

## **CHAPTER 2 : ESSAY**

### **IMPROVEMENT OF EMERGENCY MEDICAL SERVICES IN MONGGAR REGIONAL REFERRAL HOSPITAL MONGGAR, BHUTAN**

#### **2.1. Introduction**

The District of Monggar lies some what in the center of the eastern region of the country, which consists of 5 districts. Monggar's District Hospital is upgraded to Eastern Regional Referral Hospital in 1995. Since then, it is referred to as Monggar Regional Referral Hospital (MRRH). Besides serving the Monggar District's population of over 38,000 (District Health Statistics of 1995), it now provides referral services to the people of 5 districts in the eastern region, and also to the people of eastern half of Bumthang district in the central region. The present bed capacity of MRRH is 58 with bed occupancy rate of 38.2% (Annual Health Bulletin, 1995). With the upgradation of the hospital to regional referral hospital, the bed occupancy rate has increased sharply to the extent that often there is shortage of beds (Figure not available).

The present hospital buildings are semi-permanent structures which have served their purpose. Considering the health care needs of the people of eastern region, the Royal Government decided to build a new regional referral hospital complex in Monggar. The construction of the new hospital complex with 100 bed capacity has already started.

The essay gives a brief overview of Bhutan's development of health care service system, and the background profile of MRRH. It provides an introduction to the concept of EMS, identifies the EMS needs, suggests innovative programs for improving the EMS in MRRH. Justifications for developing an EMS system in MRRH are described in detail on the basis of current and expected problems in EMS. It explores for alternative solutions to the problems in the light of existing problem situation.

## 2.2. Country Profile

Bhutan is a Himalayan Kingdom with an approximate land area of 46,500 square kilometers (km), about 150 km north to south and 300 km east to west. It is a landlocked country, bordered by the Tibetan region of China and the Indian states of Sikkim, West Bengal, Assam and Arunachal Pradesh (see Appendix A on page 184 for the map). The population is estimated at 600,000 of which about 43% are under 15 (Royal Government of Bhutan, Eighth Five Year Plan Document, 1996).

For administrative convenience, the country is divided into 20 districts based on geographic boundaries (see Appendix B on page 185 for the map). However, for logistic reasons and socio-cultural distinctions, the districts are generally grouped into Eastern Region, Central Region and Western Region, thus necessitating the establishment of referral hospitals regionwise.

### 2.3. Development of Health Care Service

It is now over three decades since Bhutan embarked on the process of economic development. Traditional health care service called “So-wa-rigpa” existed long before the introduction of modern health care service (Report on National Health Survey of 1994, 1996).

The first allopathic hospital in the country was established in the capital city, Thimphu, in 1961. This hospital is now renamed Jigmi Dorji Wangchuk National Referral Hospital. Presently there are a total of 27 hospitals of which three are referral hospitals, 84 Basic Health Units (BHUs), 42 dispensaries and 444 Outreach Clinics (Annual Health Bulletin, 1994). This constitutes a good health infrastructure network and health care delivery system in the country (see Appendix C on page 186 for the map showing health infrastructure network). Over the years there has been a marked improvement in the health status of the population (see Appendix D & F on page 187, 189 for health indicator tables).

In Bhutan, EMS is provided along with the general health care services. All health care activities in the country are delivered as an integrated health care package. There is no separate organization that provides or supervises EMS activities in the country.

#### 2.4. Historical Perspectives of Emergency Medical Care

“Hospitals owe their origin to the sufferings and ailments of the people and to the compassionate zeal amongst some philanthropists to relieve these sufferers from agony of suffering and discomfort” (Annand, Gupta, Murthy, Mitra, 1985, p. 1). But the modern concept of EMS owe its origin to the American college of Emergency Physicians (ACEP) which was formed in 1968 and propounded the modern concept of EMS.

Although the modern concept of EMS was propounded by ACEP, “the beginnings of organized emergency medical care can be traced back through military history dating back to the middle ages” (Sefrin, 1991). What gave rise to the development of emergency medicine as new medical specialty was the experiences of Korean and Vietnam wars and the lessons of critical care procedures in anesthesia and intensive care.

## 2.5. Definitions of Emergency

Conventionally, an emergency was defined as a threat to life or limb which required immediate attention. In 1972, the American Hospital Association (AHA) defined an emergency from the patient's perspective as:

*Any condition that in the opinion of the patient, his family, or whoever assumes the responsibility of bringing the patient to the hospital requires immediate medical attention. This condition continues until a determination has been made by a health care professional that the patient's life or well-being is not threatened.*

In 1982, ACEP defined appropriate emergency visits to emergency departments as:

*When a patient visits an emergency department with an unforeseen condition of a pathophysiological or psychological nature which a prudent lay person, possessing an average knowledge of health and medicine, would judge to require urgent and unscheduled medical attention most likely available, after consideration of possible alternatives, in a hospital emergency department.*

In Bhutan context the definition of emergency given by AHA is more applicable than the one given by ACEP, because the general public at large are not

knowledgeable about health and medicine. Also, there is no alternative choice other than the hospital, and the hospitals in Bhutan has no Emergency Departments (ED). Considering the present health care delivery system in the country and the level of health awareness of the population at large, it is more appropriate to use the meaning of emergency as defined by AHA. Therefore, in this study, the term “emergency” will refer to the AHA’s definition.

## 2.6. Present Concept of EMS

Today, EMS is delivered through three distinct components: pre-hospital phase, ED phase and in-hospital phase. Pre-hospital phase includes prevention, detection, communication, notification, rescue, initial stabilization, resuscitation, intervention and transport. ED phase is concerned with general or special care, consultation and transfer, and in-hospital phase provides general care or special care in Intensive Care Unit, or for burns or spinal cord injuries, or neonatal or pediatric intervention (van de Leuv, 1985). According to Lilja and Swor (1996) EMS is primarily an emergency medical care taken into the community and as such, the EMS providers need to be conversant with the pre-hospital aspect of the emergency medical care. Over the years, EMS has developed into a specialty of its own.

In most of the developed world, EMS delivery system involves a central organization which pools in the resource and expertise from concerned Government and Non-Governmental organizations including the law enforcing agencies. This

organization is usually under medical direction with a medical leadership. There are laws enacted defining the parameters of the EMS. For example, a public law enacted in US in 1973 identified 15 elements to be addressed in improving the EMS system. They are as follows:

1) manpower, 2) training, 3) communications, 4) transportation, 5) facilities, 6) critical care units, 7) public safety agencies, 8) consumer participation, 9) access to care, 10) transfer of care, 11) standardization of patient records, 12) public information and education, 13) independent review and evaluation, 14) disaster linkage, and 15) mutual aid agreements.

The elements of EMS identified above by the US law constitutes a comprehensive list, the implementation of which depends on the country's development status. Considering the present stage of development, and EMS needs of the community, Bhutan needs to give priority to the development of manpower, training, communications, transportation and facilities in order to provide improved EMS to the people.

Hafen and Karren (1989), categorized the EMS system into 4 basic elements: (1) Rescue operations, (2) Ambulance transportation, (3) ED services, and (4) Public education. They stated that such an EMS system should be operated to meet the main objective of responding promptly to any emergency situations and provide "proper emergency medical care measures and life-support systems to sustain life and prolong

life” (p. 3), both at the scene and during transportation of the patient to appropriate health center.

While there is the need to improve ambulance transportation and educate the general public about emergency medical care, in Bhutan context there is, however, no need to include rescue operations and full fledged ED services components of EMS in developing EMS system in MRRH. Rescue operation is itself a subject of specialty in EMS system. Rescue operations are specially called for during medical disaster situations. According to ACEP, “medical disaster occurs when the destructive effects of natural or man-made forces overwhelm the ability of a given area or community to meet the demand for health care”, (p 1026). Occurrence of such medical situations in the region is very rare.

Roemer (1993), also stated 4 elements in EMS system. They are: medical services, ambulance services, disaster relief, and blood transfusions. Medical services are delivered from EMS section of general OPD and ED. Ambulances with varying standardization in design and equipment as required by the law, are used to fetch patients to hospitals in all countries of the world. Ambulance drivers are trained in First Aid. Disaster relief is an intense operation of EMS system involving the management and coordination of multiple agencies. Blood transfusion is an important aspect of the EMS. Besides blood bank facility in the hospitals, many countries have programs that organize collection, storage and distribution of blood.



The 4 broad elements of EMS described by Roemer is pertinent to the under developed countries of the world, in particular, Bhutan. The system of EMS existing in Bhutan, today, has implications to what Roemer has described. Emergency visits are made either in general OPD or IPD of the hospitals. Since there is no ED, serious patients are given priority attention in the general OPD. All patients are usually seen in the OPD by the doctor except when the emergency visits are made in the IPD after OPD hours where non-emergencies (cases which nursing staff on duty considers as not serious) are being treated by the nurse on duty in IPD. Although the system works fairly well during most of the times, there is, however, serious shortcomings in the face of increased emergency visits and life threatening cases. The shortage of manpower and lack of emergency management skills poses a serious problems in providing effective EMS. There is the need to open an ER, staffed by a health assistant, compound nurse or nurse practitioner who will screen the emergency patients after OPD hours.

Almost all hospitals in Bhutan have ambulances with standardized design but they are not equipped with even the basic resuscitation equipment because the need was not felt as usually no first aid team is deployed to the site during emergency situation. For referral hospitals, standby ambulances are lacking which causes delay in overall management of emergencies. In Bhutan, ambulance drivers are not trained in First Aid. Therefore, development of proper ambulance service needs to be looked into so that emergencies can be tackled more promptly and properly.

As mentioned earlier, disaster situations do not occur in Bhutan in the magnitude that occur in other parts of the world. Therefore, at this time, considering the present situation there is no need to develop disaster relief component of EMS.

Lack of blood donors during emergencies is a serious problem in all hospitals of the country. Except in Jigmi Dorji Wangchuk National Referral Hospital (JDWNRH), Thimphu, no other hospitals have blood bank facility, and there is no program that organizes blood collection during emergency situations. While there is the need to establish blood banks in referral hospitals, there are, however, serious financial, manpower and infrastructure constraints that do not allow establishment of blood banks.

With the upgradation of MRRH to regional referral status, the hospital administration is finding increasingly difficult to cope up with the demand for blood specially during emergency medical situations. Presently, blood is managed with donors from Monggar Junior High School, District Monk Body and Hospital, if patient party is not able to find any donor. Most of the time, hospital administration has to arrange for blood.

Present hospital infrastructure constraints do not allow establishment of a blood bank in MRRH. However, it will be possible to start a blood bank facility when the new hospital complex is commissioned.

The general public are poorly educated in the need for blood donation. The past experience indicates that much needs to be done in the conduct of motivation campaigns for blood donation in order to teach the public that blood loss can be replaced by transfusion of human blood only, and the donor saves lives. Motivation campaign for blood donation is an ongoing program, and this needs to be intensified.

Pre-hospital care which is the component of the EMS provided to emergency patients outside the hospital before they reach ED, is an important area of EMS. The aim of pre-hospital care is to reduce the chances of “patients succumbing to acute illness or injury” before instituting hospital care, thereby, reducing morbidity and mortality in the pre-hospital phase of the illness (Leuv and Jenkins, 1978).

In the operational scheme of EMS, pre-hospital care assumes a vital role in preventing disability and deaths. Providing prompt and proper pre-hospital care will make a major difference between survival and death (Leuv and Jenkins). It therefore, is an important and integral element of the EMS system. Pre-hospital care is delivered by a team of well trained emergency medical technicians (EMT) who are proficient and competent to deal with catastrophic accidents and illnesses (Hafen & Karren, 1989).

Concept of pre-hospital emergency care is new to most of the health personnel in Bhutan. Organized pre-hospital care is not practiced in the country except sometimes when health workers are called upon to manage obstretic emergencies in

remote villages. Therefore, a beginning in pre-hospital emergency care may be made starting with the referral hospitals. An ideal pre-hospital care with a team of EMTs as practiced in the developed world is not at all possible in Bhutan because of the reasons and constraints discussed earlier. However, within the existing financial, manpower, and infrastructure constraints, there is the need to provide some form of pre-hospital emergency medical care by the medical staff specially during road traffic accidents.

## 2.7. Consumers & Providers Of EMS

In addressing the issue of EMS, it is important to identify the EMS needs of the community who constitute the consumer population, and the capacity of the health care facilities and the health care providers to provide EMS. Therefore, for establishing the new EMS system in MRRH, the emergency health care needs of the local population must be identified and assessed. At the same time, the existing constraints of infrastructure and resources should be taken into consideration while exploring new avenues for improving the EMS system (see figure 1 on page 18).

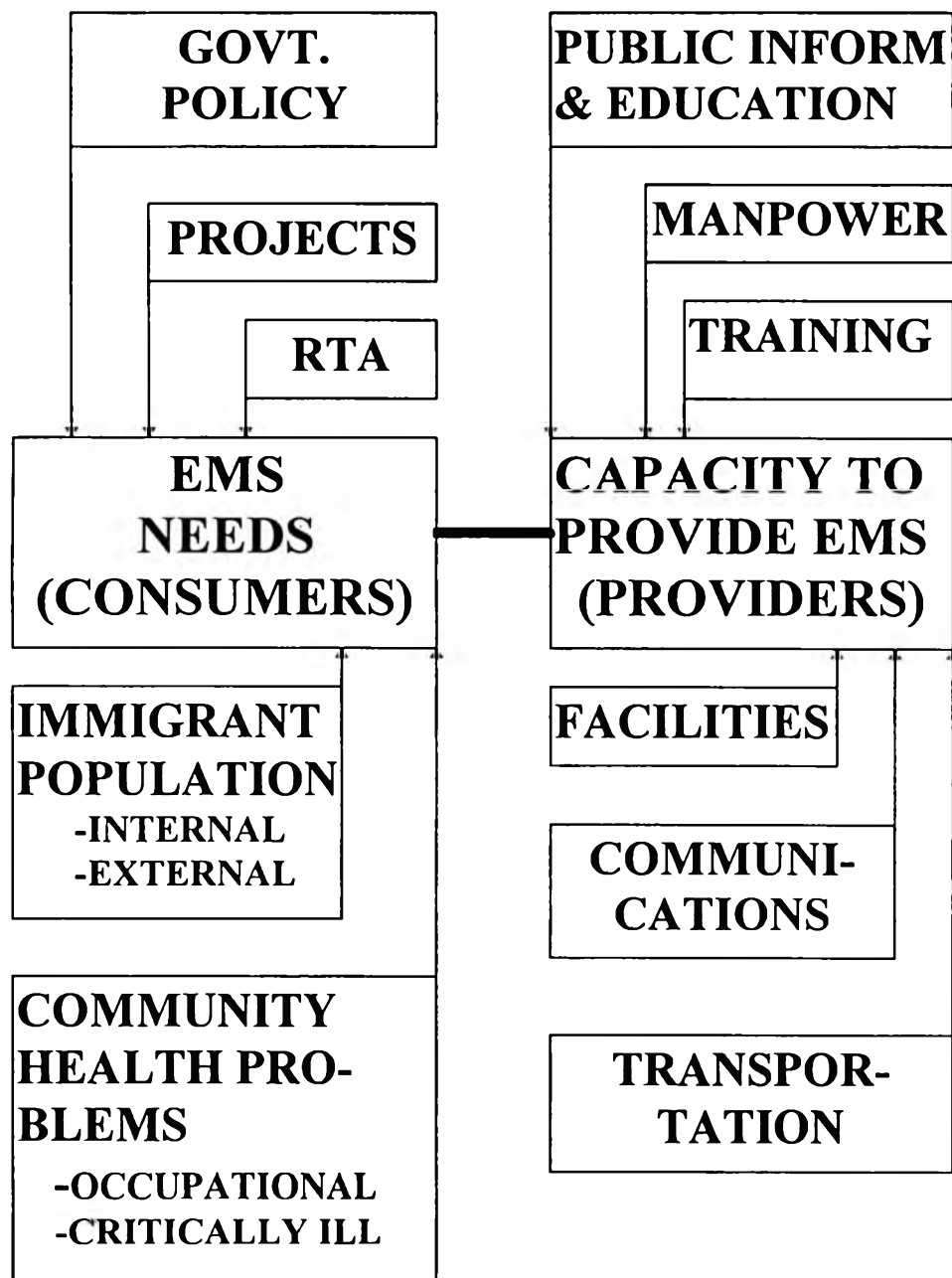
While undertaking EMS needs identification and assessment for Monggar, the main areas that needs to be studied are the immigrant population, project activities, road traffic accidents, community health problems, and the government policies. The Kurichhu Hydro-project at Jepshing is the biggest ever developmental project that has come up in the eastern Bhutan. This has brought in people from other neighboring

districts, besides the increasing urban migration within the district, thereby, increasing the coverage of EMS. With the construction project of this kind, MRRH must expect industrial accidents at the project site.

Road Traffic Accident (RTA) is another important deciding factor in the EMS system. MMRH, as it is situated strategically about half way at the eastern half of the National Highway, must be prepared to deal with RTAs which is also expected to rise due to increased traffic and mobile immigrant population. The EMS problems of the community are also expected to increase because the villagers are learning to adapt to modern ways of working and life style.

The EMS needs of the community should be matched by MRRH's capacity to provide EMS in terms of the facilities and the manpower. Questions need to be asked as to how the capacity is to be strengthened and improved with the existing resources without calling for major input from the Health Division in Thimphu. In exploring alternatives for capacity building, the important areas to be studied are facilities, training, manpower, communications, transportation, and public information and education.

**FIGURE 1: EMS NEEDS AND CAPACITY TO PROVIDE EMS**



## 2.8. Problem Definition And Analysis

(i).Background Profile Of Monggar: There is no written record of the early historical development of Monggar Hospital. The brief historical accounts narrated below are according to Mr. Solomon Yogi who worked in Monggar with the Leprosy Mission as a leprosy paramedical worker since 1973. He is still working in Monggar Hospital, but now as a laboratory technician.

There was a Government Dispensary situated just below the present Monggar High School ground. When the leprosy work by the Leprosy Mission International started in Monggar, this Dispensary was taken over by the Leprosy Mission with Sister Mollie Clark, a nurse from United Kingdom (UK) as first head of the dispensary which was then turned into a Leprosy Mission Hospital providing both general health and leprosy services.

In December 1974, the present OPD block was opened with 10 beds. Dr. John Geater from UK took over from Sister Mollie Clark as Superintendent of this hospital. The present IPD block was started in July 1975, initially with 40 beds, but later, increased to 58 beds. Dr. Reino Alho from Finland was the Superintendent till July 1978 when Dr. John Burslem from UK took over the superintendship. Dr. Helen Stokes from Australia was the last Superintendent of the Leprosy Mission when the hospital was nationalized in July 1992. Since then it became a general hospital of Monggar District.

(ii). Present Status: At present the hospital wards consist of still 58 beds. No additional infrastructure has been added to it. The IPD has 4 general wards, 4 cabins, 1 major and 1 minor Operation Rooms, 1 Labor Room, 1 Intensive Care Unit, 1 Postoperative Room, Physiotherapy Unit, Nurse Duty Room, Matron's Office and few storerooms. In the OPD are the consultation rooms; dressing, dispensing and registration/record rooms, x-ray and Laboratory; and administrative section.

After the upgradation of the hospital to regional referral hospital of the eastern region, the staff strength has been increased. The table 1 shows present staff strength of MRRH as of December 1996.

Table 1: Present Staff Strength of MRRH

<b>Designation</b>	<b>Number</b>
District Medical Officer	1
Medical Specialist	1
Surgical Specialist	1
Gynecologist	1
Ophthalmologist	1
Dental Surgeon	1
Indigenous Doctor	1



---

<b>Designation</b>	<b>Number</b>
General Duty Medical Officer (GDMO)	2
Nurse Anesthetist	1
X-ray Technician	1
Laboratory Technician	3
Pharmacy Technician	2
Dental Technician	1
Physiotherapist	1
Dental Hygienist	1
Ophthalmic Assistant	1
Indigenous Compounder	1
Health Assistant	1
Non-Medical Supervisor (NMS)	1
Record keeper	1
Administrative Officer	1
Accountant	1
Computer Typist	1
Peon	1
OPD Assistant	1
Matron	1
General Nurse and Midwifery (GNM)	4
Assistant Nurse and Midwifery (ANM)	3
Assistant Nurse {AN}	4
Nurse Aid	2

Designation	Number
Operation Room Nurse	1
- do - Technician	1
- do - Helper	1
Ward Boy	4
Sweeper	1
Cook	2
Washerwomen	2
Gardener	2
Sanitary Technician	1
Plumber/Electrician	1
Total	58

The table shows the minimum staff strength for a regional referral hospital. There is no anesthesiologist, radiologist, orthopedic surgeon, pediatrician or laboratory specialist. Anesthesiologist is due to be posted to MRRH, but in the mean time, the nurse anesthetist does the job of anesthesiologist. Since there is no radiologist, x-ray plates are interpreted by the concerned physicians. This imposes limitations on carrying out radiological investigations that requires the services of the radiologist.

As it is clear from the list of specialists in the table, the cases that need to be referred to higher referral centers are usually the pediatric and orthopedic cases. For histopathological studies, the specimens are sent to JDWNRH, and the results are conveyed back through telephone and/or fax. Most of the severe head injury cases are directly referred to India.

The OPD sees about 90 to 150 outpatients per day. The patient flow is maximum during summer months (May, June, July, August). This up-trend is due to increase in diarrhea disease case, and it is same in the whole of the country.

Since the upgradation of the hospital to referral hospital status, the IPD has seen rapid increase in the admission rate. There is not enough beds, and this problem is expected to go from bad to worse until the new 100 bedded hospital complex is completed. The construction work has already been started since January 1997. The inpatient admission register for 1996 shows a total of 830 emergency admissions of which 114 were referrals from other districts in the region. For the same year, there were 18 cases referred to JDWNRH in Thimphu and 7 cases were referred to India.

### (iii). Present EMS Problems

Current EMS System: MRRH does not have an ER. But it does not mean that emergency medical services are not delivered round the clock. All types of patients who visit the hospital after outpatient hours are treated as emergency visits

irrespective of the seriousness of the condition. In fact patients have no choice but to come to hospital as there is no private health facility in the whole of the country. As such, most of the emergency visits which would otherwise be taken care by the private practitioners and pharmacies, are not medically warranted emergency cases. Since the nature of the seriousness of illness is a subjective matter depending on the level of health knowledge and tolerance level to pain, patients are not expected to know what is and what is not emergency case.

There is another category of patients who walk for hours but reach hospital after OPD is closed. This group of patients, not presenting themselves as emergency cases, never the less, have to be seen as emergency visits. It would be inhuman and unprofessional to deny treatment to these patients because it is not an emergency case.

Presently, in the absence of the ER, emergency medical care is by the OPD staff during OPD hours and by the nurses on ward duty in IPD after OPD hours (see figure 2 on next page). The serious emergency patients are managed in the IPD where labor room, major and minor operation rooms, intensive care unit, observation room, are situated besides the wards. Therefore, even during POD hours, much of the EMS is provided by the IPD staff.

Major EMS problem lies after outpatient hours during which nursing staff on ward duty and doctor on call (if necessary) has to provide EMS from IPD. As the

emergency visits gradually increase as evidenced by the number of emergency admissions mentioned earlier, the IPD staff on duty are finding it increasingly difficult and taxing in providing emergency medical care. Moreover, some of these patients who have to be admitted overnight for keeping under observation, which normally is taken care by ED, entails unnecessary admission and housekeeping formalities to be attended to. This additional work compromises routine inpatient care.

There are inherent problems in the present EMS delivery system of MRH, both during and after OPD hours. The problems are acute after OPD hours because during this period, only the staff on emergency duty has to manage the increasing emergency visits, whereas during OPD hours there is full force of IPD staff and OPD staff as well. The net impact of all these problems is the causation of preventable death and disability, patient dissatisfaction, and bad reputation to the hospital administration (see figure 2 & 3 on page 26, 27)

## CAUSES AND CONSEQUENCES OF EMS PROBLEMS

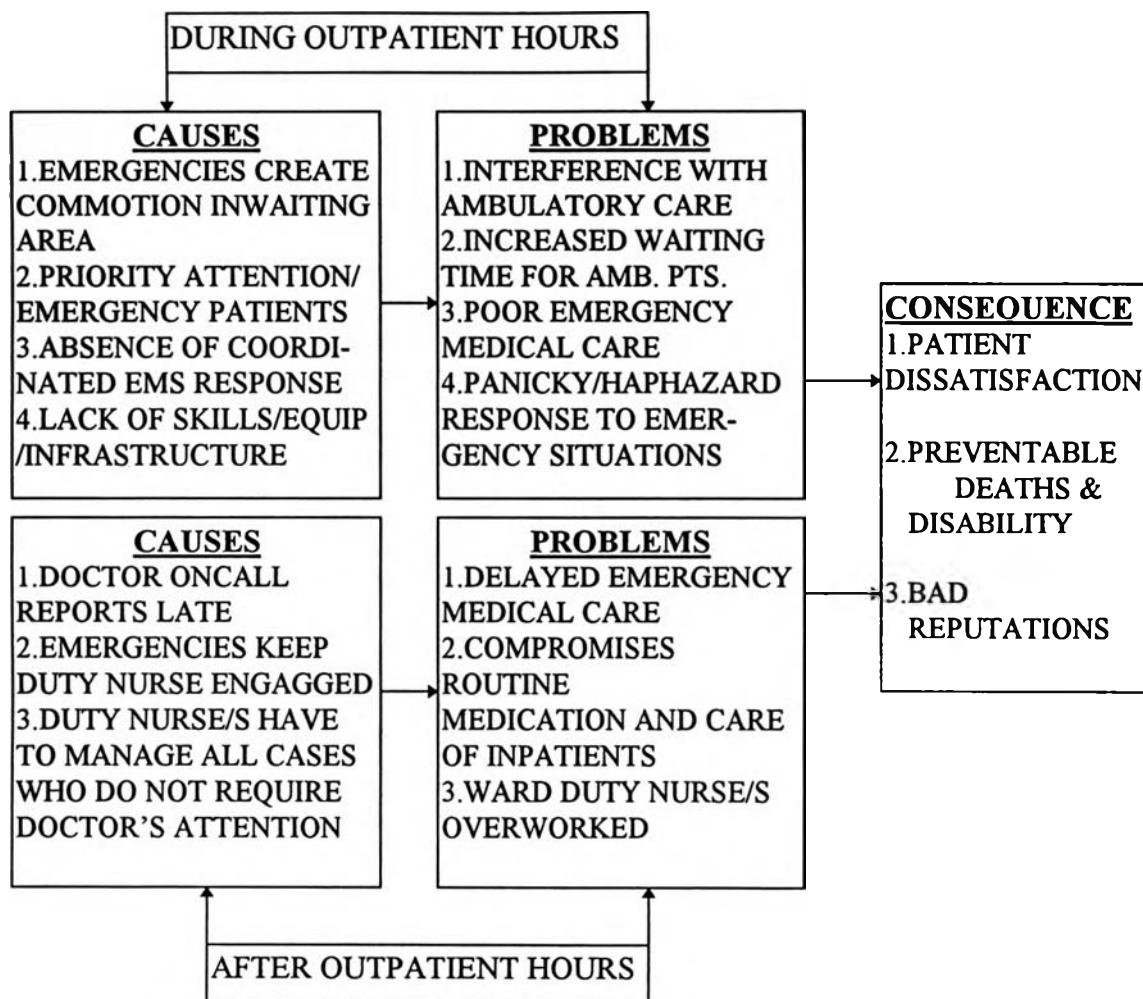


FIGURE 2: shows the causes and consequences of EMS problems faced in providing emergency medical care at MRRH during and after OPD hours.

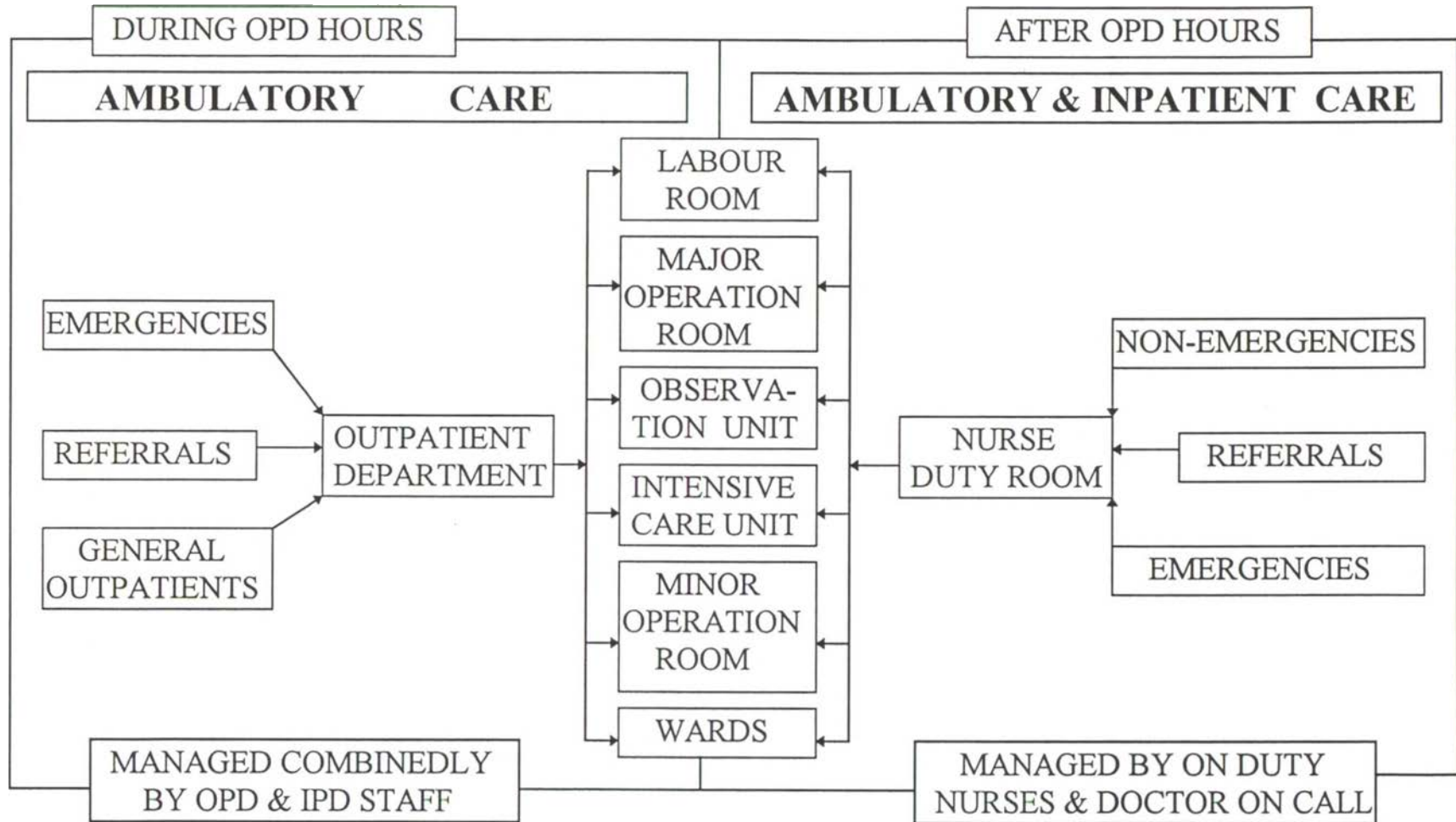


FIGURE 3: Indicates the current system of providing general outpatient and inpatient care along with emergencies during and after outpatient hours by OPD & IPD staff, and on duty nursing staff and doctor on call respectively.

Although EMS are delivered from the hospital on a 24 hour basis there is, however, no pre-hospital emergency medical care being provided. All accident victims have to be brought to the hospital for the emergency medical care. There has been frustrating moments experienced by the health care providers during major road traffic accidents in the past, simply because there is no coordinated and cooperative response to such emergency situations among the responsible authorities.

The hospital authority is not prepared to respond effectively to major emergency medical situations not only because of lack of technical skills, equipment and manpower, but also to a great extent due to non-existence of EMS system which would otherwise coordinate all intervention activities both at the site of the accident and in the hospital. The net result, therefore, is causation of preventable deaths and disability due to want of prompt and proper emergency medical care, and of course, bad reputation to the hospital.

Road Traffic Accidents: There has been a steady increase in the number of all types of automobiles imported into the country specially during the last 5 years with no simultaneous and proportionate increase in the length and breadth of the roads. Road Traffic Accident (RTA) report of Thimphu Traffic Police, however, does not show any increasing trend in RTAs over the last 4 years. But the number of fatalities resulting from RTAs is alarming. The same report shows a total of 64 fatalities, and 380 injured. The RTA report of 1996, maintained by the Crime Section of the 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. Although this RTA mortality rate is much lower than the under 5 mortality rate, which is 96.9 per 1000 (Royal Government of Bhutan, Eighth Five year Plan Document, 1996, p. 170), topping the mortality figure, the RTA mortality is expected to rise markedly in the coming years. Most of the minor injuries due to RTAs are not reported to the police. The present legal system requires that RTA cases are referred to the hospital by the police for treatment and injury report which will be processed to the District Court.

The health morbidity report, while reported as injuries, does not specify the nature of injuries according to diagnosis nor to the cause of the injuries. The injury data as shown in the annual morbidity reports of 1993 to 1995 reported under "injuries" column in most of the districts stand at an average of 3% (Annual Health Bulletin, 1995). But the fact remains that there is a high rate of RTAs in the country resulting in tragic loss of lives. Therefore, it is high time for Bhutan to start injury surveillance system which can provide fairly reliable injury data. The establishment of EMS system in MRRH may perhaps be a right step towards achieving this goal.

**Emergency Referrals:** MRRH, since its upgradation to regional referral status in May 1996, it provides referral services to 5 neighboring districts in the region. According to the data obtained from inpatient admission register of 1996, a total of 114 cases were referred from other districts in the region. For the same year, there were 830 emergency admissions. It also makes further referrals to JDWNRH in Thimphu, and to India, as mentioned earlier. The emergency referrals from districts

and self-referred emergency cases have indeed compounded the already problematic provision of emergency care in IPD after outpatient hours.

(iv). Expected Problems

**Industrial Accidents:** A 60 mega watt Hydro- Project is under construction at a place called Jepshing which is 29 kilometers from MRRH. According to Mr. Tshewang Rinzin, General Manager of the Project, this Hydro-Project is the biggest of its kind in the whole of the eastern region, and the project colony will have a population of 1000 to 5000. The construction started in September 1995, and its commissioning date is scheduled for September 2000 (personal communication, March 9, 1997).

Since this project area is directly under the health care jurisdiction of MRRH, it is imperiment that EMS is provided to this population on a priority basis. Few fatal accidents have already occurred at the tunnel construction site. It will also call for providing other curative, preventive and promotive health services.

The other major construction activity that is taking place is at the MRRH. The construction of the 1st phase of new 100 bedded hospital complex has already started. According to Mr. R.C. Sharma, site engineer of the MRRH construction project, the 2nd phase of the construction is scheduled to begin by late 1998. There will be over 800 people employed in this project (personal communication. March 6, 1997).

The two major construction activities mentioned above calls for an urgent need for the hospital authority to be prepared to render EMS for increasing number of accidents taking place in these two project areas.

**Immigrant Population:** A significant influx of immigrant population into the district is expected. Besides the two major construction activities in the district, there are other developments taking place. There is road widening activity all along the eastern highway which employs hundreds of laborers from India. At Jepsing a Junior High School has already started this year, and Monggar High School will be upgraded to Senior High School. This additional population to the district will place increased demand for EMS and the general health care coverage.

**Emergency Calls:** MRRH should expect increasing demands for EMS by the people as they become more and more health conscious with the pace of socio-economic development in the region. It is evidenced by the fact that over the last few years there has been a sharp increase in the calls for ambulance service.

The calls for ambulance service from periphery health centers of the district has also increased. This is partly due to telephone communication link with the hospital which was installed in 1996 in all periphery health centers - BHUs- of the country.

(v). Government Plans

New Referral Hospital Construction: MRRH is presently providing referral services under severe infrastructure constraints. The construction of an entire new 100 bed capacity hospital with provision for expansion to another 100 beds in future is planned, and the 1st phase of its construction activity has already commenced. This project is funded by a grant from the Government of India. The fund includes procurement of equipment and internal furnishings of the new hospital complex.

During the initial planning stage, the project engineers often called upon medical authorities to help in the architectural designing of the hospital, their contention being that the internal designs must confirm to medical requirements. Hence it is the right opportunity to integrate in the design, an EMS unit or ED in the new construction.

Establishment Of Trauma Care Center: The Health Division, Ministry of Health & Education, instructed Dr. Gado Tshering, Deputy Superintendent of JDWNRH, to carry out feasibility study for establishing trauma care centers along the national highways. The Division felt that in the light of increasing RTAs occurring along the ways, trauma care centers are required to be established at strategically located hospitals along the highway in order to provide EMS to the RTA victims.

The following criteria were used for selecting the centers:

1. Central location along the highway
2. Should have at least 10 beds for admission
3. Should have at least one Medical Officer
4. Should have a fully functional ambulance vehicle
5. Should have basic laboratory facilities including blood transfusion
6. Should have an x-ray facility
7. Should have some communication network (telephone/radio/wireless)
8. Should have an Operation Room
9. Should have basic equipment for emergency surgery

Dr. Gado presented his feasibility study report with his recommendations to the 1994 Annual Health Conference (AHC). In the recommendations, Monggar Hospital was one of the hospitals identified for establishing a trauma care center because of its strategic location, being situated midway in the eastern half of the national highway. Therefore, the proposal for starting an Emergency Room (ER) and EMS system in MRRH goes in line with the Government mandate.

## 2.9. Conclusion

Considering the EMS health care needs of the community, a new system of EMS needs to be established in MRRH. The review of EMS systems operating in

different parts of the world shows the importance of EMS in the health care delivery process. The level of sophistication in EMS delivery system in the world depends on the country's developmental status and national health care system. Therefore, the new EMS system in MRRH should be devised within the existing situation and constraints, to suit the local needs. While there are marked differences in EMS operational modalities, the ultimate objective, however, remains the same, i.e. to be prepared for rapid response to a wide ranging emergency medical situations, and deliver proper emergency medical care.

There are drawbacks and deficiencies in MRRH's current system of providing emergency medical care. These shortcomings call for overhauling of the existing EMS system in MRRH for planning corrective measures.

Therefore, it is just timely and appropriate that EMS system be established and pilot tested in Monggar Hospital as this hospital is now a full fledged regional referral hospital with the capacity to render referral services in medicine, general surgery, gynae & obstetrics, dental, ophthalmology, and diagnostic facilities. Special efforts needs to be made in developing an EMS system within the existing resources. The system should pay special attention to technical and managerial capacity building so as to equip the health professionals in providing prompt and proper emergency medical care.

## REFERENCE

Annand, T. R., Gupta, R. S., Murthy, M. V. N., & Mitra, P. (1985). Study of Referral Services: A Research on Health Care Delivery, 1980-81. (pp. 1-7). New Delhi: National Institute of Health Care.

American College of Emergency Physicians Disaster Committee. (1985). Disaster Medical Services. Annals of Emergency Medicine. 14, 1026.

Hafen, B. Q., & Karren, K. J. (1989). Introduction to Emergency Medical Services. (3rd ed.). Pre-hospital Emergency Care: Crisis Intervention. (pp. 1-15). New Jersey: Brady.

Mills, J. D. (1978). Introduction: Overview of Field of Emergency Medicine. In Jenkins, A. L., & Van de LEUV, J. H. (2nd ed.). Emergency Department Organization and Management. (pp. 1-7). Saint Louise: Mosby.

Lilja, G. P., & Swor, R. (1996). Pre-hospital Care: Emergency Medical Services. In Tintinalli, J. E., Ruiz, E., & Krome, R. L. (4th ed.). Emergency Medicine: A Comprehensive Study Guide. (pp. 1-4). McGraw-Hill.

Report on National Health Survey of 1994. (1996). Health Division. Thimphu.

Royal Government of Bhutan, Ministry of Health and Education. (1993). Annual Health Bulletin. Health Division.

Royal Government of Bhutan, Ministry of Health and Education. (1994). Annual Health Bulletin. Health Division.

Royal Government of Bhutan, Ministry of Health and Education. (1995). Annual Health Bulletin. Health Division.

Royal Government of Bhutan, Ministry of Planning. (1996). Eighth Five Year Plan (1997-2002), Vol. I Main Document. Thimphu: Ministry of Planning.

Roemer, M. I. (1996). Programs for Special Health Services. National Health Systems of the World. Vol. 2. (pp. 291-304). New York: Oxford University Press.

Van de Leu, J. H. (1985). Emergency Medical Services. (1985). In Tintinalli, J. E., Rothstein, R. J., & Krome, R. L. (1st ed.). Emergency Medicine: A Comprehensive Study Guide. (pp. 983-991). New York: Mcgraw-Hill.