

## Advanced Life Support Preparatory Training Program for Basic Emergency Management Technicians



### Management

**KEYWORDS:** Advance Life Support, Training Programs, Pre-hospital Care, Emergency Medical Services.

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### ABSTRACT

28% emergencies would require Advance Life Support Ambulances. The 2 year APGDEC program would take a longer duration to train full fledged Advanced Emergency Medical Technicians (EMT-A) and specially trained to work with advance life saving equipments in the pre hospital scenario. But the requirement is immediate. So, in order to fill the gap, GVK EMRI in 2013 has taken up this initiative to train the experienced Basic EMTs in advanced life support skills and equipment. The prerequisite for the program is an experience for the EMT for, at least one year in 108 emergency ambulances. For ALS Services, appropriate medical equipment, processes/protocols, trained personnel, pharmacological support are also critical. Assessment, monitoring, management of airway, breathing and circulation in adult and pediatric age groups in both medical and trauma related emergencies are focused in the two week training to enable our experienced EMTs to serve as Functional ALS Ambulance EMTs in GVKEMRI.

**Introduction:** In India, every four minutes, a person dies due to road crashes. While seven to ten percent are critically injured, twenty to thirty percent are seriously hurt; of these about thirty percent are disabled for life, either partially or totally. Forty four percent of all road deaths occur in the Asia Pacific region, despite a sixteen percent share of all global vehicles. Pre hospital care is an essential part of the treatment process in many acute diseases and trauma.

GVK EMRI (Emergency Management and Research Institute) Ambulance Service 108 was incepted in 2005 and has developed to include both pre hospital transport services in most regions of the country and Emergency Medical Technician training. Education of pre hospital emergency care personnel is an essential element in the implementation and growth of the emergency care system<sup>1</sup>.

Advanced Life Support (ALS) was defined as a pre hospital emergency medical service using invasive life-saving procedures including all procedures of Basic life support (BLS) but including advanced airway management, intravenous infusions and medications, synchronized cardio version, cardiac monitoring, electrocardiogram interpretation and other procedures conventionally used at the hospital level. In pre hospital setting, the advanced EMT is an allied health professional, whose primary focus is to provide advanced emergency medical care for critical and emergent patients who access the emergency medical system. This individual possesses the complex knowledge and skills necessary to provide patient care and transportation<sup>3</sup>. The advanced EMT is a link from the scene into the health care system. Stanford University School of Medicine, USA and GVK Emergency Management and Research Institute (GVK EMRI) jointly designed and developed India's first collaborative two-year advanced EMT program, to be conduct at GVK EMRI campus in Hyderabad. This program is now affiliated to Osmania University and named as Advanced Post Graduate Diploma in Emergency Care (APGDEC).

Mission of GVK EMRI is to give to safety to every person in country by providing 108 emergency response services at par with international standard through leadership, technology, innovation, research and training. GVK EMRI with its core competency of emergency response services is firmly rooted in the mission of saving lives with a staff of over 46,000 personnel.

With nearly 8,000 emergency life support ambulances being taken by GVK EMRI and to meet the growing request of advanced life support

skills in ambulance based pre hospital care, an immediate two-week functional ALS-EMT training course is initiated at GVK EMRI in 2013.

#### Advanced EMT (EMT-A): Selection Process:

The Selection Committee reviews the performance of senior Basic Emergency Medical Technicians (EMT-B). The EMT-B course generally includes non-invasive and lower risk skills such as bleeding control, positive pressure ventilation with a bag valve mask, use of oropharyngeal or nasopharyngeal airways, supplemental oxygen administration, and splinting including spinal immobilization. Cardio pulmonary resuscitation and automatic external defibrillator use is also part of the EMT-B scope of practice. Additional skills possibly allowed, depending on jurisdiction and additional training, include administration of medications only after receiving online medical direction<sup>2</sup>. The candidates are recommended for selection and promotion on the basis of their service period in the organization and then reviewed for performance, competency and suitability and then their recommendations are sent to the 108 Operations for final approval and then to Head Office for further relevant training and development.

#### Selection Committee Team:

- Department of Human Resources (HR)
- Department of Emergency Medicine Learning Center (EMLC)
- Department of 108 Operations

#### Criteria for Selection:

- Experience in the organization
- Field performance and Technical competency
- Service Record
- Professional demeanor

#### Experience in the Organization:

HR department recommends the candidates from the field on the basis of their service period in the organization and sends the list of suitable candidates to the training department EMLC. The minimum criterion is **1 year experience** in BLS Ambulance as an EMT.

#### Academic Profile:

EMLC team verifies the academic record and Emergency Medical Services (EMS) certification records (i.e. Foundation, Refresher and Global Certification Program (GCP) training) of the recommended candidates and forwards the list of eligible candidates to Care

department for assessment of their field performance and technical competencies. The minimum criterion is that the recommended candidates must have completed their GCP training and Refresher training programs.

#### Performance and Technical Competency:

Care-Patient Care Record (PCR) team assesses the field performance and technical competencies of the recommended candidates on the basis of PCR evaluation, documentation and Pre hospital management.

#### Service Record:

EMLC team recommends the suitable candidates to HR department to verify their service record in the organization (i.e. behavior, attitude & disciplinary actions etc.) and also take the feedback from the field supervisory staff regarding their performance in the field.

#### Professional demeanor:

Field supervisory staff gives their valuable feedback regarding the performance and presentation of the selected candidates in the field. Finally the list is forwarded to 108 Operations for approval and further needful process.

#### Course-Introduction:

A two week training program is conducted at GVK EMRI Head office (HO) located in Hyderabad. Once the State EMLC nominates the EMT-B's for the ALS training program as per the training schedule, the HO EMLC takes over the process of training. After successful completion of the training and assessment, the candidates are certified and posted in ALS Ambulances.

#### Course-Curriculum:

A two week intensive program was initially created and contained didactic, video based lectures and simulation based learning components. ALS course helps Basic EMT's to develop and to maintain the knowledge and skills they need to effectively manage critical emergencies during the transportation.

#### Course-Objectives:

At the end of two week training program, all the participants must be able to:

- Recognize the nature and seriousness of the patient's condition or extent of injuries to assess requirements for emergency medical care.
- Discuss ways to improving the management of critical emergencies which may need basic and advanced life support skills and medical equipment.

#### Course-Training Methods:

The methods applied for training program

- Didactic lectures, Video based lectures, Audio Visual Presentation
- Power point presentations, group activities (Mock drill)
- In-class exercises, Demonstrations, Simulation and Hands on practice
- Clinical Phase

#### Course-Materials:

- ALS course material
- Audio Visual aids
- Equipments / Manikins

#### Course-Components:

**Airway:** Airway anatomy, Airway compromise presentation, Pediatric and Adult comparison, Basic and Advanced airway management.

**Breathing:** Mechanics of ventilation, Pathophysiology of ventilation and Gases, Introduction to ventilators, Modes of ventilation, Indications of mechanical ventilation.

**Circulation:** Circulation anatomy, Pathophysiology of circulation, Shock management, Settings of Syringe pumps and Drug calculation.

**ECG:** What is ECG, How to use Multi-Para Monitor, Reading ECG – Introduction, Identification of Arrest rhythm and Peri-Arrest rhythm, Cardiac Arrest management.

**Trauma Emergencies:** Head and Neck, Thorax, Abdomen and Spine Injuries.

**Triage:** What is Multi Casualty Incident, Pre hospital Triage.

**Medical Emergencies:** Allergy and Anaphylaxis, Respiratory Distress, Organophosphate Poisoning and Snake Bite.

#### Course-Simulation Skills:

**Basic and Advanced Airway management skills:** (Head Tilt and Chin Lift, Jaw thrust, Oropharyngeal airway, Nasopharyngeal airway, Auscultation of the chest, Bag-Valve Mask ventilation, Airway Suctioning, Nebulisation, Oxygen Administration with oxygen delivery devices such as: Nasal canula, Simple face mask, Non-Rebreather mask Pulse Oximetry. Laryngeal mask airway and Endotracheal Intubation.

**Patient Assessment:** Medical assessment (responsive and unresponsive patient), Assess and Trauma assessment, (Significant and Insignificant Mechanism of injury patients)

**Spinal motion restriction devices:** Helmet removal/ Lifting and moving skills, Controlling Profuse Bleeding, Bandaging and Splinting.

**Monitor defibrillator:** Connect leads, interpretation of ECG, Demonstrates correct shock method.

**Syringe Pump:** Calculate ml/hr, Select correct rate, Respond to occlusion.

**Ventilator:** Identify Buttons, Ventilator settings and its connections.

**Clinical Phase:** mainly focused on observations in the critical care units of hospitals, hands on practice of advanced equipments, procedures under guidance of clinical instructor.

#### Total number of ALS ambulances and trained EMT's (Table-1)

(Table-1) GVK EMRI- State wise number of ALS ambulances and trained EMT's			
Sl.No.	State Name	Number of Ambulances	Number of EMT's
1	Karnataka	159	284
2	Gujarat	128	363
3	Assam	120	405
4	Tamil nadu	55	244
5	Madhya Pradesh	50	164
6	Himachal Pradesh	25	349
7	Goa	18	4
8	Uttarakhand	17	62
9	Meghalaya	12	22
10	Chhattisgarh	10	26
11	Andhra pradesh	0	103
12	Uttar Pradesh	0	96
Total		594	2122

#### Knowledge Levels-Learning Index:

A pretest is conducted prior to the training program to know the knowledge levels of the participants and after completing the training post test is conducted to know the knowledge and skills acquired by the students. Data analyzed for the period of three years since inception to till date (July 2013 to December 2016), total 2122 participants were trained in ALS. Results revealed that knowledge levels regarding the course were relatively low before training based on the analysis of pretest. After the training, a significant increase was observed in the post test-28% (Average (%): Pre-test: 60%; Post-test: 77%).

#### Knowledge Levels-Level of Confidence:

Likert Scaling one-dimensional scaling method<sup>1</sup> was taken in to

reference for rating the scale to evaluate the level of confidence of the participants. Based on the feedback survey it is observed that 99% were confident, 1% were not confident of their knowledge levels after completing the two week course on ALS.

### Conclusion and Future Studies

Functional training programs of brief duration were identified in developing countries such as a competency based course of sixteen weeks' duration in the case of MBBS doctors get trained in cesarean sections<sup>5</sup>. In the similar way basic EMT's are getting trained for two weeks at GVK EMRI campus to become a Functional ALS EMT. To know the impact of ALS training program detailed research study will be planned in future for further progress in the training program.

### References

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