



INTERNATIONAL JOURNAL OF RESEARCH IN COMMERCE AND MANAGEMENT

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EMERGENCY HEALTHCARE MANAGEMENT IN INDIA: A STUDY OF THE ROLE OF EMERGENCY MANAGEMENT RESEARCH INSTITUTE

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ABSTRACT

The value chain of healthcare system comprises of three major components viz. pre-hospital care, definite healthcare (hospital care) and rehabilitation. Each component is important in order to provide a secure and strong healthcare environment. In most developing countries the pre-hospital care, especially in case of emergency, is the weakest link in the value chain and needs huge investment to make the public healthcare system more robust, to ensure better health outcomes. In 2005, Emergency Management and Research Institute (EMRI) started working in Andhra Pradesh with the vision of responding to 30 million emergencies per annum in PPP framework as a nodal agency and to save one million lives per annum. EMRI (Emergency Management and Research Institute) is a pioneer in Emergency Management Services in India. As a not-for-profit professional organization operating in the Public Private Partnership (PPP) mode, EMRI is the only professional Emergency Service Provider in India today. Since the study examines the strategies deployed by EMRI, in uplifting life expectancy in Andhra Pradesh. Since EMRI provide the emergency response services along with quality pre-hospital care; the study examines the role of EMRI as an effective and efficient Emergency Management Service provider in improvement of the public healthcare delivery system in A.P., Gujarat and Rajasthan. The study provides an in depth analysis of a model comprising structure, system and processes of organization for providing emergency medical service through PPP mode. The outcome of the study will help developing countries to adopt the model successfully in their countries

KEYWORDS

Healthcare, Emergency, hospital, EMRI.

INTRODUCTION

Emergency Management is a relatively new discipline, with a broad Scope. It evolved from more narrowly defined disciplines such as Civil Defense. One of the earliest texts to describe emergency management concepts in detail succinctly summarized its purpose in the following Statement, "The goal of emergency management is the rapid restoration of Normal routines." Emergency Management and Research Institute (EMRI) provides a comprehensive emergency management service in the state of Andhra Pradesh, Gujarat, Uttarakhand, Goa, Chennai and Rajasthan, Karnataka and Assam using a single, toll-free number (108). The number 108 is used as the centralized helpline for Medical, Police and Fire emergencies. At EMRI, world class technology is at work to give the quickest response to any distress call. Supported by the latest technology in distress communication and management, EMRI extends quick and effective relief to any medical, police or fire emergency situation involving individuals. Emergency Management Services in India. is not-for-profit professional organization, Operating by the Public Private Partnership (PPP) mode, EMRI is the only professional Emergency Service Provider in India today. EMRI handles medical, police and fire emergencies through the "1-0-8 Emergency service". This is a free service delivered through state-of-art emergency call response centres and has over 1418 ambulances across Andhra Pradesh, Gujarat and Uttarakhand. With the expansion of fleet and services set to spread across more states, EMRI will have more than 10000 ambulances covering over a billion population and one lakh employees by 2010. With increased focus on research and analytics, EMRI has plans to significantly enhance the overall emergency management scenario - further reducing individual suffering. 1-0-8 Emergency Response Service is 24x7 emergency service for medical and police emergencies. The government of India is working on a proposal to have Hyderabad-based Emergency Management Research Institute (EMRI) as a nodal agency for providing police, medical emergency services at the national level. EMRI which is operating emergency response services under public-private partnership in Andhra Pradesh and Gujarat has signed MoUs with the state governments of Tamil Nadu, Madhya Pradesh and Uttarakhand and hopes to cover remaining states by 2010. It will soon sign MoUs with Rajasthan, Goa, Kerala, Jammu and Kashmir, Assam and Maharashtra. The centralized emergency response centre in each state would receive calls 24x7 through the toll-free telephone number —108. EMRI has the technological backup of Satyam computers, ambulances equipped with life-saving appliances and medicines and trained personnel to attend to the cases, government said of the capital investment and operating expenses, 95 per cent would be borne by the state governments and the rest by EMRI. A timely response and care is essential in saving lives and property of citizens in emergencies and the role of the Government are equally crucial in providing relief through its agencies such as police, medical and other government departments. The proactive Government of Andhra Pradesh has acknowledged the significance of their role and also importance of working in partnership with private agencies such as EMS providers and other service providers such as hospitals, blood banks, ambulances, telecom service providers and donors (individual, body Corporates or non-government organizations). To take this concept further, the various state Governments like Andhra Pradesh, Gujarat, Uttarakhand, Rajasthan, Goa, Tamil Nadu, Karnataka, Assam and Meghalaya has committed to assist EMRI in regulatory aspects, Channelizing funds, leveraging infrastructure, promoting public awareness. 108 Emergency services of EMRI to the needy are laudable. More than 4,500 people across the state are utilizing 108 ambulance services daily. With the fleet of 652 ambulances, A.P now gets one Ambulance for every Two Mandals. More awareness be created among the people in a way that masses from nook and corner of the state can utilize the services. Offered by Government of Andhra Pradesh. Rajiv Arogyasree, 104 Mobile Hospital Services, 108 Emergency Services are unique programmes fulfilling the health related needs of people of A.P. With the efficient services provided by EMRI, 108 ambulance in rural areas reaching in 20 Minutes. Government of Andhra Pradesh is bearing 95% of total expenditure of 108 emergency services, The Emergency Management and Research Institute (EMRI) and Public Health Foundation of India (PHFI) entered into a memorandum of understanding to work together for strengthening training, research and policy development in the area of public health and emergency management. According to the MoU, EMRI and PHFI will strive together to maintain an ongoing forum for discussion, training, research and

other joint activities related to the aspects of prevention, injury care and emergency medical services. The two organisations will also try to establish opportunities, including fellowships and internships, in relevant areas of public health. Like EMRI, PHFI also works in public-private partnership. It is currently working towards building public health capacity in India by establishing 8-9 new institutes of public health over the next six years.

DEFINITION OF THE “EMERGENCY”

The defining characteristic of an emergency event or situation is that usual resources are overwhelmed or have the potential to be overwhelmed. For example, a car crash with casualties is likely to be labelled an incident (business as usual) for many hospitals but a major emergency for an accident and emergency medical centre. Likewise, an outbreak of influenza is a normal winter occurrence, but a pandemic (an influenza outbreak on a larger scale) is a major emergency.

VISION OF THE EMRI

To provide free emergency response services for Medical, Police and Fire emergencies across India by 2011 in PPP (Public Private Partnership) framework.

To respond to 30 million emergencies and save 1 million lives annually by 2011

To deliver services at global standards through Leadership, Innovation, Research & Training and Technology To be recognized as best-in-class and become 1 Of 8 wonders of the World

1. EMRI IN ANDHRA PRADESH

EMRI began operations in Andhra Pradesh (AP) on August 15th, 2005 with a fleet of 30

Ambulances, across 50 towns of the state. The Call Centre for its operations, The GIS based software for providing the back-end support from the Call Centre is developed by Satyam and maintained by EMRI, though for updating it, Satyam's support is needed. It was responsible for handling medical, police and fire emergencies through the 108 Emergency Service. Making a total of 70 ambulances run by EMRI on its own. In the third year of operations (2007-08) EMRI expanded the ERS to the entire state of Andhra Pradesh in PPP mode, with the Government of AP contributing additional 432 ambulances, bringing the total ambulances in operations to 502. As on February 15th 2009, EMRI in AP has a fleet of 652 ambulances operating in all 23 districts in the state. Going by the EMRI's criteria of having one ambulance per one lakh population, they should be having 815 ambulances (population of AP is 8.15 crores). Further the government proposed to expand the EMRI fleet to 902 ambulances in 2009-10 and then to 1107 ambulances in the next year, which is calculated on the basis of one ambulance per Mandal. The government is contributing 95% of the operating cost. The rest of the capital costs however are borne by EMRI- an arrangement that differs from that of all other states. These capital costs include the cost of the Call Center, the costs of the administrative and training infrastructure, leadership cost (includes salaries of senior managers), and the technology development costs. The Govt. of AP share of the cost is charged under the NRHM. The emergency transportation provided in a state-of-the-art ambulance is, free, coordinated by a state-of-art emergency call response centre, According to the EMRI data of daily ambulance operations in the state, the service in AP operating with a fleet of 652 ambulances covering 23 districts, and the call centre receives around 54,000 calls in a day. Of these, ambulances are despatched for around 8% calls, on an average. EMRI has tie ups with 3331 private hospitals in Andhra Pradesh, apart from the government hospitals that can handle emergencies. These hospitals provide free stabilization services for the first 24 hours to the patient. As per the same data sheet, around one-fifth (21%) of the emergencies transported are delivery related complications, and around the same proportion are injury related emergencies. EMRI reports around 65% of the emergency cases being transported to government hospitals. The ambulances have been designed with a uniquely Indian perspective.

2. EMRI IN GUJARAT

EMRI began operations in Gujarat with the signing of the MOU with Government of Gujarat and launching of operations on August 29, 2007 with a fleet of 61 (20 ALS and 41 BLS) ambulances across 42 towns (in 9 districts) of the state. The capital cost for purchase and equipping the ambulances as well as for land and building of the call centre, was provided by the Govt. of Gujarat (GoG) under NRHM. Under the MOU the GIS based software for providing the back-end support from the Call Centre was to be commissioned and maintained by EMRI. EMRI was responsible for handling medical, police and fire emergencies through the 108 Emergency Service. In the subsequent year 2008, the operations were extended to the entire state with 380 (33 Advance Life Support and 347 Basic Life Support) ambulances across 319 cities in all the 26 districts¹⁴. The Govt. of Gujarat is contributing 95% of the operating cost and 100% of the capital cost (of ambulance purchase, fittings, land and building for the state level Call Centre). The Govt. of Gujarat's share of the cost is charged under the NRHM. The emergency transportation in the form of a state-of-the-art ambulance is provided free, coordinated by a state-of-art Emergency call response centre, which is operational 24 hours a day, 7 days a week. In Addition, the call to the number 108 is a Toll Free service accessible from landline or mobile. The features of the ambulance and the organisation of the service is the same as described for Andhra Pradesh. According to the daily ambulance wise reports received from EMRI by the GoG, the service in Gujarat operating with a fleet of 61 ambulances in 2007 averaged a little over one (1.44) trip per ambulance per day, which increased to over four (4.31) trips per ambulance per day in 2008, with a fleet of 380 ambulances. Also, as per the daily report of Dec 31, 2008, ambulances were despatched in the case of 8.24% of all the calls received since the operations began in Gujarat. Of these despatches, Medical Emergencies were almost 99%, Police emergencies were 1% and 0.2% were fire emergencies. Looking at the breakup of medical emergencies, 33.7% were pregnancy related, 17.4% were accident/trauma cases, 5.8% were other trauma cases and 1.96% was assault related injuries. The Gujarat government also has various PPP schemes (like Chiranjivi, Bal Sakha yojana, RSBY), which ensures cashless hospitalisation care and treatment for the patients, especially BPL, brought in by the EMRI ambulances, The ambulances are procured from Force Motors, complete with fittings as per the standards prescribed by EMRI. As per the MOU signed between GoG and EMRI, the procurement of these ambulances is done by EMRI with funds from the GoG (@ Rs. 15.75 lakhs for ALS and Rs. 9.75 lakhs for BLS ambulances). Analysing the audited expenses statements of EMRI Gujarat for 2007-08 and 2008-09, we find that the expenditure was Rs.28.27 lakhs per ambulance in the 1st year (for 60 ambulances), which came down to Rs. 11.18 lakhs per ambulance for the full fleet of 380 ambulances in the second year. Similarly, the operating expenses per trip were Rs. 2,871.72 in the 1st year (i.e. Rs. 11.37 lakhs per ambulance for the 9-month period, with 60 ambulances), which came down to Rs. 634.85 per trip in the 2nd year (i.e. Rs. 3.34 lakhs. per ambulance for the 6-month period). The audited statements also reveal that the share of EMRI's own funds in the total operating expenses were to the tune of 25% in the 1st year which came down to 5% in the 2nd year of operations in Gujarat. It was later clarified that even these are notional book entries- in

effect the EMRI's share in Gujarat is nil and thus EMRI has been functioning as fully government paid scheme. Looking at the break-up of operating cost, we find that in Gujarat, salary consumes 42% of the opex, administrative expenses are 27% and cost of running the ambulances is only 31% of the opex. Gujarat has relatively low proportion of administrative costs as according to EMRI, the Gujarat operations has yet to undertake the full investment in terms of the supporting infrastructure and staff needed to run the number of ambulances that is operational. For example, whereas the operational staff to ambulance ratio is around 7 for both AP and Rajasthan, it is 5 for Gujarat. The state of Gujarat has also undertaken a unique initiative regarding the Emergency Medical Services (EMS) in the state. In order to provide a legal and regulatory framework for a comprehensive EMS, the Govt. of Gujarat enacted the Gujarat EMS Act, which came into force on February 2007. The EMS Act provided the framework to the GoG under which it went ahead with the MOU with EMRI.

3. EMRI IN RAJASTHAN

EMRI began operations in Rajasthan with the signing of a 5-year MOU with Government of Rajasthan and launching of operations in September, 21 2008. As of February 2009, EMRI Rajasthan has a fleet of 100 ambulances across 58 towns (in 33 districts) of the state. The state plans to have a total fleet of 450 ambulances in the state with EMRI. The capital cost for purchase and equipping the ambulances as well as for land and building of the call centre, was provided by the Govt. of Rajasthan (GoR) under NRHM. Under the MOU the GIS based software for providing the back-end support from the Call Centre was to be commissioned and maintained by EMRI. The Govt. of Rajasthan is supposed to contribute 95% of the operating cost and 100% of the capital cost (of ambulance purchase, fittings, land and building for the state level Call Centre, etc.). The Govt. of Rajasthan's share of the cost is charged under the NRHM. The emergency transportation provided in a state-of-the-art ambulance is free, coordinated by a state-of-art emergency call response centre, which is operational 24 hours

A day, 7 days a week. In addition, the call to the number 108 is a Toll Free service accessible from landline or mobile. According to the GoR data, the service in Rajasthan operating with a fleet of 100 ambulances in 2008-09 averaged about two (1.1423) trips per ambulance per day, traveling a distance of around 16 km per day per ambulance, meaning the ambulances are averaging a little less than 15 km per trip. As the operations began with 50 ambulances initially and the other 50 were added to the fleet around Nov-Dec 2008, the later 50 ambulances are averaging less than one trip per day (till Feb '09). Also, as per the data provided by EMRI and the GoR for 2008-0924, ambulances were despatched in the case of 1.21% of all the calls received. Medical Emergencies were 78% of all the cases transported, of which 20% were pregnancy related and almost 40% were trauma cases. For the month of February 2009 (till 18th Feb), the corresponding figures showed that 1.46% of calls required despatches. Of these, 82% were medical emergencies and 18% were police calls. Of the medical emergencies, 42% were trauma related, of which 38% were RTA (Road Traffic Accidents) and 25% were pregnancy related, while 21% fell into "others" category. The ambulances are procured from TATA Motors, complete with fittings as per the standards prescribed by EMRI. The procurement of these ambulances is done by EMRI with funds from the GoR, projected (as per the MOU) at an average capital cost of Rs. 24 lacs per ambulance, including cost of IT and call-centre infrastructure. Similarly, the opex was projected in the MOU to be around Rs. 11.47 lacs per ambulance per year. Analysing the audited balance sheet and expenses statements of EMRI Rajasthan for 2008 (till Dec '08), we find that the expenditure was Rs. 34.06 lacs per ambulance (for 100 ambulances in the 1st year). Similarly, the operating expenses per ambulance were Rs. 11.96 lacs. Looking at the actual number of trips and kilometres travelled by the ambulances (adjusted on pro-rata basis till Dec '08) the operating cost turns out to be Rs. 2,700/- per trip. The audited statements also reveal that the share of NRHM's funds in the Total cost (were in the tune of 98% in the year 2008. It also shows that capital cost is 73% of the total cost (this being the 1st year of operations). Looking at the break-up of operating cost, we find that in Rajasthan, salary (of operations staff) consumes 47% of the, administrative expenses are 38% and cost of running the ambulances is only 15%. This clearly hints at low usage of the vehicles.

Literature review

Dr. Mukul K. Saxena: this article explore about the challenges in emergency management research, Emergency management is a response to a situation which may rightly be termed as 'predictable surprise' which by the very virtue of its nature is unpredictable to the victim, life threatening and largely due to circumstances beyond his control, but contradictory though it may sound, can be predicted by research methodologies. In a large majority of cases, the victim may not be in a position to seek medical treatment. In a number of cases, especially road traffic accidents even the by standers may be reluctant to take the victim to a medical facility due to medico legal issues, leading to lives lost that can potentially be saved. Evolution of emergency management services is still in its nascent stage. USA made a beginning in 1968 through 911 services. California passed its EMSS act as late as 1973. China, the most populous country introduced EMS in 1980, with a predominant urban focus. The 'Rescue centers' provide both ambulance and inpatient care. Madagascar with a population of 15 million has again an EMS with urban bias. Japan has an EMS run by fire defence headquarters and is basically a single tiered system. India, the largest democracy, and the second most populous country in the world had its first comprehensive emergency medical services rolling out in 2005, with the advent of Emergency Management & Research Institute (EMRI). The present challenges relate to systems design, uniform evaluations of emergencies and comparing outcomes. Unfortunately, most published research in EMS is component based, focusing on a single intervention or health problem and rarely addressing the inherent complexities of EMS systems; the emergency services do not have the existing research backup so essential to any research field. There is hardly any academic research institution with long term commitment to EMS research. Most of the institutions which do carry out research on EM subjects pertain to the Emergency room admissions and ICU interventions. This is a challenge that EMRI seeks to address. Research in EMS through prospective studies is burdened by restrictive interpretations of informed consent. The ethical issues get more challenging in scenarios that are bound to unfold when EM services are likely to increase their activities covering larger populations and areas where the increased load on emergency services shall lead to triage protocols. Research on pre-hospital interventions also needs to be sensitive to such challenge. The most important challenge stems from the application of basic ethical principles to research in emergency medicine setting involved in resuscitation in vulnerable population.⁹ A recent Academic Emergency Medicine Consensus Conference on "Ethical conduct of Resuscitation Research" addressed the term applicability of term vulnerable, relationship between vulnerability, exploitability and capacity significance of vulnerability in Research designs, adaptation of informed consent process to emergency setting, and role of institutional review board. One of the consensus recommendations that emerged from the discussion was the endorsement of the idea that research using EFIC (Exception from informed Consent) is as important in vulnerable population as in the general populations and that the systematic exclusion of vulnerable populations from resuscitation research is inappropriate. National EMS Research agenda has identified barriers to research as primary and secondary. The Primary barriers include paucity of trained researchers with interest in EMS Research and paucity of funding. Secondary barriers include recognizing the need for EMS Research.

Dr. Biranchi N. Jena: this article explain about the Impact of EMRI Services on the Public Healthcare System Delivery. India has relatively poor health outcomes, despite having a well developed administrative system, good technical skills in many fields, and an extensive network of

public health institutions for research, training, and diagnostics. This suggests that the health system may be mis-directing its efforts, or alternatively be poorly designed. If statistics on the burden of diseases are observed, the deaths and DALYs (Disability Adjusted Life Years) arising out of chronic disease and injuries are increasing significantly in developing countries like India. Emergency Medical Systems address a diverse set of diseases that span the spectrum of communicable infections, non-communicable conditions, it is important to study the role of EMRI as an effective and efficient Emergency Management Services in improvement of the public healthcare system delivery. Primary care services include expanded health maintenance activities and treatment at the primary care level, as well as coordination of access to specialty services as required. In the case of medical emergency, prehospital care is the primary care and the outcome results are highly dependent on the quality of prehospital care.

However, in most of the developing countries including India, pre-hospital care is the weakest link in the value chain and many health professionals are of the view that huge investment in this component would not procure the desired results in the healthcare system. In this context, it is true that pre-hospital care is often misunderstood by taking into account only the ambulance. However, the integrated part of pre-hospital care in the emergency like sensing the emergency and making the ambulance reach the victim within a specified time are among the most important and requires high levels of operational excellence. Pre-hospital care in a case of emergency is therefore effective and efficient if supported by better understanding the emergency (sense) and quicker response (reach). EMRI has been successful in proving that pre-hospital care is critical not only in terms of quality of intervention in the ambulance but also in ensuring better sensing and quick reaching through high-end technology. After three years of operation in Andhra Pradesh, EMRI has given a big thrust to the pre-hospital care and there is a sea change in the community perception regarding pre-hospital care. In the process, it seems that pre-hospital care is becoming the strongest link in the value chain of healthcare system. Because of quality medical intervention in pre-hospital care, the victims' expectation from the community healthcare system has gone up significantly. The health system especially in the rural set up like Primary Health Centres (PHCs) and Community Health Centres (CHCs) are now geared up to provide better healthcare to the community. Thus, EMRI has enabled the community to generate the demand for healthcare which would further help the state to efficiently equate the demand and supply of health care needs at a community level. It has been evident that EMRI has enabled the overall health system to increase the healthcare facility utilization in Andhra Pradesh by ensuring the access to efficient and effective pre-hospital transport with adequate care. Due to EMRI intervention, the whole health system in the country is getting strengthened and able to provide healthcare with more probability of success in terms of life saved. As a result of this, the macro-health indicators

COSTING OF EMRI SERVICES

Capital Costs: These work out to approximately Rs 11 lakhs per ambulance. In all the three projects the costs are high in the first year. It was Rs 21 lakhs per ambulance in Andhra, Rs 28.27 lakhs in Gujarat and Rs 34.06 lakhs in Rajasthan. This higher first year costs is because the costs of building, administration office, software, call center costs that are incurred in the first year, when all ambulances are not in place. By the second year, these costs do not rise further but the number of ambulances increases. The increasing first year capital cost across the three states represents rising non ambulance capital costs as compared to the lower costs of procuring and fitting ambulances. The study does not have the information needed to comment on whether more economies could have been made on these capital costs, or whether these are optimal costs. However, clearly the project is itself in a learning curve as the rates being negotiated for each ambulance is improving. On the other hand the merits of the rising costs of building and the requirements of so much land are not clear. It has been argued by administrators that the space required for a call center operation with some administration space would have sufficed. EMRI's position is that some 120,000 sq ft of built up area is required for administration, call center and training space. Any additional area though desirable for developing the place with gardens and so on, is not essential. The operating cost per trip is also varying across states and over the years. Thus for the year 2008, in Andhra Pradesh it is Rs 565, in Gujarat it is Rs 635 and in Rajasthan it is about Rs 2700. Rajasthan's higher costs could be explained as higher first year costs, as the Gujarat EMRI also had a cost of Rs. 2872 per trip, in the first year. It obviously takes time for the news to get around, and the demands for services to emerge. However, it is also seen that after a point rising demand or increased number of ambulances does not lead to same rate of decline in costs per trip. Thus in Gujarat, with an average of 4.31 trips per day and 402 ambulances, it costs Rs. 635 per trip while Andhra Pradesh with 652 ambulances and 8.1 trips per ambulance, it costs Rs 565 per trip – for almost the same average distance of 29 to 30 km per trip.

Cost per ambulance per year, in contrast to cost per ambulance per trip, continues to rise with number of years of utilization and increased frequency of use. There are also wide variances across states. Thus, it is Rs 6.68 lakhs per year in Gujarat at an average of 4.31 trips, but it rises to Rs 12.59 lakhs per year in Andhra Pradesh with double the average number of trips per ambulance of 8. As utilization increases and the more trips each ambulance makes, the higher these costs would be. Today Andhra is reaching 8 trips per ambulance per day with one ambulance per 1.23 lakh population at Rs 565 per ambulance trip or Rs 16.5 lakhs per ambulance per year and for 652 ambulances the current year's expenditure is 107 crores. If this were to increase to two ambulances per one lakh population, i.e 1600 ambulances for the state and 11 trips per day per ambulance and also assume that average cost per trip were to stabilise at a lower Rs 475 per trip (estimate on optimum efficiency) then the costs would plateau at about Rs 305 crores at current rates and without adjusting for the increased costs of low population density in high dispersion areas. Thus in Andhra Pradesh, in the third year of operation, when 30% of all emergencies are estimated as being picked up by the ERS, the expenditure on ERS is currently about Rs 13.4 crores spent per crore of population per year. This could rise and finally plateau at about Rs 38 crores expenditure per crore of population per year for the provision of universal ERS. In Rajasthan however the per ambulance per year costs are very high (Rs 12 crores), even at very low utilisation, because the salary costs and the administrative costs make up the major part of the costs. Even in Gujarat, the first year of use had the same pattern. The break-up of costs also shows varying patterns that needs further explanation. Thus, in Andhra Pradesh the administrative overheads costs are 31.37 % of the total operating cost, and the direct cost of running and maintaining the ambulances are 41.33% of the operating cost. The remainder of 27.30% is made up of salaries of the service providers (EMT, ambulance driver and call operator). In Gujarat the administrative overheads are 27.26% and the direct costs of operating the ambulances are 30.85% of the total operating cost and service provider salaries are 41.89%. In Rajasthan, the administration component is 38.32% while the ambulance component is even less at only 15.17% and the salaries of service providers is 41.89%. The ratio between running costs and the salaries of service providers correlates with average trips made per ambulance. As the number of trips rises the ratio falls - from about 1: 2.8 in Rajasthan to about 1: 1.35 in Gujarat to less than 1.5: 1 in Andhra Pradesh. The administrative costs, which include supervision costs, remains steady, probably

stabilising at about 30 to 35%. Gujarat is lower than this norm, but that is explained by the Gujarat CEO as transient, due to all supervisors not yet being put in place. Rajasthan is higher but that is explained by inter- state transfers. Inter-state transfers, especially from Rajasthan's fund to the funds in Goa and Andhra Pradesh, are one reason why Rajasthan has relatively higher administrative costs. The reasons for this are the liquidity problems in other states and due to the need for interest payments, and leadership costs being incurred at Hyderabad. These transfers (from EMRI Rajasthan and from some other state as well) were done without prior permission by diverting funds advanced for other purposes and were subsequently stopped.

THE FINANCING OF EMRI

1. Currently 100% of the capital costs in all states except in Andhra Pradesh are being provided by the government. In Andhra Pradesh alone the capital costs, excluding the costs of the ambulances, are to be provided by EMRI. For ambulances, the cost of the first 70 ambulances was contributed by private sector (Shri.R. Raju, the then CEO of Satyam) and this was in 2005 -07. When it was expanded with 400 ambulances from the government the costs of these ambulances, but no other capital costs were borne by the government.
2. The costs of the call centre in EMRI's Andhra headquarters and the expansions made in it, the cost of the training institution and the training programmes developed and the technology development are all EMRI's contribution. The 40 crores taken as loan and overdraft in 2006-07 went towards this expenditure. There is the burden of a huge interest payment on this count. In the last board meeting held under Shri Raju's chairpersonship in October 2008, a fund of Rs 36 crores was promised to meet the capital expenditure and the leadership costs of the national headquarters and Andhra operation. This did not come through and this is the main source of the current crisis. Funds were drawn from the state grants towards meeting these commitments, but facing objections from the state, this was stopped.
3. The national headquarters could not pay back these borrowing, leaving therefore a liquidity crisis in the states. Also it could not pay back to its creditors here or have advances for continuing its national headquarters functions.
4. Of the operating costs, 95% were to be borne by the government and the remaining 5% of operational costs were to be borne by EMRI. It has been clarified that such a contribution has *not* been made in any of the states. Further that it would no longer be possible to make this contribution- even in a best case scenario. The audited statements of expenditure and income statements of Gujarat showed 5% as being borne by EMRI, but even this was explained as an error in the way it has been booked. Thus 100% of capital costs and operational costs are borne by the government.
5. All of this government expenditure, whether capital or operational is from the central government - through the NRHM flexible pool. However from this year (2009-10) onwards, there has been a notification that henceforth, in the first year the state would have to bear 40% of operational costs, 60% in the second year, 80% in the third year, and 100% subsequently.
6. EMRI however states that there is a sum of approximately Rs 36 crore per year that their national operation has to bear. These it calls leadership costs and this covers five activities- leadership, technology, research, national training and innovation. Most of this cost is in the form of salaries for human resources and national administrative infrastructure and functioning. These funds were committed by Shri Raju and other members of the society but even when they are unable to meet these commitments, EMRI would prefer to raise these funds from private sponsors. The CEO reports that a number of parties are positive about supporting these central leadership costs but these sponsors would not be able to meet the 5% of operational costs- which incidentally would be about the same amount or less. Part of the reason why the EMRI leadership would prefer to source these leadership costs from outside the government, is to retain their flexibility and autonomy in decision making where it relates to terms and conditions and work allocations of this national leadership component- even in a situation where all the rest is under a government led board.
7. There are no user fees for any category of users. Though by itself this is desirable for a public health service, especially for an ERS, there are two problems that would result. One is the sustainability if utilization continues to rise exponentially, and more and more ambulances become necessary. And secondly, checks on over-consumption of the service.
8. The travel costs of pregnant women are potentially recoverable substantially from the Janini Suraksha Yojana (JSY) allocations. However JSY allocation is not meant for all and many categories are absent in the high performing states. To that extent it would not be recoverable. However JSY may be seen as one source of funding, although, that is also central government funds flowing from the same pool and these funds are already committed by the central government.
9. One of the most remarkable features of the financing plan is that there is really no plan. The text in the MOUs as regards costs and business plans has no relevance at all to actual financing. The exact manner of financing the costs is for the government to pay a large sum (generally, 25% of the annual contract value) as advance and then after a time period (mostly, monthly), it is up to EMRI to declare how many trips it has made and how much it has spent on them. There are no ceilings nor any minimum levels nor any targets. Indeed it does not even declare the trips it has made, though it sends a daily sheet of ambulance trips from which the government could estimate the payment to be made- which no government has ever been able to do. Governments have no idea about the staff strengths deployed, or even what funds are committed or unit costs permissible per ambulance or per kilometer travelled etc. The EMRI thus has a commitment from the government that it can spend whatever it takes on operational costs and even on capital costs, and this would be paid for in advance. This is not spend and reimbursement arrangement- but advance payment arrangement.
10. Operating costs are currently approximately Rs 15 to Rs 17 lakhs per ambulance per year. These costs could be expected to rise further. Thus the currently estimated Rs. 1700 crores required per year for a projected fleet of 10,000 ambulances needed nationwide could finally be two to three times this amount. Sustainability would thus become a major issue.
11. However Rs 1700 crores per year needed for nationwide coverage is only around 10% of current NRHM annual budget and would be only about 3% of the promised Rs 55,000 crore per year that was projected as the level of public expenditure on NRHM that was to be reached by 2012. Even if we take a higher level of utilisation, then it would be about 5% of the NRHM budget.

GOVERNANCE AND MANAGEMENT

The EMRI has been as a single agency in most states without a tendering process. Whereas in Andhra, in the early phase this was a partnership with Satyam bringing in investment, subsequently the project became 100% government funded and 95% government funded. With even this small 5% not turning up, it is now a 100% government funded. Most of the MOUs have the provision of declaring it a monopoly provider. This is also not an essential feature for success. Potentially one could have a system of multiple ownership of ambulances, with a single call center, or a mix of public or private or even more than one provider in a state. Of course regulation would be essential for efficiency so that there is only one operator for a given area. However to the extent that by virtue of 100% ownership EMRI would need to increasingly abide by government financial regulations and soon face all the attendant HR issues as well, one may well rethink even this aspect of it. Procurement of ambulances and their fabrication have been two separate contracts and tendering process- the first costing about Rs 5 to 6 lakhs per ambulance and the fabrication costing about Rs 3 lakhs per ambulance and then the equipment costs. In Andhra the government tendering process was followed, with the government doing the tendering for the vehicle and the EMRI tendering the fabrication component. There was joint committee that conducted both procurements and payment was through EMRI. In Gujarat the first 75 vehicles were as per Andhra Pradesh's tender but subsequently, the rest was by government tendering process with a joint tendering committee composed of equal number of government and EMRI representatives. This same process was used in Rajasthan. There are states like Uttarakhand that left it to EMRI and even some that did it fully on their own - though the latter was cancelled. In Rajasthan the cost per ambulance came down to Rs 5.3 lakhs with fabrication costs at Rs 2.8 lakhs. One of the management challenges and achievements of EMRI has been its HR planning and management. Each ambulance has 3 pilots (drivers) and three EMTs who work in pairs of two for every 12 hour shift. For every 15 ambulances there is one operation executive and one fleet executive- both supervisors, the first of the care given and the second a diploma in automotive engineering, provided for vehicle support. Above them there is one district manager, and one administrative officer for every district. There is a small advance of Rs 500 given to every ambulance, Rs 5000 given to every operation executive and Rs 12,000 to every fleet executive. At the call center there are approximately 500 calls handled per call officer and 100 despatches per despatch officer. This impressive staff strength and this ideal pyramid of supervisory staff to manage the staff would be the envy of every programme manager in the health system. It is to the credit of the EMRI that it could put in place such a structure. It is unlikely that any other programme, especially if done within the government would have been allowed this. And yet this adequacy in the supervisory structure is essential to this schemes success. When costs are lowered through a tendering process, or there is a rationalisation of costs that is attempted,

CONCLUSION

1. EMRI is undoubtedly a historic landmark in the provision of health care in the nation. To its credit goes the achievement of bringing Emergency medical response on to the agenda of the nation.
2. Though not part of the original NRHM design, its tremendous popular appeal along with the flexibility of the NRHM design made it possible for it to emerge as one of the leading innovations of the NRHM period.
3. The first common review mission of the NRHM had noted this as one of the two successful public private partnerships worth replicating. However, even then the need for a closer look at the costing and the contractual arrangements and the need for independent monitoring had been recognized.
4. The crisis of its promoter only hastened on a process of evaluation that was well underway. Today there is a situation that without central intervention into the governance of the EMRI, the whole system could collapse. Yet such intervention if poorly planned could create more problems than it would solve.
5. This evaluation seeks to build on the EMRI model of ERS, not replace it, and much less abandon it. The average cost of Rs 45030 per ambulance trip, provided free to every emergency medical, police or fire needing help anywhere in the country, and that too within 20 to 40 minutes, is almost a dream, and it is a dream that is tantalizingly within our reach, not within a lifetime but within a plan period!! Rs 2000 crores to reach such a goal is steep but not impossible.
6. It costs about as much as we spend on pulse polio today. The only danger in this stage is the danger of complacency and the abandonment of caution and basic systems of governance in a fit of populism and competitive promotion of what seems a certain winner. It is in this spirit of such caution mixed with a commitment to achieving universal ERS that these recommendations are made.

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Academically yours

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