

Emergency Medical Services Provided By Ambulance Patient Safety**Dr. R. Leelavathy,**

Assistant professor, Department of Commerce,
Vivekanandha College for Arts and Science for women (Autonomous),
Elayampalayam, Tiruchengode, Namakkal.

Dr.V. Senthil Kumar,

Associate Professor, Department of Commerce,
Vivekanandha College for Arts and Science for women (Autonomous),
Elayampalayam, Tiruchengode, Namakkal

Abstract

As in India every minute's one person dies because he is not able to reach the hospital in time so The Ambulance service which will reduce the time. The main services of these Ambulances will reduce the time between ambulance driver and the Patients and it will save someone's life. The Ambulance vehicle provided excellent medical service to the patient safety and security and save the lot of people life on the current decade. Emergency medical services (EMS) personnel care for patients in challenging and dynamic environments that may contribute to an increased risk for adverse events. However, little is known about the risks to patient safety in the EMS setting. Ambulance Services is the most visible and crucial component in Pre-Hospital Care. It is the initial segment in the continuum of health care. The Ministry of Health has placed great importance on this frontline activity to benefit the community. The Medical Development Division and the Emergency Medicine and Trauma Services for their continuing effort in development and improvement in standards of care for pre hospital care service. Many challenges arise from implementation of the ambulance services, and as paramount for patient and staff safety, this policy was developed to safeguard and elevate the quality and safety of the service. This paper analysis only effective services provide by the Ambulance to the patient safety. It strengthens the Safety-First work culture within all MOH facilities and uses surveillance methodology to measure the success implementation.

Key Factors: Patient safety, Ambulance services MOH facilities.

INTRODUCTION

As in India most of the cities are going to be Smart city but as in under the smart city we much back to achieve the word of smart. If we improve efficiency in healthcare sector it is not easy task because of these we will require some time but we can do it. As our project i.e. ambulance application which we have got idea by seeing our day to day life where we can see that every minute and every hour some die because of not reaching because hospital reach within time. By seeing these we are developing an application which will easily provide availability of ambulance and decrease extra time which is consumed. In our project there is facility of availing the ambulance within the time. In these two java based application are created i.e. one for user based application in which user can call ambulance by clicking one button and second application is for driver of the ambulance where he will receive the notification of the user who is in emergency.

Developed Software Networks:

The aim is to advance the existing healthcare services with the improvement of sensor networks, Medical devices, wireless communication, middleware software, and end software applications. Indoor and outdoor health monitoring systems attracts many researchers, because they provide early detection of diseases, emergency help, and reducing the medical costs. In health status monitoring systems, periodic physiological statuses of people must be collected using sensors and delivered to medical professionals through a communication system. Alongside this periodic data, these systems must provide emergency reports under critical situations. Gathering of different vital signs depends on the purpose of the healthcare system and its concern.

E-Ambulance system

Many patients with critical conditions lose their lives while they are inside an ambulance. This is because they need urgent aid to survive. Medical professionals who may be able to save their lives are serving in medical centers. Therefore, only first aid can be provided in an ambulance and essential treatments will take place in medical centers. Towards this end, this paper proposes an E-Ambulance system to provide remote health monitoring with automatic responses while patients are still in the ambulance. In normal situations, the ambulance is summoned to carry Patients to medical center. Many issues may occur in regards to patients'

conditions and the need to deliver them to a medical center. These issues are classified into two categories: monitoring patients' status and providing urgent responses, and Reaching nearest suitable medical center as soon as possible.

OBJECTIVES

- To provide safety standards for land ambulance services for all MOH PHCAS Provider.
- To mandate a compulsory reporting programme or feedback system for ambulance safety incidents or collisions.
- To advocate organizational approach to safe operations and managements of land ambulances.

Review of Literature

Kumar (2010) in the Annals of Emergency Medicine casts further doubt on the concept of the golden hour for patients with severe injury. The authors studied more than 3,000 trauma patients with low blood pressures from bleeding, head injuries and difficulty breathing, and examined various time intervals after a call to 9-1-1. The authors compared the times with outcomes for patients in the hospital. The result: shorter intervals did not appear to improve survival

Meisel and Pines (2010) state that it would be wrong and irresponsible to claim that time does not impact the delivery of emergency care. Time-sensitive medical conditions, such as choking episodes requiring the Heimlich maneuver and cardiac arrest that could require medics to shock and restart a heart, depend upon timely action. New and better evidence suggests that very small differences in time may not be as important as other factors in the delivery of care for seriously ill patients. Policies should be examined in relation to risk, value and consequences—policies that may save minutes but not lives.

AMBULANCE VEHICLES SAFETY

This is a unique transportation and health care delivery environment for a number of reasons. Even though there is comprehensive medical and clinical oversight, training and standards in EMS - this is not the case with the transportation safety aspect of this system. There are few

applicable transportation system safety standards for EMS, no vehicle crash safety testing standards that pertain to ambulance vehicles and no comprehensive personal protective equipment standards. There is only very limited national data captured on the safety of this transportation system, primarily by the Fatality Analysis Reporting System (FARS), which is far from comprehensive. There have been extensive studies that have identified that intersections are responsible for many ambulance crash fatalities and injuries. It has also been demonstrated that for each ambulance occupant killed in an adverse event involving an ambulance vehicle, that there are 3 bystanders killed, either in an unrelated passenger vehicle or pedestrians being struck. Also the rear patient compartment has been identified as the most dangerous part of the ambulance for its occupants, yet this part of the vehicle is currently not regulated by the Federal Motor Vehicle Standards. Unfortunately also, no reporting system or database exists specifically for identifying ambulance crash related injuries and their nature, so specific details as to which injuries occurred and what specifically caused them are extremely scarce.

Standardize and Quality of Ambulance Services

Ambulances services play a major role in ensuring that patients receive the appropriate care for their needs. With the increasing scope and coverage of the service, many challenges are encountered when providing patient care. There is a need for a policy to be developed and these measures shall standardize and improve the quality of ambulance services as well as raise the credibility of the existing system. This led to the combined effort between the medical development division of ministry of health with the emergency services and trauma in which the first policy for land ambulances was first tabled in 2015. From there on, ongoing work has been put forth into setting a guide for managing, maintaining and supporting such service. This policy is a product of those efforts and will help guide especially the administrative aspect in maintaining and support the services.

AMBULANCE SERVICES

Basic Ambulance

Basic Life Support Ambulance is for the patients who need medical transportation. It comprises of patient bed, pulse oxi-metry and oxygen delivery devices.

Advance Ambulance

ALS ambulance is equipped with ventilator, ECG, monitoring devices and paramedic staff.

Mortuary Ambulance

Mortuary ambulance services are used for the transportation of the dead body. It is also called as Hearse Van.

Neonatal Ambulance

Neonatal transport services are a vital part of care for premature and sick babies, to ensure that babies can be moved quickly for the right care in the right place for their needs.

Patient Transport Vehicle

PTV is a non emergency patient transport vehicle equipped with patient bed & other life-support devices.

Air Ambulance

Air ambulances contain ventilators, defibrillators, infusion pumps, balloon pumps, oxygen cylinders, trained doctors, & nurses.

Policy Related to Ambulance Service

This policy shall serve as Ministry of Health (MOH) safety standards in safe operations and management of land ambulance services, hence providing guidance to all relevant stakeholders within and outside of MOH. This policy shall cover key areas of safety in land ambulance operations such as organization, vehicle, operational and occupational safety standards. This policy shall be read with the Emergency Medicine and Trauma Services (EMTS) policy and other policy related to PHCAS published by Ministry of Health. The policy document shall be reviewed periodically every 5 years or whenever the need arises.

Emergency Medical Services

The Emergency Medical Services (EMS) community that will enable the design and manufacture of ambulance patient compartments that are safer and more efficient. EMS providers (EMSP) face high injury and fatality rates due to the nature of their work, providing critical patient care in rapidly moving ambulances, as has been cited in numerous publications. They also experience high levels of musculoskeletal injuries due to lifting of patients or other equipment. Much of this risk can be attributed to the design and layout of patient compartments, which are typically not designed to allow EMSP to perform their patient care tasks while remaining seated and restrained.

Impact on the EMS:

These vehicle accidents involving ambulances have a significant financial impact on the EMS community. Costs associated with an accident may include medical expenses, lost work time, disability expenses, legal fees, equipment repair and replacement expenses, workman's compensation, recruitment and training costs for employee replacement and increased insurance costs. Motor vehicle crashes cost employers 60 billion annually in medical care, legal expenses, property damage and lost productivity. When a worker has an on-the-job crash that results in an injury, the cost to their employer is provided Rs. 75000 for medical expenses.

Ambulance Speed Guidelines

- Ambulances should not exceed the posted speed limit by more than 10 mph.
- It Speed should be moderated to avoid roll over in a turn or curve.
- It Speed should be reduced when the curbside tires leave the paved or elevated surface of a road to reduce the likelihood of improperly returning the vehicle to the paved surface.

EMS Services in India

In India, EMS is a relatively new concept, where the most dominant model is the EMRI services. The “108 Ambulance Service” is a Public Private Partnership model between state governments and Emergency Management and Research Institute (EMRI) and the service provides complete pre-hospital emergency care from event occurrence to evacuation to an appropriate hospital. The concept of “108 Ambulance” aims at reaching the patients/sites within 20 minutes in urban areas and 40 minutes in rural areas and that the aim is to shift the patient to the nearest hospital within 20 minutes after reaching him/her. The emergency transportation is conducted in a state-of-the-art ambulance, which is provided free. The transportation is 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 ambulances have been designed with a uniquely Indian perspective and it includes space for the patient, paramedic in the back and also bench seat for family members. EMRI ambulance fleet includes Basic Life Support ambulances (BLS), Advanced Life Support ambulances (ALS). The ALS ambulances are available with cardiac monitor and defibrillator in addition to the basic provisions of a BLS ambulance. The Emergency Response System (ERS) implemented by EMRI also includes trained human resources from the call centre staff to support staff in ambulances. Each ambulance has three pilots (drivers) and three EMTs who work in pairs of two for every 12 hour shift with a break every fourth day. For every 15 ambulances there is one operation executive and one fleet executive. Above them there is one district manager and one administrative officer, for every district.

Recruitment and training of Ambulance Drivers

- All Ambulance Drivers shall have a valid driving license, based on the vehicle class of the Ambulance.
- All Ambulance Drivers shall undergo defensive driving training approved by the MOH. There shall be a mechanism of recertification of trained Ambulance Drivers.
- MOH PHCAS Providers shall be conduct continuous, scheduled and periodic safety and health training education for all Ambulance Drivers.

- All Ambulance Drivers shall be certified to be medically fit to drive.
- Drivers with poor disease-control based on the current clinical practice guideline for the respective disease shall be prohibited from Emergency Ambulance Services or driving with the use of lights and siren until deemed fit by the assigned Primary Care Physician or Medical Officer.
- Ambulance Drivers shall be allowed to be on duty for only 12 consecutive hours, except with written permission by the Hospital Director or District Health Officer.
- Ambulance Drivers that have been on duty for more than 12 hours shall be allowed a minimum of 12 hours resting time before recommencing active driving duty.
- Ambulance Drivers shall drive for a maximum of four (4) continuous driving hours.

Ambulance Operator Qualification

Ambulance operators should be adequately trained and qualified to drive. They must make vital and timely decisions while responding to an emergency call or transporting patients to a hospital without risking the lives of the medic team and other civilians, or causing further injury to their patient. They must possess knowledge of driving rules and regulations as well as the skills and ability to implement those rules appropriately. Failure to be properly trained and qualified can lead to injury or death to themselves, their passengers and other motorists. Forty-eight percent of the ambulance drivers involved in the crashes had a poor driving record prior to the crash. Several practices should be implemented to ensure that drivers exhibit proper qualifications, including maintaining a good driving record, maintaining proper physical health and obtaining emergency vehicle certification.

Ambulance Operator Functions

- Pre-run preparation
- Receive a call
- Depart the station
- Drive to the scene
- Arrive at the scene
- Conduct operations at the scene

- Prepare to depart from the scene
- Drive to receiving facility with no one in the passenger seat
- Arrive at the receiving facility
- Perform operations at the receiving facility
- Depart the receiving facility
- Drive to the station
- Arrive at the station
- Conduct post run operations at the station

AMBULANCE OPERATIONS

- Training
- Driving procedures
- Use of restraints
- Lights and sirens policy
- Navigation resources
- Data terminal usage
- Performance monitoring
- Accident history and causation
- EMS ambulance operator distractions
- Accident avoidance methods

Vehicle Speed and Stopping Distance

Vehicle Speed	Stopping Distance
10 mph	18 Feet
20 mph	52 Feet
30 mph	100 Feet
40 mph	169 Feet
50 mph	280 Feet
60 mph	426 Feet

Suggestion to Ambulance operators

- Fleet safety managers engage and educate their ambulance operators, and discuss the importance of being attentive and not engaging in distracting tasks or behaviors. Even routine behaviors (e.g., reaching for an object, putting on sunglasses, or adjusting the instrument panel) can distract and may lead to a safety-critical event.
- Fleet safety managers develop policies to minimize or eliminate the use of in vehicle devices while driving. The authors also urge fleet safety managers to be cognizant of devices that drivers bring into the truck cab and use while driving. These may seem innocuous (e.g., calculator), but may increase crash risk if used while driving.
- Ambulance operators should not use the radio while driving and fleet safety managers should educate drivers on the danger of interacting with these devices while driving. Similar to manually dialing a cell phone, if operators must interact with a radio, the authors recommend that they do so only when the ambulance is stopped.
- Ambulance operators should not manually dial cell phones while driving. If a call must be made, they should pull off the road to a safe area. Another option, requiring further study, is the use of voice-activated, hands-free dialing, which would allow the operator to maintain eyes on the roadway. This approach may cause “cognitive distraction” (though visual distraction would be expected to be reduced).
- Ambulance operators should not read, write or look at maps while driving. Commonly performed tasks, such as reading, writing and looking at maps, significantly draw visual attention away from the forward roadway. These activities, which may be integral to the driver’s job, are not integral to operating the vehicle and the authors recommend that such tasks never be performed while the vehicle is in motion.
- Designers of radios and other communication devices should consider the increased risk associated with using their devices and work to develop more human-factor designed interfaces that do not draw the driver’s eyes from the roadway. Possible solutions include a hands-free interface or blocking manual use while the vehicle is in motion.

- Designers of ambulance operator compartment instrument panels should consider the increased risk of adjusting panel controls. The designs should be intuitive, user-friendly and require only brief glances away from the forward roadway.

Conclusion

Most of the research identified during this study is of poor quality and often relates to small studies in individual ambulance services. This study concluded that future research needs to implement larger studies that are adequately powered to demonstrate an effect. Ambulance services are relatively new to clinical research and the absence of quality data that is specific to the pre-hospital care environment may reflect that immaturity. Research support for ambulance services and encouraging increased links with academic institutions may be appropriate. The areas of greatest concern and the clinical effectiveness and safety of alternative pathways. The knowledge transfer is best achieved in ambulance services with their dispersed and mobile workforce. The communication in ambulance services can be improved; this covers a range of topic areas including 999 call handling, patient communication and handover to EDs

As ambulance services develop new models of working need to ensure that staff are adequately trained and have means of monitoring clinical risks and intervening if required. Feedback mechanisms are often an important step in this process and the complexity of training staff who work in a mobile workforce and are often isolated from colleagues appears to be a recurring issue in safety reports. Providers and commissioners need a full understanding of the safety implications of introducing new models of care, which is currently undertaken with little supportive evidence this also needs an inherent culture of critical evaluation and make proper policy take by the state government and central government.

References

- Levick, N., (2008). Emergency Medical Services: A Unique Transportation Safety Challenge. Transportation Research Board Annual Meeting.
- Patrick, R.W., (2012). Safe Intersection Practices. EMS World.

- Sanddal, T., Ward, N., and Stanley, L., (2010). Ambulance Vehicle Operator: Driver Behavior and Performance Checklist. U.S. Department of Transportation, Research and Innovative Technology Administration.
- Kumar (2010) “Emergency Vehicle Visibility and Conspicuity Study,” FA-323.
- Office of the Federal Register (2012) Code of Federal Regulations, Title 49: Transportation, Part 571 – Federal Motor Safety Standards, 571.108 Lamps, Reflective Devices, and Associated Equipment. U.S. Government Printing Office, Washington, D.C.
- Meisel and Pines (2010) “High Speed Care: How Fast Should Ambulances Go?,” Slate magazine, May 2010.
- Newgard, C.D., Schmicker, R.H., Hedges, J.R., Trickett, J.P., Davis, D.P., Bulger, E.M., Aufderheide, T.P., Minel, J.P., Hata, J.S., Gubler, K.D., Brown, T.B., Yelle, J.D., Bardarson, B., Nichol, G., (2010), “Emergency Medical Services Intervals and Survival in Trauma: Assessment of the Golden Hour in a North American Prospective Cohort,” Annals of Emergency Medicine, Mar, 55(3), 235-246.
- Sanddal, T.L., Sanddal, N. D., Ward, N. & Stanley, L. (2010). Ambulance Vehicle Operator: Driver Behavior and Performance Checklist (D1). Washington, D.C.: U.S. Department of Transportation.