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AN ENQUIRY INTO THE PERFORMANCE OF 108 EMERGENCY SERVICES IN TAMIL NADU

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ABSTRACT

Although there have been isolated attempts to address emergency care in India, these measures could not and address all kinds of emergencies. The existing service levels were primitive and suffered from operational deficiencies of single number contacts, accreditation of ambulances, education and training standards for paramedics for the pre-hospital care. The 108 emergency services emerged as a panacea to fill the gap in the Indian health care delivery system. This research article enquires into the functioning of the 108 emergency services particularly in Tamil Nadu with the help of the data related to the first half of the financial year 2013-14.

KEY WORDS: 108 Emergency Services, Ambulance, Sense- Reach- Care, Emergency Management Technician, EMRI, Tamil Nadu Health Systems Project.

JEL Classification: I18,I11,I12

INTRODUCTION

A centralized emergency management system which exists in most developed countries helps in saving lives on a day to day basis. The first emergency number system to be deployed anywhere in the world was in London in 1937 using the number 999, and this was later extended

to cover the entire country. The most common European emergency number 112 is used in Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Georgia, Germany, Greece, Hungary, Iceland, the Republic of Ireland, Italy, Latvia,

Liechtenstein, Lithuania, Luxembourg, the Republic of Macedonia, Malta, Montenegro, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey, Ukraine and the United Kingdom in addition to their other emergency numbers. United State of America has 911 Emergency Number which is accessible nationwide. . India lags far behind its western counterparts in terms of emergency services. India lagged far behind its western counterparts in terms of emergency services till the launching of the 108 Emergency services.

1-0-8 EMERGENCY SERVICE IN INDIA

“1-0-8 Emergency service” is a free service delivered through state-of-art emergency call response centres and has over 6668 ambulances across the country. GVK Emergency Management and Research Institute (GVK EMRI) handles medical, police and fire emergencies through the “1-0-8 Emergency service”. GVK EMRI is a pioneer in Emergency Management Services in India. As a not-for-profit professional organization operating in the Public Private Partnership (PPP) mode, GVK EMRI is the largest professional Emergency Service Provider in India today. With a vision is to respond to 30 million emergencies and save 1 million lives annually, GVK EMRI is set to expand fleet and services set to spread across more states.

PROCESS MODEL

Emergency Management requires the integration of three cardinal pillars: Sense, Reach and Care. Emergency Management requires partnership with multiple institutions to provide quick and quality response. GVK EMRI has therefore integrated with Government and private hospitals for timely response in case of medical emergencies. The 108 call centre is in contact with the police control room for easy dispatch of police and fire brigade in case of Police and Fire emergencies.

Table-1, Achievements of 108 services in India

Coverage	14 States and 2 Union Territories
Calls answered every day	1,53,862
Emergencies responded per day	15,729
Ambulances	4,567
Travelling distance of Per day	4,77,508 KM
Emergencies responded	1,90,65,451
Lives saved since inception	6,30,333
Deliveries assisted by EMTs.	1,95,391

Source: www.emri.in/research/GVK-EMRI-National-EMCARE@Apr'13.pdf

ACCESSIBILITY OF 108 ACROSS INDIA

Having launched the 108 emergency response service on August 15, 2005, in Hyderabad, GVK EMRI presently provides an integrated emergency service across the state of Andhra Pradesh, with 802 ambulances serving over 3500 emergencies per day. GVK EMRI is currently operational in 16 States and union Territories i.e. Andhra Pradesh, Gujarat, Uttarakhand, Goa, Tamil Nadu, Karnataka, Assam, Meghalaya, Madhya Pradesh, Himachal Pradesh, Chhattisgarh, Uttar Pradesh, Rajasthan, Kerala and 2 Union Territories Dadra & Nagar Haveli and Daman & Diu.

Table-2, Ambulances Distribution in Various States

State	Number of Ambulances
Andhra Pradesh	802
Gujarat	525
Uttarakhand	140
Goa	33
Tamil Nadu	629
Karnataka	517
Assam	657
Meghalaya	47
Madhya Pradesh	589
Himachal Pradesh	172
Chhattisgarh	240
Uttar Pradesh	988
Rajasthan	496
Kerala	43
Dadra & Nagar Haveli and Diu & Daman	13
Total(*Included Boat Ambulances)	5891

Source: www.emri.in/states.html

108 SERVICES IN TAMIL NADU

Initially, Tamil Nadu Health Systems Project had partnered with selected NGOs in 15 districts to provide ambulance services. Due to various difficulties faced in running the operations, it was decided to partner with an experienced organization and accordingly signed a MoU to provide emergency services for the State, fully funded by Government of Tamil Nadu

All the ambulances procured were handed over to EMRI so that they could modify according to the specifications. On September 15, 2008, the programme was launched in Tamil Nadu. The number 108 is a toll-free number and can be dialed from any phone, be it a mobile phone or a landline, at the time of an emergency, without any prefix or suffix. Initially, the person who receives the call at Emergency Response Centre (ERC) takes down the nature of emergency and the location of the caller. Depending on the nature of the call, either an ambulance, a fire engine, or a police assistance is sent. This is done through the Emergency Response Centre.

The centralized Emergency Response Centre helps coordinate between the Despatch Officer, Emergency Response Centre Physician and the Emergency Medical Technician (EMT) for getting guidance during transit. Coordination with police and fire department is also facilitated through the Emergency Response Centre. The entire service is free for any citizen.

The ambulances are fitted with a Geographical Information System (GIS) and Geographical Positioning System (GPS) to locate the site of emergency and to monitor the availability and mobility of the vehicle near the site of emergency. The ambulance has well trained personnel to provide pre-hospitalization care during transit. Advance Life Saving (ALS) ambulances are fitted with defibrillators and ventilators for handling the emergency cardiac cases.

Person in an emergency dials 108 Communication Officer collects details regarding nature and location of emergency Medical care is provided in the ambulance during transit. The paramedics manning "108" ambulance are trained with a course including the modules on Basic Preparatory course, Refresher Emergency Management Technician (EMT) training program and Long term EMT program. A Paramedic is trained professional who extends help to the victim during the transit from site of emergency to hospital where doctor will take over the care of the victim. The patient is handed over to the emergency Physician in the appropriate hospital for further treatment.

Despatch officer assigns appropriate vehicle ambulance, fire engine, or police van. Under this Scheme help reaches the person within 20 minutes on an average. Emergency help will reach the needy on an average of 17 minutes in Urban areas and 23 minutes in Rural areas. This is a free service delivered through the state-of-art Emergency Response Centre and 632 Ambulances across the 32 districts of Tamilnadu.

Table-3 Types of Emergencies, handled by 108 services

Medical Emergencies	Police Emergencies	Fire Emergencies
Serious Injuries	Robbery / Theft / Burglary	Burns
Cardiac arrests	Street Fights	Fire breakouts
Stroke	Property Conflicts	Industrial fire hazards
Respiratory	Self - inflicted injuries / Attempted suicides	
Poisoning	Theft	
Maternal/Neonatal/Pediatric	Fighting	
Epilepsy	Public Nuisance	
Unconsciousness	Missing	
Animal bites	Kidnappings	
High Fever	Forceful Actions, Riots and etc	
Infections		

District-wise Logistics in Tamil Nadu

The district wise distribution of ambulances shows that out of the 632 vehicles including the 12 Neonatal (NN) ambulances. Ambulances are strategically placed so as to reach the victim at the earliest possible time. 40 allotted to take care of vellore district alone. It was followed by the Kancheepuram district (39vehicles), Chennai and Thiruvallur (33vehicles each) and Villupuram district with 32 vehicles. Barring these five northern districts, all other districts in the state has only less than 30 vehicles to serve.

Table-4 District Wise Distribution of 108 Ambulances in Tamilnadu

Districts	Count Of Ambulances
Ariyalur	11
Chennai	30+ 3 NN
Coimbatore	25
Cuddalore	25 + 1 NN
Dharmapuri	16 + 1 NN
Dindigul	18
Erode	20
Kancheepuram	37 + 2 NN
Kanyakumari	9
Karur	11
Krishnagiri	16 + 1 NN
Madurai	20 + 1 NN
Nagapattinam	18
Namakkal	14
Perambalur	9
Pudukottai	16 + 1 NN
Ramanathapuram	15
Salem	22
Sivagangai	14
Thanjavur	19
The Nilgiris	11
Theni	11
Thiruvallur	33
Thiruvanamalai	28
Thiruvarur	13
Thoothukudi	14
Tiruchirapalli	20
Tirunelveli	22
Tirupur	17
Vellore	39 + 1 NN
Villupuram	32
Virudhunagar	15 + 1 NN
Grand Total	632

Source: Performance Report, 108 Emergency Management Services, Tamil Nadu Health Systems Project, Government of Tamilnadu, Oct. 2013

Performance of 108 Services in Tamil Nadu

Sense, Reach and Care are the three aspects upon which the whole gamut of 108 services is performed. The first process of ‘sensing’ has five forms of data like answering ratio, types of calls, classification of calls based on emergency and in turn on medical emergency exclusively and the speed in answering .Data for the current financial year upto the month of October 2013 is taken for the study. In this period, 98.62% of all calls landed were answered. On an average more than half a million number of calls every month in Tamil Nadu alone regarding 108 services which got accumulated to 3691330 calls in the given period.

But unfortunately, two-thirds of the calls were found ineffective ones. Ineffective calls are the Calls falling under the category of No Response call, Wrong call, Nuisance, Disconnected call, Missed call, General Enquiry call, and Silent Call. Of the effective calls, 666240 calls (i.e., 18.05%) are emergency calls and the rests are non-emergency ones. Of all the emergency calls 97.41% is found as medical emergency calls and the balance ones were emergency calls related to fire and police. Of the medical emergency calls the original medical emergency calls were only 496348 (i.e., 76.48%) in the first half of the year 2013-14.

The data regarding the second aspect “Reach” disclosed the extent of utilization of ambulance services. In the study period, 484821 number of ambulance trips were made and in 460153 cases (i.e., 92.71%) the trips were utilized and only 4.97% cases the ambulance services were utilized. Only 2.32% cases were marked as ‘ambulances services busy’. Whenever all the ambulances closer to the area have been assigned for an emergency case, and a new emergency case comes in the same area, the Dispatch Officer will enquire with the caller, if he can assign a

ambulance from the nearby location. The Dispatch Officer will also tell them about the distance the ambulance has to travel and the approximate time it will take to reach the incident location. If the caller is not willing to wait till the specified time, then the Dispatch officer will close this case as “Ambulance Busy” after confirming with the caller. In the first seven months of the present year 771 trips were made per ambulance.

In other words 3.60 trips are made by an ambulance every day.

The data of the third ultimate aspect ‘Care’ shows that 460153 number of cases transported in the 108 vehicles which is 731.56 per ambulance in the given period. The number of cases transported per ambulance per day comes to 3.42. This reduction from the above mentioned average of 3.60 was due to unutilized trips which are unavoidable.

Table-5 ‘sense –reach-care’ data of 108 services in Tamilnadu upto October 2013 in the year 2013-14

Sl.No.	Particulars	Count	Count in %
1. Sense - Activities of the Emergency Response Center			
1.1 Details of the Calls			
1.1.1	Number of Calls Landed	3742920	100.00%
1.1.2	Number of Unattended Calls (UAC)	51589	1.38%
1.1.3	Number of calls answered	3691330	98.62%
1.2 Types of Calls			
1.2.1	Emergency Calls	666240	18.05%
1.2.2	Non Emergency Calls	564041	15.28%
1.2.3	Ineffective Calls	2461049	66.67%
1.2.4	Total Number of Calls	3691330	100.00%
1.3 Classification of Emergency Calls			
1.3.1	Number of Medical Emergency Calls	649015	97.41%
1.3.2	Number Police Emergency Calls	8220	1.23%
1.3.3	Number fire Emergency Calls	9005	1.35%
1.3.4	Total Emergency Calls	666240	100.00%
1.4 Classification of Medical Emergency Calls			
1.4.1	Number of Medical Emergency calls	496348	76.48%
1.4.2	Number of repeated Emergency calls	152667	23.52%
1.4.3	Total Medical Emergency Calls	649015	100.00%
1.5 Call Handling Data			
1.5.1	Percentage of calls attended within 1st Ring	NA	92.00%
1.5.2	Percentage of calls attended within 2nd Ring	NA	3.00%
1.5.3	Percentage of calls attended within or above 3rd Ring	NA	5.00%

2 Reach - Ambulance Service utilized			
2.1	Number of Medical Emergency Dispatch requests	496348	NA
2.2	Total Number of Ambulance Trips	484821	NA
2.3	Number of Ambulance Services utilized	460153	92.71%
2.4	Number of Ambulance Services not utilized	24668	4.97%
2.5	Number of Ambulance Services busy	11527	2.32%
2.6	Number of Trips per ambulance	770.78	NA
2.7	Number of Trips per ambulance/day	3.60	NA
3 Care			
3.1	Total number of cases transported	460153	NA
3.2	Total number cases transported per ambulances	731.56	NA

Source: Office records, Tamil Nadu Health Systems Project, Government of Tamilnadu.

Medical Emergencies attended by 108 in Tamil Nadu

Continuing the care aspect, the data regarding the types of medical emergency cases reveal that the pregnancy related cases are prominent with the highest frequency of 25.75%. It is followed by the road traffic accident cases

with a share of 22.85%. Acute abdomen-ache ailment is in the third place with the occurrence in 7.64% cases which is followed by heart attack like cardiac cases to the extent of 5.34%. All other cases attended are not significant enough, the occurrences being less than 5%.

Table-6 medical emergency cases attended by 108 services in Tamilnadu upto October 2013 in the year 2013-14

Sl. No.	Nature of emergency	counts	counts in%
1	Accidental Poisoning	22419	4.96%
2	Acute Abdomen	35053	7.64%
3	Allergic Reactions	335	0.07%
4	Animal Attack	12500	2.64%
5	Assault	20415	4.55%
6	Behavioral	45	0.01%
7	Cardiac/Cardio Vascular	24670	5.34%
8	Diabetes	3991	0.86%
9	Disasters due to Natural elements	23	0.01%
10	Epilepsy	12472	2.68%
11	Fevers / Infections	12218	2.45%
12	Fire/Burns	4731	1.05%
13	Hazmat (Hazardous Material)	7	0.00%
14	Industrial	116	0.02%
15	Neonatal(upto 1 month)	13365	2.88%
16	Paediatric(1-12years)	590	0.13%
17	Pregnancy related	120871	25.75%
18	Respiratory	13872	2.97%
19	Road Traffic Accident – Trauma	102975	22.85%
20	Stroke/Cerebro Vascular Accidents	13667	2.93%
21	Suicide attempt	2443	0.55%
22	Trauma	20402	4.49%
23	Unconscious	9565	2.08%
24	Others	13408	3.09%
	Total Medical Emergencies	460153	100.00%

Source: Office records, Tamil Nadu Health Systems Project, Government of Tamilnadu.

Hospital Admission by 108 in Tamil Nadu

The data regarding the destination of admission details that 86.48% admissions were made to the Government Hospitals and only 5.15% cases were admitted to the private hospitals.

The rest of 8.38% cases were given on-the-spot first aid only as the admission was not warranted.

This is to be noted here that the Emergency Response Services has signed MoU with over 1806 hospitals which provide initial stabilization free of cost for the first 24 hours.

Table-7 Hospital Admission Details by 108 services in Tamilnadu upto October 2013 in the year 2013-14

Sl.No	Admission Cases	Count	Count %
1	Number of cases admitted in Government Hospitals	397918	86.48%
2	Number of cases admitted in Private Hospitals	23679	5.15%
3	Others (Number of cases provided First aid only refused treatment etc.)	38556	8.38%
TOTAL		60153	100.00

Source: Office records, Tamil Nadu Health Systems Project, Government of Tamilnadu.

Golden hour Clock in Tamil Nadu

The golden hour is the time after a traumatic incident during which there's the highest possibility of a life being saved by timely, appropriate medical treatment. Reaching the victim in the Golden Hour is crucial for an emergency medical service provider. The Advanced Life Saving 108 ambulances are equipped with advanced medical equipments to aid the patient even during transportation to a hospital.

The swiftness in the performance of ambulance services in the first seven months of the year 2013-14 is tabulated below. It reveals the average call to dispatch time is just 4 minutes; average time taken from the base of the ambulance to the needy place is 17 minutes; average time taken at the location is 11 minutes and the average time taken from the location to the hospital is around 34 minutes. Totally the Average time taken from call to hospital, thus presently stands at 1 hour 6 minutes.

Table-8 Call / Dispatch Time Break-Up by 108 services in Tamilnadu

S No	Call / Dispatch Time	Time Break-Up (HH:MM:SS)
1	Average Call to Dispatch Time	0:04:08
2	Average Time taken from Base to Scene/Incident	0:16:54
3	Average Time taken at the Scene / Incident Location	0:11:07
4	Average Time taken from Scene to Hospital	0:34:17
5	Average Time taken from Call to Hospital	1:06:26

Source: Office records, Tamil Nadu Health Systems Project, Government of Tamilnadu.

CONCLUSION

The 108 emergency services has been a life saving PPP venture with an unimaginable timely service particularly in the golden hour. It is present only in 16 states of India and 2 Union Territories. The rest of the country also should try to implement this scheme and the 108 should emerge as the single saviour for the second most populous nation at all sorts of emergencies. The states in which the scheme is

already in existence, should also improve the infrastructure and logistics so as to speedily attend the emergency. The paramedic training and the first aid training should be given to all interested youth and it should be made as a compulsory practical part of the curriculum of all the College Students as the courses like Gender Studies and Environmental Studies. This may help the youth aware of 108 services and emergency management tactics. Because, *preparation through education is more preferable than learning through tragedy.*

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