INDIAN EMERGENCY JOURNAL

Transforming Emergency Management

CONTENT

DIRECTOR'S MESSAGE

EMT AND DRIVER TO AMBULANCE CREW - ENTRY OF SAATHI ERA

GVK Emergency Management and Research Institute (GVK EMRI) continue to provide free emergency response services to the people of 17 States/UTs in partnering with respective State Governments. By the end of 2021, manpower of GVK EMRI has reached nearly 55,000 associates. Total ambulances under GVK EMRI are 14,283, out of which 8,039 are 108 Emergency Medical Services (EMS); 297- Bike; Dropback or JSSK -5059; Mobile Medical Units-148; Dental Vans-3; Boat Ambulances -11; Hearse Vans- 29; NTPC (National Thermal Power Corporation) MMU (Mobile Medical Unit) - 32; Women Helpline Rescue Vans- 49 and Mobile Veterinary Units- 616. Cumulatively, over 9.0 crore emergencies were served, 5.90 lakh child births were assisted and nearly 46 lakh critical lives were saved.

New Generation (NG) Computer Aided Dispatch (CAD) technology of GVK EMRI is now able to add features like auto-assignment of emergencies, digital prehospital care record (ePCR), real-time case closure, immediate transfer of case to nearest ambulance in case of breakdown, pre-arrival intimation of the patient to the hospital, auto-release of the ambulance from hospital after 10 minutes and monitoring through Operations Excellence Desk (OED).

GVK EMRI while providing uninterrupted ambulance based prehospital care services continued to support COVID 19 linked transfer of patients. By the end of December 2021, over 24.5 lakh COVID linked beneficiaries were served since the beginning of the epidemic. GVK EMRI is closely monitoring the exposure of associates on a day-to-day basis. Regular internal communication was stepped up even during the third wave. Majority of the associates were protected by full vaccination. Fortunately, ambulance staff were recognized as frontline workers by Government. Sentinels of the Soil- A tribute to frontline and healthcare workers in India's fight against COVID 19, published by MOHFW, GOI (Ministry of Health and Family Welfare, Government of India), documented that *"As thousands of ambulances were pressed into service, they often became the face of a responsive system that successfully reached out to multitudes during the pandemic. Ambulance services became critical to combat the pandemic. It was not just one role that ambulance drivers performed during this time. The ambulance drivers ferried and attended COVID patients, they along with the paramedic staff monitored their condition and even motivated them along the way. They thus became the caretakers and often even confidants. Ambulance staff even at the risk of infection to themselves and their families, put duty above all and worked round the clock".* No doubt, GVK EMRI always considered Emergency Medical Technician (EMT) and Pilot (Driver) as our Heroes. These recognitions make us humbler, modest and committed to the vision. Tribute booklet articulated our core value attached to the frontline staff. PPP (Public-Private-Partnership) model is the winner in the endeavour to fight against individual, disasters and public health emergencies.

As a pro-active civil-society organization, with focus on execution excellence and a leader in EMS, a fresh thought to enhance the prehospital care outcomes was envisaged by strengthening the multi-tasking competencies in GVK EMRI ambulances in the form of SAATHI initiative. Safe Ambulance and Adequately Trained Healthcare Individual (SAATHI) are expected to perform the combined roles of erstwhile EMT and Pilot. SAATHI foundation training accordingly included practical driving, simulation driving, Light Motor Vehicle (LMV) license additionally to the existing EMT foundation training modules. This trusted companion in need, true meaning of word SAATHI, 'EMT cum Pilot' concept was started with the ongoing Rajasthan operations for new cohort of associates, but is being promoted across the organization in near future. Along the side-lines, these ambulance driving and prehospital care competencies in all ambulance crew has been a practice in some of the best EMS system. SAATHI initiative in 2021 by GVK EMRI thus remains as the milestone in the history of EMS in India. Who knows, like our sense-reach-care model being appreciated as the best in class for Lower and Middle Income Countries (LMIC), SAATHI may be a panacea to the whole of developing world down the line.

It is delighting to share that three focus areas of EMRI since inception are Emergency Management, Research and Institute (Training/Capacity Building). GVK EMRI has crossed the milestone of over 108 scientific publications. The unique differentiator of research at GVK EMRI is panorama of approaches/methodologies in EMS research. Online Medical Research (OLMR)- prospective multi-centred research on a pre-determined emergency like chest pain in collaboration with Stanford; Transitional Research/Action Research like Active Bleeding Control (ABC) Project collaboration with National, International Institutions and Government of Telangana; Professional Partnership with Pan Asian Resuscitation Outcomes Study (PAROS) in Out of Hospital Cardiac Arrest (OHCA) in Telangana; Predictive analytics based research (Diwali and RTAs) in Gujarat; CTI (Computer Telephonic Integration) data based epidemic forecast - Syndromic Surveillance using Undifferentiated Fever in the combined state of Andhra Pradesh; Simulation Education based (video laryngoscopy using manikins); DACPR (Dispatcher Assisted Cardio-Pulmonary Resuscitation) training in Telangana; Observational Research - RTA and role of Police, Bystanders and Ambulance Staff in Hyderabad; Educational - Functional ALS (Advance Life Support) EMT training.

EMS services are no doubt complex, but it provides myriad of opportunities to continuously learn, carryout research for improving patient outcomes and execution excellence. GVK EMRI in future considers' education-care-research' triad on effective and efficient implementation models and not only documentation of best practices.

With warm regards,
Mr. K. Krishnam Raju
Director, GVK EMRI

A FRAMEWORK OF EMERGENCY PREPAREDNESS IN ELDERLY IN INDIAN CONTEXT- A SPECIAL NEED OF THE HOUR AND IN EVERY GOLDEN HOUR SITUATION

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Any medical emergency in elderly is not only a sudden event but also likely a life threatening condition, it can cause long term disability and may impact quality of life, if timely action is not taken. It can create stress and can cause panic to the elderly and the entire family in addition to the imminent catastrophic expenditure. Elderly are vulnerable and at high-risk to emergencies. Preparedness for emergencies need special approach so that complications and cost can be reduced. Fatalities can be minimized. Duration of the stay in the hospital can be reduced. Stress and panic can be put under control. Emergency preparedness is readiness in an organized way arranged by systematic planning and combined efforts.

Breathing difficulty, fever, vomiting, chest pain, abdominal pain, trauma including falls, giddiness, altered sensorium are observed as most common emergency manifestations in elderly from an Emergency Department (ED). In 108 GVK EMRI (Emergency Management and Research Institute) emergency ambulances, 8 per cent of the beneficiaries belong to 60+ age group. Abdominal pain, respiratory, cardiovascular, trauma (vehicular/non-vehicular), fever, stroke, diabetes was documented as the major chief complaints of these elderly seeking 108 services.

Overall, in India, the prevalence of poor Self-Reported Health (SRH) is two times among the elderly age 60 and above (24%) than older adults age 45-59 (12%) as per the Longitudinal Ageing Study of India (LASI), Wave 1, 2017-18. Around a quarter of the elderly age 60 and above have multi-morbidities (23%). CVDs(cardiovascular disease), diabetes mellitus (DM) and respiratory diseases contribute to a major share of chronic health conditions among older adults as well as elderly age 60 and above. Among the elderly age 60 and above, the prevalence of falls (23%) is higher than that of injuries (19%). The prevalence of high blood pressure is higher among the elderly age 60 and above (37%). However, more than

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a third of elderly are undertreated for hypertension (HTN) (36%) and one in ten (10%) elderly remain untreated for hypertension. A quarter (24%) of the elderly age 60 and above reported having at least one Activity of Daily Living (ADL) limitation; 14% reported having two or more ADL limitations. A quarter (25%) of elderly age 60 and above needed a helper to perform ADL. Tobacco smoking, use of alcohol and lack of physical activity were found to be at risk factors. 8 per cent of the persons above 60 years were admitted in the one-year period. Hospitalization has a strong economic gradient. About 23 per cent visited public health facility while 63 per cent visited private health facility.

Mean expenditure per admission was rupees 23,000. Among other factors, accessibility and affordability of the health services are potential factors leading to variations in hospitalization rates among older adults and elderly in India. 6% of elderly age 60 and above are living alone. 5% of the elderly age 60 and above have reported that they experienced ill-treatment. LASI has observed that death rates amongst 60+ is 38.4 per 1,000 population when compared to 7.7 in all age groups.

The projections for population over 60 years in the next four censuses are 133.32 million (2021), 178.59 (2031), 236.01 million (2041), and 300.96 million (2051). Currently about 138 Million elderly persons are estimated to be living in India. About 11.4 per cent of the population will be aged by 2025 in India Population ageing has not been experienced uniformly across all the states of India. While the more developed states like Kerala, Tamil Nadu, and others in the south have

experienced demographic transitions before the rest of the country, states like Uttar Pradesh and Bihar. Road Accident Report, 2019 - MORTH (Ministry of Road Transport & Highways), Government of India has observed that 6 per cent of the persons killed due to vehicular accidents are above 60 years.

When planning the management of acute events in older people, severity of the medical problem, cognitive status of the patient, social circumstances and availability of community and social support are key factors. In low resource settings, **M**anpower, **E**quipment, **R**elevant Standard Operating Procedures (SOPs), **I**nterconnectivity and **T**raining (absence of MERIT as acronym).

Disposition decision has to be timely for emergency patients, in particular elderly. Disposition time impacts patient care and safety. Disposition decision in the Emergency Department (ED) is a critical decision that determines the level of care that an individual requires after leaving the ED - including admission to the hospital or discharge to home. Disposition time for red, priority or severe category emergency patients in large private hospital is about 45 minutes and in government medical college hospital is 90 minutes. In case of elderly, these delays might be due to non-existence of triage policy, lack of emergency providers and department leads, need for multi-specialty reviews, high patient load of other age groups. Study on emergency and injury care in secondary and tertiary care centers in India by AIIMS (All India Institute of Medical Sciences*)* - 2020, observed that only 45 per cent have dedicated ambulance access, 35 per cent have earmarked triage area, 63 per cent had

smooth entry for wheel chair and 26 per cent had point of contact lab.

Therefore, it is imperative that emergency preparedness in elderly is not only a neglected area of scientific work but is the need of the hour in view of the growing number of elderly and growing numbers of emergencies amongst elderly in India. In addition, vulnerability and high-risk for emergency and critical care requirements, early recognition, early triggering of emergency medical services, accessing emergency services, pre-arrival intimation and definite care interventions, transitional care, rehab and back to routine at the home level also need to be incorporated into the emergency preparedness framework. Review of literature exist mostly on emergency preparedness in disasters. Hence, a comprehensive framework encompassing "practicing professionals - patients - public health" categories are envisaged as a maiden and modest effort in the elderly emergency preparedness conceptual framework in the Indian context.

I. A. Individual Practicing Professionals: All levels of healthcare providers should adopt a combination of the suggested approaches in emergency preparedness of elderly beneficiaries. Yet times, a combination of such approaches is warranted for desired outcomes.

1. Standard Treatment Guidelines (STG): In case of hypertension (HTN) as an example, if primary physicians follow STG guidelines, significant reductions in organ damage can be achieved. Adhering to Classification pathway-3 and Assessment and management pathway in a patient with hypertensive crisis -pathway 7 (severe HTN with acute cardiac, neurological, renal, retinal dysfunctions) early stabilization and timely referral to higher centres can be ensured.

2.Patient Education: Patient education matrix which includes a meaningful conversation on nature of disease, potential serious complications, need to adopt lifestyle measures, lifelong therapy, knowledge of target control and need for regular monitor remains to be essential patient education as such in NCDs (Non-communicable diseases) like HTN and DM. It is important that healthcare providers should educate elderly patients on the potential complications and dangerous manifestations, danger signs to seek timely emergency medical guidance.

3. AV Aids: Elderly patients can be made to understand the dreaded emergencies by use of appropriate audio-visual (AV) aids. Best example is use of FAST abbreviation, and brochure with four pictures (hard or soft copy) on 'Stroke', is popular universally. Full form of FAST is -Face (uneven)- Arm (drifting)- Speech (slurred)- Time (note onset time and call 108 without delay). With the higher usage of soft phones, 30 seconds to 60 seconds videos are also recommended for use by the doctors to prepare elderly in case of emergencies. Simple first aid tips available at National Health Mission web site. These endeavours should facilitate de-professionalism in recognition of emergency conditions in elderly like stroke.

4. Partnership with Patient: Doctors treating elderly patients generally have a long-term association because periodic review and follow-up care being the preferred mode of the doctor-patient relationship for favourable

outcomes and impact. Hence, partnership philosophy likely to ensure desired compliance of drug usage, lifestyle management and control of clinical and diagnostic parameters (medical record). This association need to be taken advantage and significant deviation in home monitoring parameter when observed should trigger emergency consultation. Chest pain, shortness of breath, excessive sweating, severe headache or BP of over 180 mm systolic or 110 mm diastolic, etc. are few of danger signs to be criteria in the partnership model of emergency preparedness. Medical device based alerts under Internet of Things (IOT) can be listed as a component of partnership model.

5. Life Support Skills: Knowledge and skills for triage, assessment and management of acutely ill and injured are mandatory for all frontline workers and doctors. ABCDE (Airway- Breathing- Circulation- Deformity-Exposure) approach is universally practiced in emergency care skills training and certifications. Life support skills, both basic and advanced are bound to have attrition and hence all healthcare professionals should educate and re-educate in life support skills throughout the professional career and hold a valid certificate of basic and advanced life support skills like BLS- ACLS (BCLS/ CCLS) – ATLS, etc.

6. Dynamic Nature of Preparedness: In certain conditions, all levels of healthcare providers and doctors should have to seek updated protocols, guidelines though use of digital or appropriate media including professional body publications/updates. Best example of this category of emergency preparedness for practitioners is COVID 19.

Recent revision (January 2022) released by Ministry of Health, Government of India on guidelines when to seek medical attention (based on serious signs and symptoms) were different when compared to the earlier version viz. Unresolved High-grade fever (more than 100° F for more than 3 days), Difficulty in breathing, Dip in oxygen saturation (% SpO2 $\leqslant$ 93% on room air at least three readings within 1 hour) or Respiratory rate > 24/ minute, Persistent pain/pressure in the chest, Mental confusion or inability to arouse, Severe fatigue and Myalgia. Hence, evidence based approach in emergency care and preparedness is possible by being in 'constant learning mode.'

7. Orientation of Medico-Legal Cases: In spite of adhering to the higher level of preparedness, being a random event, emergencies do happen. Healthcare practitioners should be acquainted with the medico-legal dimensions of emergencies and sometimes fatal outcomes. Standard treatment being adopted and relevant documentation are critical. Emergency conditions which draw attention to the medico-legal aspects are assault, hanging, attempted suicide, gunshot injury, burns, poisoning, drowning, fall from height, electrocution, stab injury, road traffic accident, etc.

I.B. Facility/Hospital Based Doctors and Healthcare Providers:
1. Government Health Centres: National program for the health care for the elderly (NPCHE) India, aims to provide accessible, affordable, and high-quality long-term, comprehensive and dedicated care services to an Ageing population; create a new "architecture" for Ageing and enable an

environment for "Society for all Ages." Elderly were categorized into Mobile – Restricted mobility and Bed bound elderly. 10 bedded in-patient services at district level and 30 bedded Regional Geriatric Centre is expected to be established and made up and running. Timely redressal of acute elderly needs to have active involvement of community based ASHA workers, Sanjiveeni – elderly care-giver support groups as well as PHC and CHC staff and Medical Officers. Immediate and primary management should be carried out before referral. Leveraging teleconsultation is identified as an intervention. Referrals should have specific instructions regarding facility name and location, day and time of visit, person to contact, etc. The care provided, especially the documentation and intimation to appropriate authorities, shall be in accordance with statutory requirements. In near future, if electronic health records (EHR) are developed they should be made available to PM JAY (Pradhan Mantri Jan Arogya Yojana) empaneled hospital with the consent of the patient. As best practice, World Health Organization in its Age-Friendly Primary Health Centres Tool kit has highlighted whether emergency in an elderly person is identified early and services accessible if so, an alarm system exists or not? In addition, the tool kit also highlighted the role of 'Communication Killers" like Don't worry – Don't talk about it.

2. Clinics Practicing Modern System of Medicine (Allopathy): Accreditation by NABH, for allopathic clinics highlighted the standard on policies and procedures are used to identify the additional care needs of the patients and to appropriately refer them to outside healthcare providers. Further, NABH focus on Ambulance or patient transport

services, if provided, are organized through defined policies and procedures for efficient and effective services. Patient rights are to be given importance including informed consent for any invasive/high risk procedures/ treatment. Elderly patients being considered as high risk group, in the clinics hence, there should be basic first aid facilities and resuscitation equipment available in the clinic. Clinical guidelines/protocols to provide first aid, resuscitation and management of specific conditions like hypoglycemia, allergic reaction and other condition, common in the elderly patients, etc., should be in place. Training of staff to use the resuscitation equipment and provide resuscitation services. Policies also addressing handling of medico-legal cases are appropriately highlighted.

3. Hospital or Facility Level: At the design stage itself preparedness should begin, with focus on ambulance access, police work room, secured holding room, triage trolleys, resuscitation bay, surgical suites, observation bay, equipment, crash carts, etc. Planner should reach a reasonably good prediction of facility mix including exclusive geriatric beds in future. Compendium of norms for hospitals and medical institutions, GOI, emphasized on separate accident and emergency services department in medical institutions. Triage should enable categorization of immediate, urgent, non-urgent and dead patients. The mortuary should provide facility for keeping dead bodies along with proper illumination and hand washing. NABH has published certification standards for Hospitals and Emergency Department of Hospitals to meet the needs of consumers. Focus of the standards was on unique ID (Identity Document) number; undertaking an initial

assessment; special needs identification in elderly; provision of emergency services in accordance with written guidance applicable laws and regulations; minimum basic resuscitation preparedness (trained personnel, equipment, drugs and consumables); triage guided initial appropriate care; reassessment in case of change in status; appropriate transfer (in and out) of referral patients; ambulance services for ensuring safe transportation with appropriate care.

Hospitals should also enable preparedness for code red for fire; code black for bomb blast; code purpose for the hostage taking; code white for potential or actual violent behaviour, code yellow for missing the patient, code brown for hazardous spill; code grey for infrastructure loss; code orange for external disasters, code green for evacuation and code blue for cardiac arrest/medical emergency. In certain emergencies like trauma, strok, etc. elderly should also have access to transitional care and rehabilitation in the comprehensive preparedness plan and hospitals have a role in coordinating with such units before returning back to the normal domestic or social environment.

II. Patient Cantered Preparedness: Elderly emergency patient himself/herself, his/her family member, care giver (professional or otherwise) should prepare in a combined manner and act timely in an emergency.

1. Emergency Communication Plan: All elders should prepare for an emergency by maintaining an In-Case of Emergency (ICE) contact number (trusted member to help in emergency) in their phone. Triggering an emergency to ICE member by an elderly

should enable chain communication to family and friends. Elderly should be aware and prepared to use 108 or 112 three digit unified number. When '1-0-8' ambulance is requested, elderly should be prepared to list Number of the mobile phone, Name, Nature of emergency, Name of the locality and Nearby Landmark (5N principle). It is not out of place to use '14567' elder helpline for all supportive services during the day time, other than emergency help.

2. Spouse/Family Supported Preparedness: In families with an elderly person, a document of existing medical conditions, list of drugs under usage, chief complaint and its start time, list of non-prescribed drugs if being used, contact details of the primary physician, pre-arrival intimation to the destination hospital, ID card, insurance and cash should be part of the preparedness.

3. Care Giver's Emergency Management Plan: Care giver should reassure the elderly till emergency medical help arrives, first aid should be initiated without further delay, identification of warning symptoms and the time of onset, requesting help of others as part of the emergency management plan.

4. Old Age Homes: All old age homes should have a nurse/geriatric aide to the extent possible; early recognition-early triggering-early transportation-early access to emergency life support care should be in the emergency preparedness plan. Access to ambulance services should also be listed in the preparedness in old age homes.

5. First Aider Training: Elderly persons who are having acceptable ADL score, should be

trained in first aid. First aid skills can be useful to oneself or during distress situations.

6. Medical Equipment Maintenance: if an elderly is using a medical equipment like blood pressure apparatus, glucometer, nebulizer, inhaler, CPAP, etc. maintenance of those equipment is essential. This approach not only enables home monitoring and home based management, but should be precisely documented in the preparedness plan.

III. Disasters and Emergency Preparedness of Elderly: During disasters (natural or man-made) elderly become high-risk and vulnerable to severe negative impact. Hence, building an emergency kit, forming a support network, creating an emergency plan and making sure that the treatment benefits are

media updates in particular local radio, electronic and social media including family WhatsApp group; home safety including shut down of electricity if warranted; exit plan if the home or campus is large; checking for injuries.

Framework: A framework for emergency preparedness in elderly can hence be proposed with elders themselves, spouse/family, Healthcare providers and Hospitals, Government and NGOs as key stakeholders. 3 P (Professional-Patient and Public Health) model is the preferred nomenclature for the proposed model. Diagrammatically 3 P framework of emergency preparedness in elderly is given below:

Conclusions and way forward: Keeping the list of emergency contacts, staying calm,

PROFESSIONAL
- DOCTORS HOSPITAL
- STG
- DANGER SIGNS
- PARTNERSHIP
- PATIENT EDUCATION
- TELEMEDICINE
- INFRASTRUCTURE
- REFERRAL SYSTEM
- LIFE SUPPORT SKILLS

PATIENT
- ELDERLY VICTIMS
- CARE GIVER
- FAMILY
- CALL AMBULANCE
- FIRST AID
- MEDICAL EQUIPMENT MAINTENANCE

PUBLIC HEALTH
- OLD AGE HOMES
- COMMUNITY LEVEL DATA BASE
- GOOD SAMARITAN
- WELLNESS CLINICS
- DISASTER

accessible and secure are recommended guiding principles. Focus of elderly preparedness in disasters must comprise emergency assembling point; prioritizing safety over possessions; following official

safeguarding government sponsored or private medical insurance, summary of medicines and medical conditions, ensure police verification of the hired caregiver, creating a legally valid will, advanced

directives (example Do Not Resuscitate-DNR), ambulance and hospital support, care giver's support are priorities in elderly emergency preparedness plan.

Elderly should seek help even in doubt of a medical emergency, it is better to prepare for the worst-case scenario, panic adds fuel to the fire hence being calm is the best way, getting trained as first aider, remembering reassurance is a great medicine and being Good Samaritan are few of the tips in an emergency for elderly.

Way forward all elders should have Electronic Health Records (EHR), a structured emergency preparedness plan with the involvement of individual elderly person- his/her family and healthcare provider and social support groups, access to telemedicine-point of contact care (POCC), ambulance should reach in less than ten minutes with prehospital care and pre-arrival intimation to the destination hospital, all old age homes should be mapped to secondary and tertiary care health institutions, BLS skills should be accessible in an ubiquitous manner, hospitals should have designated geriatric ED beds and IP beds, public health systems should be geared up to meet the special needs of elderly in maritime and disasters. Finally, every district in India should have standardized special health and comprehensive support indicators reflecting the health and social status of elderly across the country. Such indicators should be monitored and processes should be set in place to keep the agreed elderly SLA high and desirable. Earlier infant mortality rate was considered as a sensitive indicator of healthcare systems. In future equal emphasis should be given to the elderly morbidity and mortality indicators. Emergency in elderly thus requires well-thought over preparedness plan to enable a society for all ages.

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SAFE AMBULANCE AND ADEQUATELY TRAINED HEALTHCARE INDIVIDUAL (SAATHI) TRAINING PROGRAM

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SAATHI: Safe Ambulance and Adequately Trained Healthcare Individual, who not only provides prehospital care but ensure safety of ambulance and road users by a specialized induction training.

Introduction: Emergency Medical Service (EMS) is a branch of emergency services dedicated to providing out-of-hospital acute medical care and/or transport to definitive care, to patients with illnesses and injuries which the patient or the medical practitioner, believes constitutes a medical emergency.[1] The goal of EMS is to either provide treatment to those in need of urgent medical care, with the goal of satisfactorily treating or arranging for timely removal of the patient to the next point of definitive care. This is most likely a casualty at a hospital or another place where physicians are available. The term EMS evolved to reflect a change from a simple transportation system (ambulance service) to a system in which actual medical care occurred in addition to transportation. In some developing regions, the term may be used inaccurately, since the service in question does not provide treatment to the patients, but only the provision of transport to the point of care. [2]

EMS Context: Globally each year more than 100 million people worldwide sustain injuries and more than five million people die from violence and injury, and that 90% of the global burden of violence and injury mortality occurs in low and middle-income countries (LMIC). The World Health Organization (WHO) also recognizes that improved organization and planning for provision of trauma and emergency care is an essential part of integrated health-care delivery that it plays an important role in preparedness for and response to mass-casualty incidents. EMS organization and planning lower mortality, reduce disability, and prevent other adverse health outcomes arising from the burden of everyday injuries. WHO in 2019, in its World Health Assembly para 9 of 72nd resolution has prioritized training for frontline workers and certification pathways

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for prehospital providers. Well-organized emergency care is a key mechanism for achieving a range of Sustainable Development Goal targets, including those on universal health coverage, road safety, maternal and child health, non-communicable diseases, infectious diseases, disasters and violence.[3] 2021, AIIMS (All India Institute of Medical Sciences) report on emergency and injury care submitted to NITI (National Institution for Transforming India) Aayog highlighted the need to strengthen EMS capacities in India and recommended pre-arrival information to the receiving hospital.[4]

EMS Best Practices, USA, UK: Ambulance Crew in USA, National Highway Traffic Safety Administration (NHTSA), an organization which sets standards of EMS, has identified that every ambulance should have a crew (more than one trained personnel with prehospital care skills and emergency vehicle driving) since beginning 1972. Even in the recent report of 2019, specially emphasis was made on the need for Emergency Vehicle Operators Course (EVOC) as per Standard Curriculum. London Ambulance Services, under National Health Services (NHS), UK, in its entry requirements and training for Paramedics have clearly mentioned good level physical fitness and driving skills - "full manual driving license."[5] One standard that does appear ubiquitous is that it's assumed a minimum of two crew members are necessary to staff the EMS unit that transports a patient to definitive care. This is the case regardless of the level of EMS

provided or the individual crew members' individual scopes of practice; it's based on the simple logic that during transport to a hospital, one member would need to operate the vehicle, while the other needs to attend the patient providing ongoing care.[6]

Goal: The goal of this SAATHI program is to provide basic training on most common emergencies and safe ambulance practices in order to perform stipulated functions in 108 ambulances. This training enables participants to develop capabilities (knowledge/skills) to shift emergency patient from home to hospital, hospital to hospital (inter facility transfer) in safe and effective manner by stabilizing them by providing prehospital care as per GVK Emergency Management and Research Institute (GVK EMRI) policies and protocols. Initiate life support skills in case of emergency and facilitate next level of emergency care.[7]

Methodology: SAATHI training program was conducted by National Emergency Medicine Learning Centre (EMLC) at GVK EMRI head office at Hyderabad. Training participants are all from the state of Rajasthan in India. Education qualification with three mixed groups mostly GNM, B.Sc. and M.Sc. Nursing. Age of the participants was between 22 and 40 years. Training methods adopted as follow: Didactic lectures; Audio-visual presentation; Power point presentations; Group activities; In-class exercises; Demonstrations and simulation; Hands on practice; Case studies at simulation lab; Driving practice on simulators; Ambulance

driving practice; Ambulance side teaching; Guided hospital and ambulance phase and Pre, weekly, post training and driving assessments of Pilot phase; simulation driving; during practice assessment. Major contents of the training program include Medical, Non-Medical, Fleet, Operations, Information Technology (IT). SAATHI foundation training program has both Emergency Medical Technician (EMT) Basic Foundation and Emergency Vehicle Driver/Pilot Foundation Training inputs for 108 project in Rajasthan.

Results: Total number of participants in the first SAATHI training phase were 940 who were divided into nine different batches between October and December 2021. Each batch underwent 28 days residential training program which includes both theory, practical and clinical rotations by following all COVID pandemic guidelines. Total hours of training for each batch is 330 hours covering both EMT and Pilot curriculum. Every SAATHI participant has provided with training kit which consists of EMT Foundation kit (five individual manuals), Pilot (Driver) Foundation kit (six individual manuals) and Drug hand book which was designed by National EMLC for this program. At the end of the training program, conducted both theory and skill assessments. Participants who did not perform well in the theory and skills were given the opportunity of remediation which was utilized by the participants and finally 940 participants have completed the training successfully. Individual feedback on the training program was collected batch wise by the coordinators and received the response as excellent (98 per cent) from the trainees. All participants were handed over with a training completion certificate and a transcript of the course by National EMLC.

Discussion: SAATHI program would be envisioned as a critical program that plays a significant role in influencing the patient outcomes and system viability in following factors like treatment time, lesser error rates in patient care, proficiency in hands on skills, creating a buddy system to avoid burnout, reduced transport time and operations sustainability.

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BRIDGING THE GAP - DEVELOPING A SUPERVISOR CADRE IN PREHOSPITAL CARE TO IMPROVE CARE AND OPERATIONS

G. Madhusudhan Rao*, Srinivas Rao Swarna, G.V. Ramana Rao

Introduction: An organization is required to clearly identify those individuals who are responsible for developing, managing, and implementing the different components of organizational goals to achieve organization mission. A great deal of effort is managed by the organization's supervisors or managers, who has overall responsibility for the system and direct reporting authority to the organization's senior management.[1] The Emergency Medical Services (EMS) integration team that helps to ensure the smooth and efficient running of the system; various teams charged with implementing the programs developed to achieve the organization's goals; and an audit team that periodically checks against specific criteria to ensure it is operating as intended. Clinical supervision is a professional support mechanism that benefits patients, healthcare professionals and healthcare organizations.[2] Clinical supervision of health professionals is associated with effectiveness of care. The review found significant improvement in the process of care that may improve compliance with processes that are associated with enhanced patient health outcomes.[3] While evidence is growing on the impact of clinical supervision on patient and healthcare professional outcomes, the evidence base for the impact of clinical supervision on organizational outcomes remains weak. Supervisors play an essential role in implementation by diffusing and synthesizing information, selling implementation, and translating top management's project plans to frontline workers. Theory and emerging evidence suggest that through these roles, supervisors shape implementation climate (i.e.), the degree to which innovations are expected, supported, and rewarded.[4] However, it is unclear exactly how supervisors carry out each of these roles in ways that contribute to implementation climate, this represents a gap in the understanding of the causal mechanisms that link supervisor's behavior with implementation climate. This study examined how supervisors' performance of each of these roles influences three core implementation climate domains

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(expectations, supports, and rewards).[5] Management in health care is a complex and variegated activity that does not map onto a clear, unitary and distinct (Standard Operating Procedure SOP). Health managers are the authorities responsible for overseeing the operations and day-to-day delivery of services, including processes of planning and budgeting, aligning resources, managing implementation and monitoring results.[6] Improving knowledge and learning among health-care managers involves taking account not just of the distinctiveness of managerial groups, but also of a number of other features.[7] To implement organization mission of saving lives a new role called Emergency Management Executive (EME) was perceived. To develop this perceived new role in GVK Emergency Management and Research Institute (GVK EMRI) organization with the help of all the departments a novel training program was designed to facilitate the trainee to have hands on experience and knowledge about all the deliverables and service level agreements with the stake holders. GVK EMRI envisions to provide integrate emergency services and save one million lives annually. Ambulances need to be available round the clock. State level Emergency Response Center (ERC) need to be prepared to process distress calls 24x7. Hence, ambulance staff and ERC associates manning the work place and ensuring up and running ambulances and 108 systems are core tenets. GVK EMRI path to realize its vision is based on the four pillars of technology, innovation, leadership and training /research.

The vital link in these complex emergency response services is the role of first level supervisor cadre. EME is the designation bestowed for the supervisory cadre in GVK EMRI. They act as mediators between the staff members and other parts of management. Contributions of EME ensure operations of GVK EMRI productive. GVK EMRI wish to deliver international standard services and takes pride in execution excellence as an organizational differentiator. Therefore, developing cadre of high quality EME's through a structured foundation EME training course is a priority for GVK EMRI to expect best-in- the class performance.[8]

Aim: EME foundation training program aims to develop a cadre of Emergency Management Executive for providing 'effective and supportive supervision' aligned with the "Execution Excellence Standards" of GVK EMRI projects. Execution excellence to enable "right to safety" and thereby saving lives is the basic premise of GVK EMRI. Effective and supportive supervision when aligned with vision and mission of organization will facilitate realization of the goals.

Methodology: EME training program was conducted at GVK EMRI head office at Hyderabad. The duration of the training program was 44 days. Entire training program was conducted on adult training principles. The major training methods along with duration were as follows Lecture discussions, Individual and group exercises, Mock and simulation based exercises (3 days), Role

plays, On-the-job training, Guided visits to hospitals; Ambulance demonstration; Buddy up as ERO, EMTs , Pilots (3 days), Guided practice in services and repair, and maintenance in ambulance workshops by fleet (6 days), Meeting the senior leadership interactive sessions by special guests who are excel in their field of work, Behavior and communication skills (2 days) and Assessments on skill and knowledge components (2 days), Pre and post-test (1 day). Participants are encouraged learning through individual and group efforts. EME Foundation training program is expected to impart essential knowledge, skills and develop right attitude amongst the participants. Hands-on practice and observational visits remain as critical pedagogical approaches.

Contents of EME Training Program: The topics covered in the EME training course as follows, GVK EMRI-Organizational vision, mission and current projects, Organizational structure, HR processes, Job description of EME, Ambulance-medical equipment, Operations of emergency services-ERC, Operations of ambulance-Fleet management, Information Management System, Ambulance visit and ambulance audit, Supervisory visit of an ambulance, Operations support and Operations Excellence, District Performance Indicators, Rostering, Personnel management, Soft skills, First responder training, Essentials of financial management, Ambulance up keep, Monitoring of staff, Relationship management, Conducting meetings, Team

building, and Special situations- Crisis management. EME Foundation training manual is developed with focus on project implementation and performance improvements. Field operations, monitoring and actions to improve form the essence of the manual. Important information on the organization principles, department wise functions, HR rules and leadership concepts also find place in this manual, to create right perspectives for every EME to align with the culture of GVK EMRI. During the development of the training and manual, all the departments were involved, and their inputs were included. At the end of the training, all the participants are expected to have the knowledge on responsibilities of EME. They are able to describe the tasks, duties and prepare duty roster of EMT and Pilot. They are able to explain the key operations parameters, their impact and actions required for improvement. Able to motivate the ambulance staff in improving performance, and ensuring smooth uninterrupted and efficient operations. They are able to develop a skill in periodic report and communication to the reporting manager.[9]

Results: EME foundation training program participants age was between 23 and 30 years. They are all graduates of Mechanical and Automobile Engineering. Participants were trained in batches. Assessment of the participants was through pre-test and post-test to measure the learnings from the batches. However, individual participants were assessed through weekly assessment in

knowledge and skill components. Final assessment was carried out through standardized check lists in terms of class room participation, group work, hand on sessions, field visits based performance. Participants whose learning when assessed found below the expectations were subjected to remediation. Those who have completed the training were issued course completion certification along with a transcript describing the number of hours of theory, practical, skills set. With the above mission and designed training program, GVK EMRI has conducted nine batches of EME training programs. A total number of 255 participants were trained and posted in different parts of GVK EMRI operating states.

Discussion: Emergency Medical Services are relatively new to our country, developing a first level managerial workforce which will fit into the mission of saving lives is a difficult task. The nuances of running prehospital care should be understood by the supervisory cadre of the organization, then only the set goals of organization can be achieved. As these trainees are from the mechanical engineering background, any mechanical problem with the ambulance will be immediately identified and rectified. This will result in less off-road instances. During the training they were exposed to various aspects of vehicle maintenance. This exposure will enable them to identify the exact mechanical problem of an ambulance and its appropriate vendor and cost of repair. This will result in lesser expenses towards the maintenance and repair of the vehicle. As these trainees

are oriented towards patient care part, they will understand the care given by the Emergency Medical Technician (EMT) is whether appropriate or not and can suggest any changes. This will result in better patient care and stakeholder satisfaction. Documentation is crucial and very important, as various stakeholders are involved with prehospital care. These trainees are well trained in documentation procedures so that they can monitor the documentation by the EMT and Pilot (Driver). By good supervision and good documentation organization will be in good books of stakeholders. During training they were posted in call center, so that they will understand how the call is processed. These hands-on experiences will reduce the case handling time and will improve the documentation process. This will also result in lesser instances of double dispatch and they can find out the lacunae in the dispatch. Overall the development of the new supervisory cadre with appropriate training will result in better patient care and less operational hiccups. This will enhance the organization reputation and overall function.

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A STUDY ON THE RESPONSE TIME OF NON-TRAUMATIC OUT-OF-HOSPITAL CARDIAC ARREST (OHCA) CASES REPORTED TO 108 SERVICES IN THE STATE OF TELANGANA

Aruna Gimkala*, G.V. Ramana Rao

Introduction: Ambulance Response Time (ART) is typically reported as the time interval from time of distress call to arrival of the ambulance on-scene. For time sensitive services like Emergency Medical Services (EMS), response time is often the bench marked for service level agreement. GVK Emergency Management and Research Institute (GVK EMRI) provide emergency response service to the state of Telangana through 108 a toll free number in Public Private Partnership (PPP) model which was started in India way back in 2005 with 426 - 108 ambulances[1] covering (38.51 Million) population of Telangana state.[2] An Out-of-Hospital Cardiac Arrest (OHCA) is defined as cessation of cardiac mechanical activity that occurs outside of the hospital setting and is confirmed by the absence of signs of circulation.[3] The global incidence of OHCA is 62/100,000. Estimated survival to hospital discharge is 8% (8% of 62/100.000 = 5/100.000) and not much has changed for many years. When sudden cardiac arrest (SCA) happens, the person collapses, becomes unresponsive, and is not breathing normally. Survival depends on the quick actions of people nearby to activate EMS and to start Cardio-Pulmonary Resuscitation (CPR), and if available, use an Automated External Defibrillator (AED) as soon as possible.[4] Cardio-Vascular Diseases (CVDs) are the leading cause of death globally. An estimated 17.9 million people died from CVDs in 2019, representing 32% of all global deaths. Of these deaths, 85% were due to heart attack and stroke. Over 75% of CVD deaths take place in low-and middle-income countries (LMIC) where raised blood pressure happens to be amongst the most important risk factors for CVDs. India reported 63% of total deaths due to non-communicable diseases (NCDs), of which 27% were attributed to CVDs. CVDs also account for 45% of deaths in the 40 to 69 years age group.[5]

Objectives: To describe the response time, characteristics and outcomes of non-traumatic OHCA cases reported to 108 services of GVK EMRI in the state of Telangana in India.

Methods and Materials: A retrospective study method was conducted to analyze the data on OHCA cases reported to 108 services of GVK EMRI in the state of Telangana. Prehospital Care Record (PCR) was the primary source of the data and only limitation of the study. Because of limited information in the PCRs, variables such as patient age, gender, status at the scene, attempt of CPR at the scene, return of spontaneous circulation (ROSC) at scene/enroute, destination hospital type and outcomes of admitted patients (in number and per cent) and response time (in average) were presented in the results section.

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Results: A total number of (N=2,985) OHCA cases related PCR's were analysed during the study period. Among these, 95 per cent of non-trauma (n=2,835) were included and 5 per cent of trauma (n=150) were excluded from the study sample. The distribution of OHCA sample was shown in (Figure.1).

Figure 1: OHCA Sample (N=2985)
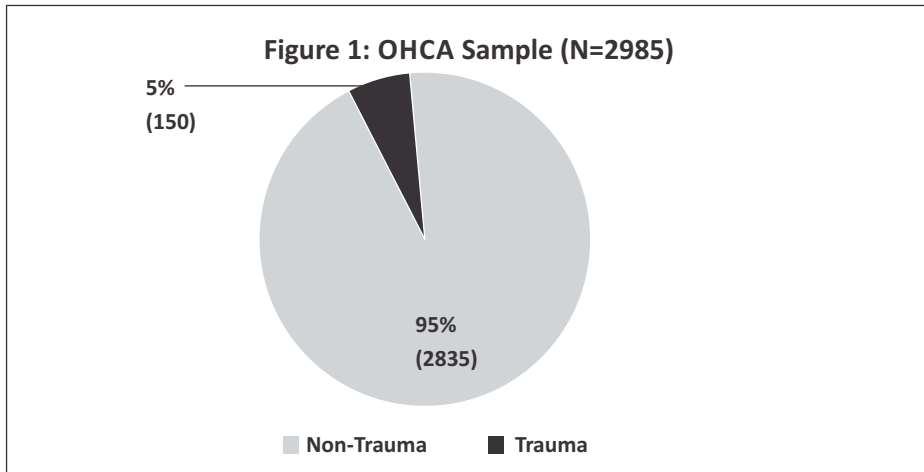
Out of total (n=2,835) non-trauma OHCA cases, patient status was 58 per cent of presumed dead at the scene (n=1,637) and remaining 42 per cent of the patients were transported and admitted to the hospital (n=1,198) through 108 ambulances. The distribution of non-trauma OHCA sample-patient status was shown in (Figure.2).

Figure 2: Non-Traumatic OCHA Sample (N=2835)
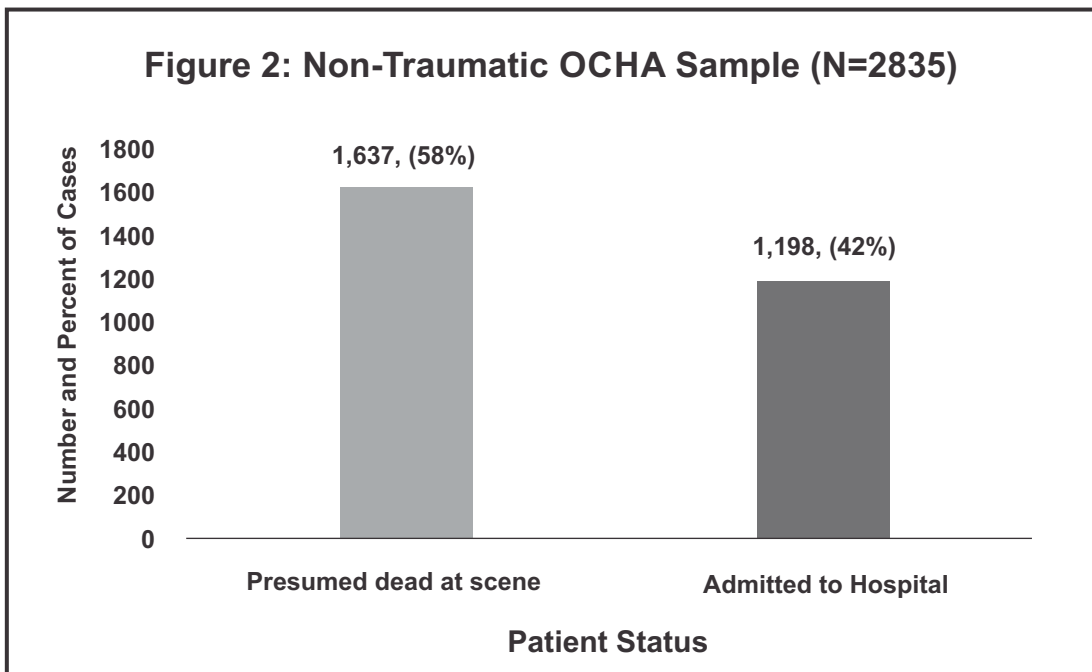
Among the non-trauma cases, majority (36 per cent) of the OHCA incidences occurred in elderly age of above 60 years followed by age between 51 to 60 years with (21 per cent). Gender wise distribution found that, (67 per cent) of males were more prone to OHCA incidents than females (33 per cent). In the entire OHCA study sample, EMT of 108 services was the first personnel to initiate CPR at the scene. The demographical distribution of non-trauma OHCA sample was shown in (Table.1).

Table.1: Non-Traumatic OHCA Sample-Demographics						
Variable	Presumed dead at scene		Admitted to Hospital		Total Sample	
Age Group	Count (n)	Per cent (%)	Count (n)	Per cent (%)	Count (n)	Per cent (%)
< 1 year	24	1%	34	3%	58	2%
1-10 years	18	1%	24	2%	42	1%
11-20 years	46	3%	36	3%	82	3%
21-30 years	85	5%	110	9%	195	7%
31-40 years	149	9%	138	12%	287	10%
41-50 years	311	19%	227	19%	538	19%
51-60 years	351	21%	251	21%	602	21%
> 60 years	653	40%	378	32%	1031	36%
Gender						
Female	524	32%	400	33%	924	33%
Male	1113	68%	798	67%	1911	67%
Total	**1637**	**100%**	**1198**	**100%**	**2835**	**100%**

Out of admitted cases, majority of the OHCA patients were transported and admitted to government (n=831) followed by private (n=366) and trust (n=1) type of hospitals. Outcomes of the transported patients to the hospital were found as dead in emergency department (ED) in (n=1,198) cases and return of spontaneous circulation (ROSC) in (n=9) at the scene/en-route with admitted status. The distribution of admitting to the hospital non-traumatic OHCA sample was shown in the (Table.2).

Table.2: Admitted to Hospital Sample (N=1198)		
Hospital Type	Count (n)	Percent (%)
Government	831	69.4%
Private	366	30.6%
Trust	1	0.1%
Outcome		
Dead at (ED)	1189	99%
Admitted (ROSC)	9	1%
Total	**1198**	**100%**

Ambulance Response Time: The average response time for the entire study sample of non-trauma OHCA cases in the state of Telangana was 16 minutes 27 seconds.

Discussion: Literature review of similar research studies was conducted for this study, and four article observations were mentioned below: (i) In a literature review conducted by National Institute of Technology in Chhattisgarh, defined Ambulance Response Time (ART) as the time between the call for the ambulance and ambulance reached at the scene, in emergency situations and concluded that ART is the Key Performance Indicator (KPI) to evaluate performance of Emergency Medical Services (EMS) because it is directly related to people's life.[6] (ii) In a study conducted by (Zhu et al.) from China, assessed the relationship between emergency response time and prognosis of the patients without of-hospital cardiac arrest and the weighted mean differences (WMD) for the response time were calculated for those survivals to discharge and death in hospital and observed that the WMD of the response time between survivals to discharge group and death in hospital group was 1.976 (95% confidence interval [CI]=1.161-2.792; p<0.001) and concluded that the emergency response time is an important risk factor for prognosis after OHCA in adults.[7] (iii) In a study titled Global resuscitation alliance utstein recommen dations for developing emergency care systems to improve cardiac arrest survival, stated that survival depends on the quick actions of people nearby to activate EMS and to start CPR as soon as possible.[8] (iv) In a study conducted by (Kapoor *et al*.) from India, emphasized the importance of high-quality chest compression as an important

component by the layperson CPR. A huge response has been observed for creating awareness and teaching compression-only life support (COLS) for CPR by the layperson outside the hospital in India.[9]

Conclusion: This study highlighted the findings regarding OHCA cases reported to 108 services in the state of Telangana. OHCA incidences occurred mostly in elderly age of above 60 years. The ambulance response time of 16 minutes and 27 seconds was recorded for OHCA cases. Survival outcome was very low in OHCA patients. EMT's consistently assessed and provided CPR to patients following the protocols of GVK EMRI.

Way forward: Quick response after the distress call enables assessment and initiation of prehospital care in EMS. Monitoring response time and decreasing response time should remain as the single most operational priority of 108 EMS services. Future efforts should address factors related to emergency response services and bystander CPR to improve patient outcomes.

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A CASE STUDY ON ATRIAL FIBRILLATION WITH RIGHT BUNDLE BRANCH BLOCK REPORTED TO CARDIAC CARE AMBULANCES (CCA) IN THE STATE OF GOA

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Introduction: Atrial Fibrillation (AF) is the most common sustained cardiac tachyarrhythmia encountered by clinicians worldwide. An estimated 2.7 to 6.1 million people in the United States have atrial fibrillation with projections to reach nearly 12.1 million in 2030. The prevalence of AF increases with age, afflicting about 10% of the population by 80 years of age. AF is a common cardiac arrhythmia which can be detrimental if not controlled. It involves rapid irregular firing from multiple pacemaker cells of the atria as well as irregular and often rapid ventricular responses. The heart muscle cannot produce strong, efficient contractions and instead is a quivering mass of muscle. AF can result from cardiac and non-cardiac cause. Patients can experience signs/symptoms like dizziness, fatigue, chest discomfort, palpitations and shortness of breath.

Case Presentation: On 28th of July 2021 at around 07:35 AM at Kavele, Ponda, 108 Emergency Response Center (ERC) received a call from a Sub District Hospital Doctor requesting for a Cardiac Care Ambulance (CCA) urgently to shift a critical patient to Goa Medical College and Hospital. On enquiring about the case details, Emergency Response Officer (ERO) immediately assigned the case to Ponda, CCA which was closest to the hospital. Pre-arrival preparation was done and personal protective precautions were taken by the Paramedic, Doctor and Pilot in the ambulance. A 66 years old male patient resident of Kavele, Ponda, presented in the ambulance complaining of palpitation and dyspnea since 3:00 AM. The patient had a medical history of ischemic heart disease and hypertension.

Initial Assessment: Paramedic carried out the patient assessment and found that, patient was conscious with a Glasgow Coma Scale (GCS) of 15/15; speaking in short sentences; had difficulty in breathing; skin was warm but sweaty; the heart rate was irregular on radial palpation; and chest auscultation revealed equal air entry with normal breath sounds. The patient complained of intermittent chest palpitations. The initial vital signs were Heart Rate (HR): 110 beats per minute; Respiratory Rate (RR): 16 breaths per minute; Blood Pressure (BP): 100/90 mm of Hg; Oxygen Saturation (% SpO2): 89% on room air and Temperature: Afebrile.

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Interventions: Oxygen administration was provided through nonrebreather mask at 15 liters per minute. After initial assessment the patient suddenly collapsed and went into cardiac arrest. Immediately cardiopulmonary resuscitation (CPR) was started by the paramedic. The patient was intubated with 7.5 endotracheal tube and mechanically ventilated by the doctor. After 5 cycles of CPR, the patient had the carotid pulse. A twelve lead electrocardiogram (ECG) was obtained to find out any cardiac disturbances. On examination of the ECG by the doctor it was evident that the patient was in rapid atrial fibrillation with a fluctuating heart rate of between 100-130 beats per minute. ECG characteristics included a rapid ventricular and atrial rate, absent P waves and an irregular ventricular rhythm. Intravenous (IV) cannulation was placed by the paramedic in the right anticubital fossa by 18G size cannula and the patient was started on injection Noradrenaline and Dopamine infusion on the advice of the doctor.

Ongoing Assessment: Enroute patient was conscious but disoriented, responded to painful stimuli, vitals were HR: 125 beats/min; RR:12 breaths/min; BP:100/70 mm of Hg; SpO2: 95%; skin was pink, warm and normal and capillary refill was more than 2 seconds and pupils were reacting sluggishly. Vital signs and interventions were rechecked by the paramedic and found that patient oxygen saturation has improved. The patient was transported and shifted to Goa Medical College and Hospital with the mechanical ventilation and vasopressor support. Vital signs of the patient while handing over at the hospital were HR: 95 beats/min, RR: 12 breaths/min, BP: 100/70 mm of Hg, SpO2:

95%. On follow up found that, patient was shifted to tertiary care hospital and later admitted in Cardiac ICU.

Discussion: Case fatality due to CVD in low-income countries, including India, appears to be much higher than in middle and high-income countries. In India, for example, the mean age at which people get the first myocardial infarction is 53 years, which is about 10 years earlier than their counterparts in developed countries. In the next age group (60+ years), a majority was diagnosed with CVD in states like Goa (60 per cent). About a third (32 per cent) of the senior citizens have been diagnosed with hypertension, (5.2 per cent) were diagnosed with chronic heart disease and (2.7 per cent) with stroke. In rural areas, prevalence is higher in states like Goa (41 per cent). The clinical manifestations of atrial fibrillation are variable. Some patients with AF are genuinely asymptomatic, even at rapid heart rates for unclear reasons. More often, however, patients report nonspecific symptoms such as fatigue, dyspnea, dizziness, and diaphoresis. Palpitations are a common feature. Occasionally, patients present with extreme manifestations of hemodynamic compromise, such as chest pain, pulmonary edema, or syncope. AF is tough to diagnose since it is often asymptomatic and clinicians need many tests to confirm diagnosis. ECG findings in AF include the absence of P waves and the presence of low-amplitude, high-frequency atrial fibrillary waves (F waves). A 12-lead ECG is best to establish the diagnosis of atrial fibrillation.

Conclusion: Atrial Fibrillation can lead to life threatening problems such as stroke and heart failure. Based on the case presentation, highlighted step-wise approach of the patient assessment, timely interventions like oxygen administration, performing CPR, intubation, IV access, administration of medications and ECG recognition provided to the patient by the paramedic and the doctor which resulted in improved patient condition.

Way forward: The surveillance of atrial fibrillation in India is important in order to identify opportunities for intervention. Continued data collection on CVDs can improve the understanding of AF in India. The government should device necessary approaches that can fill the gap between establishing a robust surveillance system, improving efficiency of care and health system preparedness and attempts in direction to preserve the traditional lifestyle. Cardiac Care Ambulance (CCA) initiative in Goa under STEMI project is yielding desired results. This case is an anecdodal experience in the direction of scaling up CCA.

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