depending on the number additional nurses that has joined the hospital since the writing of this proposal, ANMs and ANs can even form separate groups. Including more nursing groups in the study will enhance the validity and reliability of the information.

Like in in-depth interviews and for the same reason, no more than one Nominal Group session will be conducted in a day. Since it involves the use of highly structured focus group discussion method, a time limit of 90 minutes to 2 hours for each session will be placed, with the first group getting the 2 hour period because there is always the tendency for the session to drag on when clinicians are participants.

The sessions will be conducted in the training room of Diarrhea Training Unit (DTU) of MRRH where sitting arrangement, white boards and flip chart facilities exist. The experience from the conduct of data exercise dictates that the sessions be conducted in warmer days. Data exercise was done in the same room on 5 March, 1997 when it was still very cold, and the participants were too eager to get out of the room as soon as possible. There is no heating facility in the room. The sessions are intended to be held after outpatient hours so that routine functions of the hospital is least disturbed.

English language will be used with all four groups because it is the most commonly used language medium among medical personnel especially when discussing health issues. Exception may be considered for ANMs, ANs and Technicians, allowing them to clarify their ideas in local dialect as and when necessary, but these will be directly transcribed onto the boards and flip charts in English. There will be no use of cassette recorder because the technique does not

cassette recordings. Consensus on prioritizing the issues raised are achieved on the spot by democratic style.

The session will be conducted by two resource persons. Dr. Ngawang Tenzin, Ophthalmologist, is identified as the facilitator for all the sessions because he knows the local languages of the participants if they choose to clarify their points in the language he or she is comfortable with. The recorder will be the researcher himself.

The questions developed for the sessions are framed differently for the nursing staff, technicians and doctors. This is done in order to gather ideas from participants with different job responsibilities and experiences so that the information thus obtained, is holistic and comprehensive (see Appendix K on page 216 for the Nominal Group Technique question guides). The pilot testing of the Nominal Group Technique in the data exercise shows that the question guide should be pre-tested.

(iii). Conventional Focus Group Discussion: Focus group method as a qualitative research methodology was developed and used in market research by industrialized countries since 1950s, and today it is used widely by social researchers (Dawson, S., Manderson, L., and Tallo, V. L. (1992). It is used to gather information from stakeholders on issues of the study in order to base the programme decisions.

Focus group method is intended to be used in this study for obtaining information about problem perceptions on EMS from DYT members and VHWs. As identified in the sampling procedure, there will be 1 group with 9 DYT members and 3 groups of VHWs with 9 members in each group.

Every year VHWs are given a week long VHW refresher training course at the hospital in summer. Since focus group discussions are usually completed within 2 hours, the conduct of the focus group sessions are to be tied up with the annual VHW refresher course training. There is no need to call up the VHWs separately for the focus group discussions.

The selection of the 27 group members will be done on the second day of the training period because not all VHWs are able to report on the first day. These 27 VHWs will be divided into first group, second group and third group with 9 members in each group. They will be explained about the objectives and procedures of focus group session, and also about the type of participation expected from them.

The sessions will be conducted in the afternoons, taking the first group on the third, second group on the fourth, and third group on the fifth days of the training period. It may also be conducted in the mornings depending on how best the time can be adjusted with the programme schedule. All sessions will be conducted in the meeting room of DTU, and the language used will be Tshanglakha. Although some

VHWs have local dialect as their mother tongue, they never the less are conversant with Tshanglakha. Discussions will be taped.

Focus group sessions for the 9 DYT members may be scheduled during the summer DYT session in the DYT hall at Dzong complex (Office of District Administration). This is to avoid calling the members separately for the focus group discussion. The session may be conducted in the DYT hall or at the hospital. The time and date will have to be negotiated with Dzongda. But it will be made sure that the members are not detained any extra day for the focus group session. Since it is only one group, making time allowance with the DYT session will not be a problem. The session will be conducted in Tshanglakha and the discussions will be cassette recorded.

This focus group discussions will be conducted with the help of Dr. Ngawang Tenzin as moderator, researcher as observer, and Mr. Rup Narayan, Administrative Officer, as assistant. Dr. Ngawang Tenzin is selected as moderator for the same reason given earlier. Mr. Rup Narayan is identified as assistant because as an administrative officer, his participation in the study is crucial. It is important that his commitment to the study is solicited from the very beginning of the study.

The question guides for this focus group discussions are same for all the groups (see Appendix K on page 216 for the focus group question guides). The questions address the variables for discussion.

3.9. Secondary Data:

The data on existing injury recording and reporting system will be collected from the confidential patient files in OPD record room and inpatient admission registers by looking at the type and number of injury cases seen during and after OPD hours over one year period from July 1997 to July 1998. The inpatient nursing staff and OPD record keeper will assist in this data gathering exercise (see chapter 4 on page XX for details of the present information maintenance system). The main aim of the secondary data collection is to find out the deficiencies in the present injury recording and reporting system in regard to the cause, severity, outcome of treatment and follow up of injury cases, and introduce improvements in the system so that reliable and informative injury data can be obtained for improving the provision of emergency medical care to the injury victims.

3.10. Data Analysis

According to Attig and Svetsreni (Citation made from the class handout which does not have the year of publication), researchers should begin to analyze data as

one starts collecting data from the sample population on a daily basis. The statement holds true specially to the focus group discussion using Nominal Group Technique because the technique involves some degree of analysis by the group members.

Data analytic process will be started immediately after completion of each research technique. For Nominal Group Technique, the data analysis begins in the discussion process itself, in that the technique entails prioritization of the issues raised by the members. The priority listing by each participant of the group will be fixed at 5 issues so as to keep the deliberations focused on the topic addressed to by the question guide. After the voting and ranking of the priority issues are done, the listing of issues in order of priority will be done on the basis of total scores obtained by each issue when score value of 5 to 1 are given to the issues in priority order of 1 to 5 (see Chapter 4 for more details of the ranking procedures).

The data analytic procedures will be followed same for all 4 nominal groups. Following this, contrasting and comparative patterns about different areas of EMS problem perceptions by different group members will be drawn on the basis of descriptive taxonomic analysis. This taxonomic analytic method will attempt to explain what's and why's of EMS problems and how it could be solved. By sorting the data in this way, interpretations can be made and conclusions drawn from these interpretations.

For in-depth interviews, the transcription of cassette recordings into field notes and preliminary analysis will be done on the same day. This will enable researcher to take stock of shortcomings in terms of both content and style of the interview process, and affect changes in subsequent interviews. When all interviews are completed, the final data analysis will be done using the same procedures as in Nominal Group Technique.

However, for conventional focus group discussions with VHWs and DYT members, the data analysis is little complex than that of the Nominal Group Technique and in-depth interviews. In these group sessions, the observer will take field notes of what each member says and behaves. It will involve taking note of gestures and quoting verbatim of participants. Since the sessions will be conducted in Tshanglakha, the observer will transcribe proceedings directly into English language in his field notes. Cassette recordings will be used to cross-check field notes, and/or making corrections.

On completion of the group sessions, the field notes will be sorted and coded simultaneously into units of analysis. By this process the information will be organized into logical, discrete, and comparable units (Attig, Boonchalaksi, and Yoddumnern-Attig, 1989). After the sorting and coding exercise, patterns of association and differences will be interpreted according to the major variables raised in the question guides.

The secondary injury data gathered from the record room and admission registers will be compared with the morbidity reports which are submitted to the Health Division. This comparative analysis will be done to find out the deficiencies in the present injury recording and reporting system.

3.11. Activity Plan

A. Phase One

(i) Hospital Management Committee: The study is intended to be undertaken for one year period from July 1997 to July 1998. The study activity will be initiated with the formation of Hospital Management Committee (HMC). The management responsibility of the study will then be entrusted with the HMC.

The main aim of instituting HMC is to organize the hospital staff as the main stakeholders in the EMS system, for the change, and thus involve them through the whole process of the activity plan. SWOT (Strengths, Weaknesses, Opportunities & Threats) analysis will be done using Clarke's model of organizing for change before embarking on the project activities (see appendix V on page 246 for the model).

(ii) Data Gathering (Interviews, Group Discussions & Injury Data): In-depth interviews can be conducted in the second month of the plan period depending on whether the concerned interviewees are in station or not. But the interviews should be completed within the first 9 months of the study plan period.

Focus group discussions for VHWs and Nominal Group discussions will be held in September and October months respectively. However, the focus group discussions for the GYT members will depend on the time schedule of the summer DYT session. If the sessions cannot be held during this summer DYT session, the alternative plan is to hold during winter DYT session. Scheduling tentative dates for sessions with VHWs is possible because DMO is responsible in preparing and conducting VHW refresher training course for the district.

Secondary data gathering will be done in November because by this time of the year the outpatient load decreases, and the staff who will be assigned for this job, will have sufficient time to go through the files and registers during outpatient hours. This is to avoid giving the staff assignment after OPD hours.

While preliminary data analysis will be done after completion of each and every techniques used in the study process, the final data analysis, however, will be done in February and March months. December and January months are too cold to

work productively. Reporting writing will be done in April and May. The outline of activity time table is given on the next page.

B. Phase Two

(i) Manpower: To begin with the functions of the new EMS system in MRRH, manpower will be managed by the present hospital staff strength with few more additional nursing staff. The staff will not be overtly over burdened and stressed by this new assignments. They are already performing this duty, and the demands placed on them by the introduction of new elements in the EMS system is but a process of streamlining the existing EMS delivery system with the upgradation of facilities and technical know-how.

The new set of staffing with new responsibilities that this new EMS system will call for, is the operation of ER, and manning pre-hospital emergency team. This will be a new field for the hospital staff, and it will therefore, involve technical and managerial problems in the initial stage of the establishment of the new EMS system.

(ii) Training & Ems Standards: The new EMS system will provide a wide range of EMS which mean that the EMS providers will see mix case load of emergencies. Therefore, it is imperative that all health care providers are well trained in the management skills of all types of medical emergencies.

Doctors and senior nursing staff will be used as resource personnel to develop the training curriculum. Different curriculum will be developed for different levels of EMS providers, i.e. police force, VHWs, ambulance drivers, and different categories of hospital and BHU staff. The beginning of the institution of the EMS training program will be made with the training of hospital nursing and paramedic staff in Basic Life Support in emergency cardiac and trauma care. For the long run, the EMS providers will be trained to deal with medical emergencies competently at the level expected of them, considering the EMS health care needs of the people.

The EMS training curriculum will be developed by referring the curriculum of the Emergency Department Nurses Association (EDNA) and EMT-Basic: National Standard Curriculum of US. Local standards for EMS will be set according to the relevant topics included in the curriculum for the purpose of medical auditing and evaluation (see appendix R on page 237 for the list of the core curriculum and the list of different skills for nursing in-service training program of the EDNA).

The EMS training for the health staff will be conducted as a continuing in-service training program (see chapter 5 for the details of how EMS training program is to be conducted).

(iii) Communications: There are two areas where communication system needs to be improved, i.e. within the hospital system and outside the hospital system. While independent wireless communication system will remain an ultimate option for the EMS system in the long run, but for now, a cost effective communication technology which is beeper system, will be considered for MRRH. This system is already introduced in JDWNRH. The introduction of beeper system will go a long way to improve the communication system, thereby, helping to respond promptly to emergencies.

The communication between the hospital and the periphery will be streamlined for mobilizing appropriate EMS response. VHWs, being the EMS providers at the grass root level, will make use of the nearest telephone facilities to communicate with the hospital. An integrated communication system will be developed with the BHUs (all BHUs are linked with micro-wave telephone), animal husbandry centers at Lingmethang and Monggar headquarters (these centers have wireless communication sets supplied by Highland Development Project), police force (they possess mobile wireless sets), and Office of Kurichhu Project at Kurizampa (linked with telephone). Since the police is directly involved in the emergency medical situations, specially during Road Traffic Accidents (RTA), it is all the more pertinent that the communication facility available with the police force be integrated with the EMS communication system at large.

In the hospital, the communication center will be in the ER. The health staff manning the ER will receive the information and make appropriate EMS response according to the needs of the emergency situation as described by the information dispatcher. The ultimate aim of the improved communication system is to enable the hospital authority to provide prompt and proper EMS through early notification by using existing communication facilities in the region in an integrated manner.

(iv) Transportation: All hospitals in the country have ambulance vehicles with standard design but there is no standards for equipment requirements. Till today, there is no system of providing pre-hospital emergency care, and as such, the need for equipping the ambulance did not rise.

There is no agreed standards for equipping the ambulance. But the basic criterion for naming a vehicle an ambulance is that it should have facilities to provide Basic and Advanced Life Support, appropriate to the medical team, both at the scene and during the transportation of the patient to the health facility (Lilja and Swor, 1996). The American College of Surgeons (1970) lists 24 items as basic requirements for equipping the ambulance (see appendix T on page 242). The list has been updated, and today, a fully equipped ambulance has a defibrillator machine in addition to the other items. But the defibrillator machine is an expensive equipment, and yet the most important life saving device. At best, the EMS system in MRRH can install one in ER only.

At present there is only one ambulance in MRRH. The hospital is due to receive the second ambulance. The new ambulance will be maintained as a fully equipped ambulance with the local standard facilities for providing first aid and basic life support. The facilities for advanced life support will be kept at hand in ER, and this will be carried in ambulance only when advanced life support team is deployed to the scene.

The transportation needs of the far flung communities will be studied and a system of transportation worked out by involving the communities themselves. The key players in the development of the transportation system in the villages will be VHWs.

(v) Facilities: The important facility that needs to be immediately considered for the new EMS system in MRRH is the opening of an ER which will play a central role in the EMS system. The infrastructure and resource constraints existing now, does not allow for establishing a full fledged ER, and the present emergency case load does not warrant for it either. However, as a starting point, an improvised ER with 2-3 beds will be opened in OPD. It will be possible to install the minimum equipment requirements as listed by Jenkins and Van de LEUV (1978). (see appendix U for the list). The ER will have a corner for storing life saving drugs and other basic supplies.

The ER will be managed by the doctor during the OPD hours, and by the nurse or HA after OPD hours. This doctor will see all emergency cases and other general OPD cases when there is no emergency case. The establishment of ER, besides relieving the ward duty nurse from the additional burden of managing emergency visits, will also ease the problem of bed shortage in the IPD because the patients requiring overnight admission for observation will be kept in ER. The outpatients patients who are on daily injectable medications and wound dressings will also be seen in ER after OPD hours and on holidays.

There is no blood bank facility in MRRH, and it is not possible to start one because of the constraints mentioned earlier. Blood transfusion is managed by asking the patient himself to find the donor. However, in emergencies when the patient party is unable to get the donor, the hospital authority has to take over the responsibility to look for donors, and it often lands up hospital staff donating blood. People do not come forward to donate blood. Motivation campaigns for blood donation are being carried out, and this activity will be further intensified.

C. Phase Three

Pre-Hospital Emergency Care: Pre-hospital emergency care will be provided by the pre-hospital emergency team, mobilized from the hospital health staff when the emergency situation calls for the dispatch of pre-hospital team. The staff strength of the team will depend on the nature of the emergency situation which will dictate

whether the team should include a doctor or not. In some situations it may not be necessary to send a team. A single health provider may be able to manage the emergency. If ambulance driver is well trained in basic life support and first aid, he alone may be able to deliver the pre-hospital EMS.

Provision of pre-hospital emergency medical care can be assisted by the police force and VHWs. To begin with the new EMS system in MRRH, responsible people from police force and VHWs will be trained in first aid and basic life support, primarily to equip them to assist the pre-hospital team.

Lilja and Swor (1996) states that the public interest and participation are very important in EMS system. But in Bhutan, past experiences poorly of public participation. Therefore, the public participation will be solicited through public information and education soon after establishment of the new EMS system in MRRH. Their cooperation and assistance is specially required when victims have to be picked up from the valleys and cliffs and carried up to the road head.

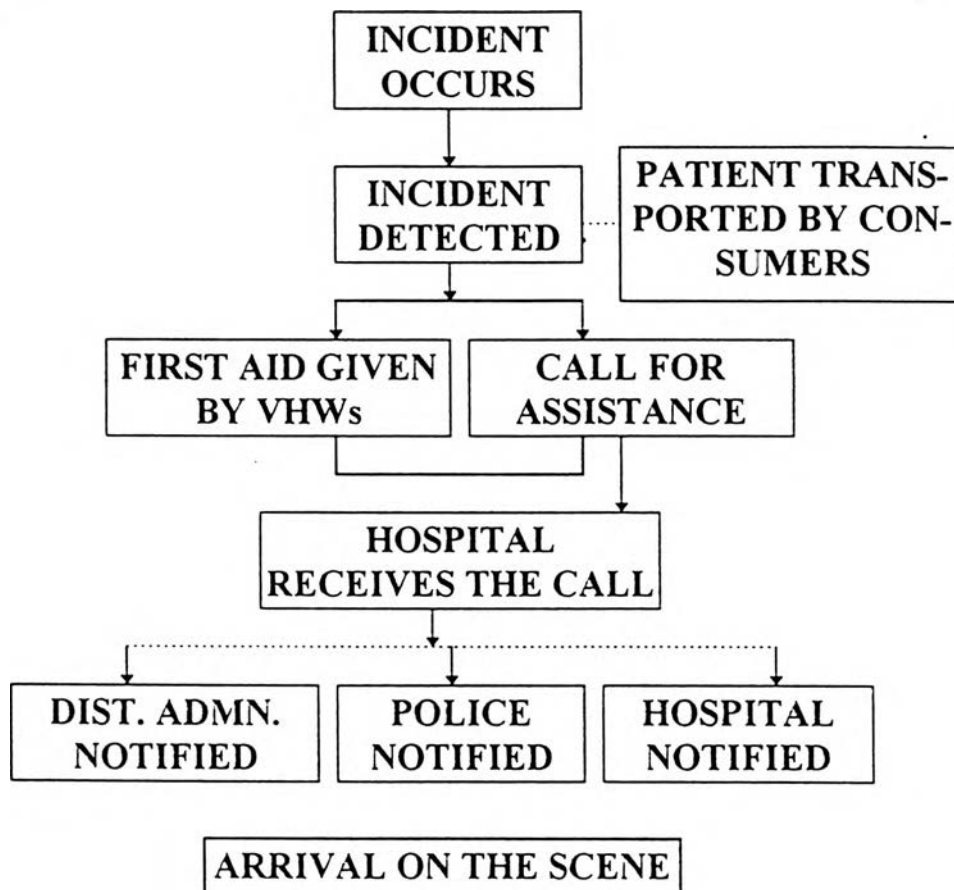
EMS is delivered through three different stages as shown in the EMS flow chart in figure X on the next three pages. It calls for consumer involvement in the first stage, paramedic involvement in the second stage, and hospital involvement in the third stage. Pre-hospital emergency care engages the first two stages and the third stage till the patient receives continued emergency care in ER. Consumer involvement

is restricted to the community's assistance in terms of notification and transportation of the patient to the road head. The major consumer involvement will be contributed by the VHWs.

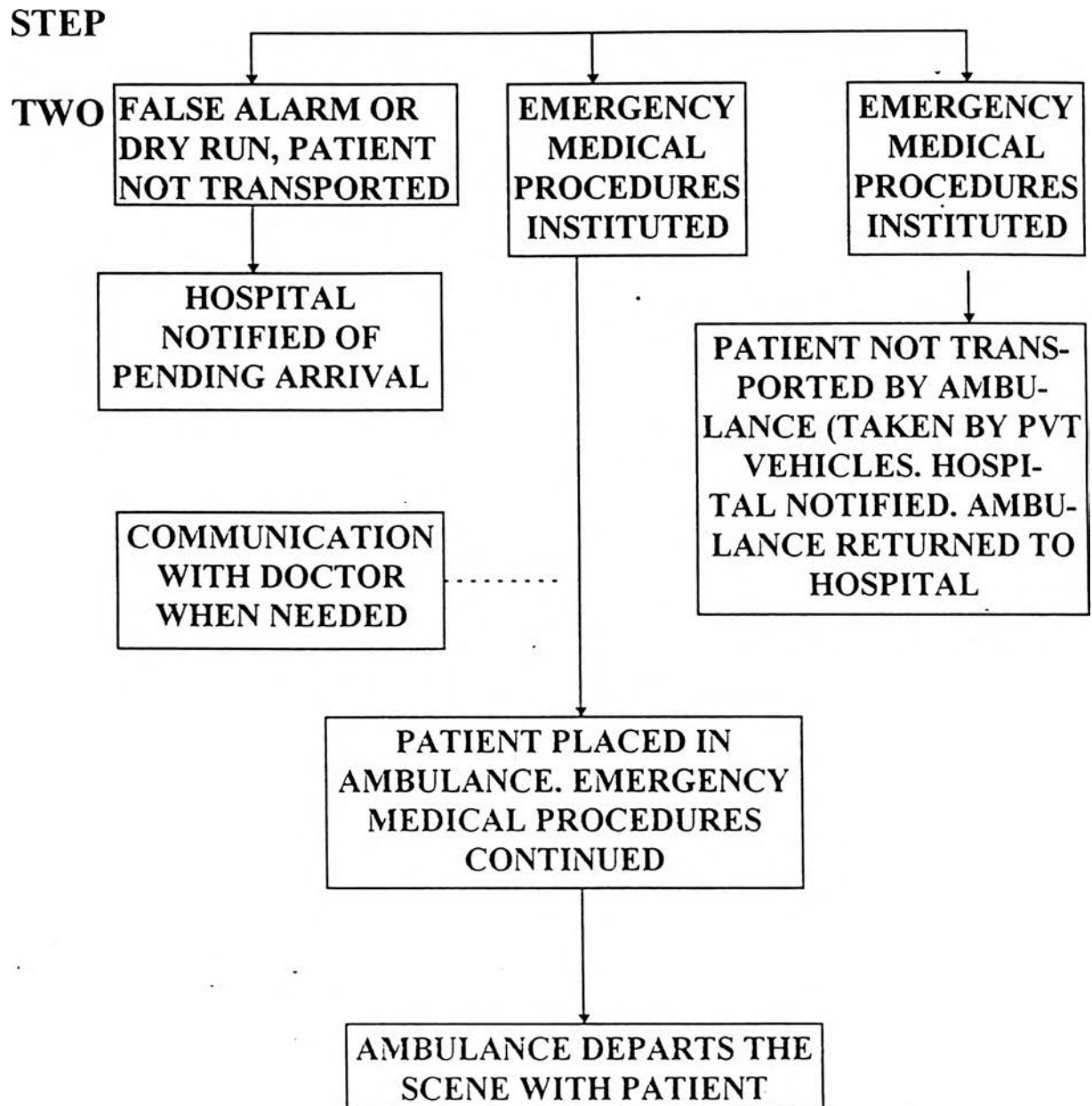
Pre-hospital team will consist of paramedic involvement. This team will be responsible in instituting the EMS procedures at the scene and during transportation till the patient is delivered to the care of the ER staff. On conclusion of the ER treatment the patient may be discharged, admitted in IPD or sent to his native hospital for continued treatment.

STEP FIGURE : EMERGENCY MEDICAL SERVICES FLOW CHART

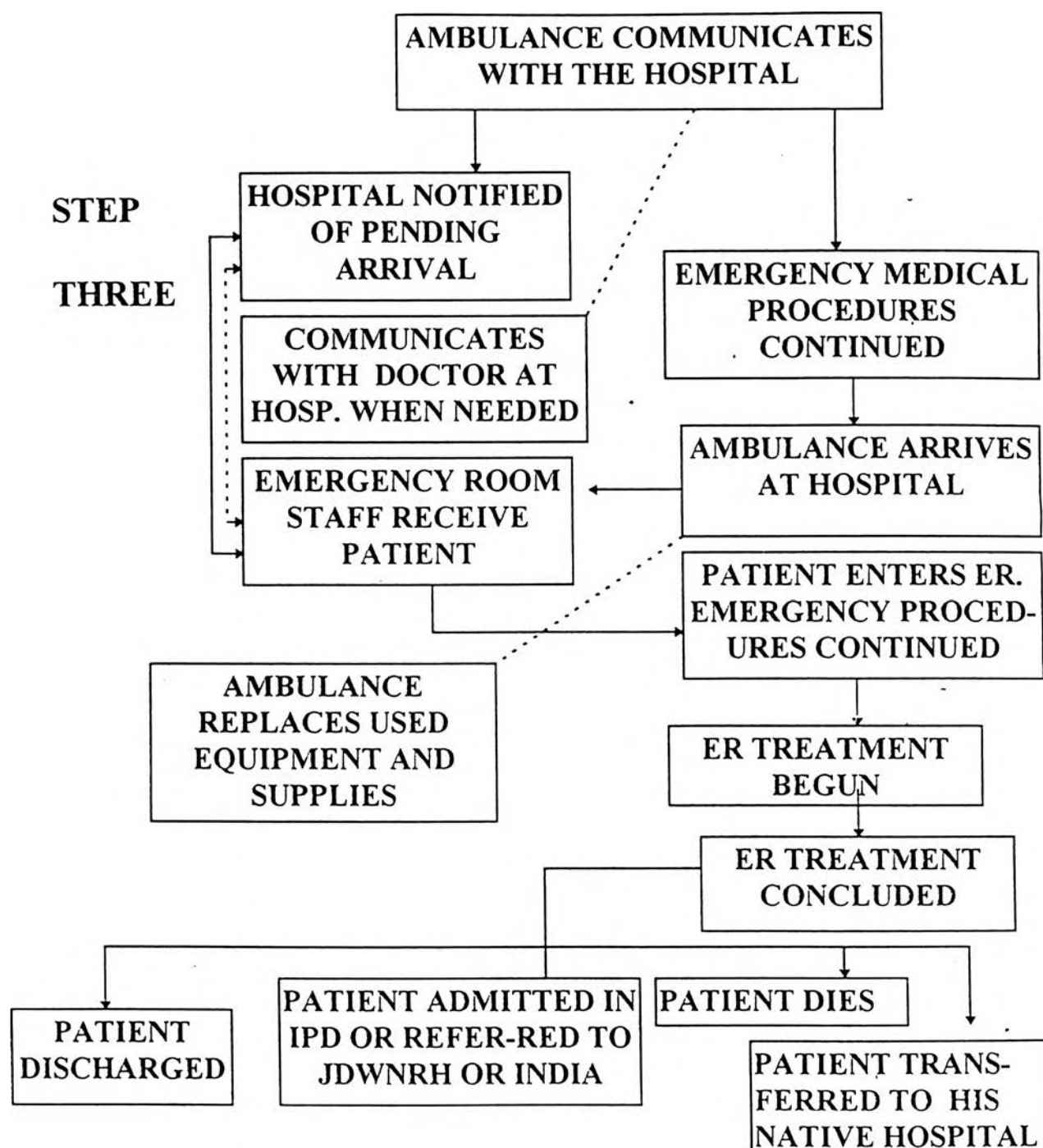
ONE



CONSUMER INVOLVEMENT



PARAMEDICAL INVOLVEMENT



HOSPITAL INVOLVEMENT

SOURCE: Adapted from : Jenkins, A. L., & Van de LEUV, J. H., (1978).

Emergency Department Organization and Management. (2nd ed.).

Transportation and Communication. (P. 229).

Table 2 Outline of EMS Activity Time Table.

Activity	Period	JULY 1997 ← → JULY 1998												Resource Personnel	
	Months	J	A	S	O	N	D	J	F	M	A	M	J		J
Staff meeting and formation of Hospital Management Committee		↔													DMO, ADMO
Depth interviews			↔												OMD, Ophthalmologist
Focus Group Discussions with VHWs					↔										
Focus group discussion with DYT members					↔						↔			DMO, Record Keeper, nursing Staff	
Secondary data collection						↔									All Doctors
MS Training						↔								All Hospital Staff	
Establishing EMS Facilities							↔								DMO Superintendent of police, HLDP, Kurichher Project-Manager
Establishing integrated Communication system			↔												DMO, ophthalmologist, ADMO
Final Data Analysis								↔							DMO, Computer Typist
Report writing										↔					

3.12. Evaluation

The evaluation of the EMS activities will be done by two ways:-

Process Evaluation and Impact Evaluation.

(i) Process Evaluation: Process evaluation will be undertaken through a process of continuous monitoring and supervision of activities, and affect corrective measures whenever and wherever necessary. Use of process evaluation method in evaluating the study is essential because as an action research study, it is subject to trials and errors which would require series of problem solving discussions all through the process of activities to plan alternative strategies and solutions. This will be done by means of Utilization Review, Medical Care Evaluation Studies (MCES), or Patient Care Audit (PCA) as mandated by Professional Standards Review Organization (PSRO).

(ii) Impact Evaluation: Impact evaluation will be carried out as a separate study as a patient satisfaction survey using the instrument adapted from the Brigham and Women Hospital Ambulatory Emergency Unit Survey instrument which is a self-administered questionnaire on finding out the patient satisfaction level of emergency medical care provided by the hospital. The survey will be conducted after one year of the establishment of EMS system in MRRH. The questionnaires will be mailed to all educated patients who had received emergency medical care from MRRH during the

one year period. From the hospital record, data on death and disability will also be noted.

3.13. Budget For The Study

The budget requirement for the study is minimal except for the procurement of the lap-top computer with printer. The programs are planned in such a way that the activities which incur major expenditures are tied up with the annual work plans of the hospital and District Administration. So it leaves with the expenses to be paid for per diem to resource persons, refreshments, stationary and miscellaneous expenditures.

The essence of action research study calls for undertaking the study activities at work place within the given resources. The manpower requirement is mobilized from the hospital staff. The activities are planned in such a way that this additional assignment will not cause undue burden and inconvenience to the resource persons. Although the hospital staff are expected to contribute their efforts in developing the EMS system for the good of the people, payment of some incentives to resource persons is considered. This extra budget except the cost for the computer, can be met from the regular hospital budget. But in order that hospital budget is kept unaffected by this new program, the budget for the study can be made available from the Health

Division. However, procurement of computer must be pursued with the Health Division separately. Given below is the budget estimate for the study.

TABLE 3

Particulars	Amount (NU)
Perdiem for resource persons as identified in the activity schedule	10,000
Refreshments for participants	8,000
Stationary	5,000
Miscellaneous expenses	1,000
Cost of lap top computer with printer	45,000
Total	64,000

NOTE: US \$ 1 = NU 36.00 (NU Stands For Bhutan Currency - Ngultrum)

3.14. Management Issues

The main aim of the institution of the Hospital Management Committee (HMC) is to manage the action research study through participatory approach. Most or all of the hospital staff will be involved in the study activities. HMC will assign responsibilities and supervise the activities throughout the study period.

Since this study does not involve surveyors, there is no need for additional manpower requirement. The two resource persons identified for conducting focus group discussion sessions will be thoroughly briefed on the modalities of the research technique.

HMC will see that Nominal Group sessions with the hospital staff are conducted in a way that causes least disturbance to the routine functions of the hospital. For the staff who may have to work overtime for the study will be considered payment of some incentives in the form of granting leave by the HMC. HMC will ensure that there is no complaint from the staff against the conduct of the study. There must be full participation from each and every member of the staff.

The “phase one” study activity incurs minimum expenses, and this expenditure can be met even from the hospital budget except the cost for the computer which will have to be sought from the Health Division. It is important that the researcher possess a lap-top computer to enable him to compile and analyze data on a day-to-day basis. There is only one computer in the hospital, and this computer can be made available for use only in the final data analysis and report writing during which the services of the computer typist will be utilized. However, a major financial input, in terms of procurement of defibrillator machine, Minikin and budget for in-service EMS training, needs to be sought from the Health Division in order to carry out the “phase two” activities.

Problems are expected to surface at every stage of the activities. I foresee conflicts specially with the colleagues who will be called upon to contribute to the study activities. They make the hard core group of the hospital staff who can be potential threats to the study activities or provide opportunities for the change. One reason for forming HMC is to identify the potential areas of conflicts and resolve the problem issues through adopting participatory approach in discussing the problem issues, and as such, HMC will be used to resolve outstanding issues. HMC will look into finding ways and means within the financial rules and regulations to consider incentive payments to every member of the staff who makes a contribution to the study activities. This is to motivate the staff for better participation in the study activities.

3.15. Limitations Of The Study

The sample size is small and the sampling is done on the basis of non probability sampling method. It does not include all the important stakeholders in the study, for example, the patients who received emergency medical care from MRRH. Their views on EMS would have a much bearing on the development of EMS system in MRRH. As such, the findings of the study will not represent the views of all stakeholders.

Two sets of in-depth interview guides are developed for two groups of interviewees to obtain ideas specific to their area of involvement and of concern to the hospital authority. The interview, therefore, does not triangulate across information sources as a means to cross check the data. This will compromise the validity, and to some extent, reliability of the study.

In this study, the researcher is the “boss” of the hospital. There is bound to be researcher-based biases although attempts towards reducing these biases have been made as much as possible. For instance, in the focus group discussion sessions, the researcher has avoided the role of moderator so that the deliberate influence of researcher as moderator is minimized.

The researcher, being the “boss” of the hospital, his presence may inhibit the degree of participation from subordinate staff. They may withhold ideas which they assume might offend the “boss”. This will render the study less reliable and replicable.

The findings of this action research study cannot be generalized to the EMS delivery systems of other hospitals in the country because the variables studied here are specific to MRRH.

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