



International EMS systems

## EMS in the Sultanate of Oman

Sultan Zayed Khalifah Al-Shaqsi\*

Department of Preventive and Social Medicine/Accident and Emergency Department, Dunedin School of Medicine/Dunedin Public Hospital, University of Otago, Dunedin, New Zealand

### ARTICLE INFO

#### Article history:

Received 31 March 2009

Accepted 8 April 2009

#### Keywords:

Sultanate of Oman

EMS

Ambulance

Royal Oman Police

Para-medicine

### ABSTRACT

The Emergency Medical Services (EMS) in Oman is a relatively new project in the country. It has been developed based on the Anglo-American system of EMS. Currently, it is run by trained Omani Advanced Emergency Medical Technicians (AEMT) under the auspices of the Royal Oman Police (ROP) Ambulance Division. The system covers most of the country and responds to medical and trauma emergencies. It is state-funded and free of charge for all people in Oman. There are plans to incorporate aero-medical services into the system, to support the land ambulance service, and there are also plans to expand its coverage to the whole country by 2012. The EMS in Oman has hard challenges ahead but there are also promising plans in place to improve the system.

© 2009 Elsevier Ireland Ltd. All rights reserved.

### 1. Introduction

The Sultanate of Oman lies in the southeastern corner of the Arabian Peninsula with a land area of about 212,457 km<sup>2</sup> which is about the size of the United Kingdom. Oman's land is considered to be about 82% desert and the rest mountainous. The coastline extends for about 1700 km.<sup>1</sup> The Ministry of Economy estimates that in mid-2006 the population was about 2.577 million, of which about 1.844 million are Omani citizens.<sup>2</sup> Nearly 54% of Omanis are younger than 20 years old and only 3.5% are older than 60 years. The current annual growth rate is 2.2% and the population is expected to double by 2030.<sup>3</sup> Since 1970 and the Renaissance led by His Majesty Sultan Qaboos bin Said (Sultan of Oman), Oman has undergone a very rapid transformation in all aspects of life which has changed the pattern of health in Oman.<sup>1,2</sup> These trends in urbanization increase the exposure of the population to biological and behavioural risk factors. All these features are of importance for the organisation of the emergency medical services (EMS).

### 2. EMS in Oman

The concept of EMS in Oman was first initiated in June 1985 which was followed later by the formation of the national committee of the EMS in 1986. As per Royal decree 68/91 of June 1991, a

public authority for ambulance services (PAAS) in Oman was established.

It took the program another 9 years to be re-activated under the Royal Oman Police (ROP) in 2000, after which the Joint ROP and Ministry of Health (MOH) committee for the development of a modern EMS system was formed.

In 2000 the need to start an Ambulance project was endorsed by Royal Oman Police Law No. 90/35 and the Civil Defence Law No. 91/76 which were amended by Royal Decree 99/75. As a result, an Ambulance Division Project Committee was formed in 2001.

In 2001, a group of Omani doctors and nurses of various specialities were sent abroad to the Ronald Reagan Institute of Emergency Medicine in the United States of America. The aim was to train this group in order to set and formulate an advanced emergency medical care training program under the auspices of the Royal Oman Police (Ambulance Division). This group were trained to be instructors and took the responsibility of teaching local candidates in paramedicine. Furthermore, they set applicable EMS standards that are appropriate to meet the health needs of all people in Oman.

The service was officially launched on April 6th 2004 with highly qualified Omani Advanced Emergency Medical Technicians (AEMT) trained by the Omani instructors. First, it was designed to cover the Muscat Governorate, followed later by other regions of the Sultanate. In Oman, despite the preventive measures of Road Traffic Accidents (RTA), the number of road accidents and injuries are increasing.<sup>1</sup> Thus, the scope of EMS was first directed towards dealing with trauma and injuries resulting from RTAs. Now the EMS has extended its scope of practice to respond to all trauma and medical emergencies. There are now 23 permanent ambulance units serving over 70% of the population of the country. Also, there are five temporary units during the summer months of Salalah Festival.

\* Tel.: +64 21 63 65 67.

E-mail address: [veen2004@hotmail.com](mailto:veen2004@hotmail.com).



Fig. 1. Map of Oman.

Statistics from 2008 showed that the service attended to 5501 cases, of which 4544 cases were trauma cases (83%) and the rest were medical emergencies (17%) (Fig. 1).

The ambulance vehicles in the EMS are very modern and equipped with excellent equipment and state of the art supplies. They are well equipped to deal with both trauma and medical emergencies to an advanced level of care and they are designed according to the American KKK-A-specifications and the best evidence available in designing EMS vehicles.

### 3. The role and activities of EMS in Oman

The service has a mission statement which states that it provides a quality and timely advanced pre-hospital emergency medical care to the citizens and residents of the Sultanate of Oman in the case of life threatening emergencies. In addition, it aims to stabilize victims of road traffic accidents and transfer them to health care facilities in a timely manner to optimize their survival, recovery and productivity. Moreover, it aims to reduce the mortality and morbidity of acute injuries and acute emergencies and to meet the need for urgent medical care in a period of fast urbanization which is happening in Oman now.<sup>3</sup>

Apart from the urgent medical interventions provided by EMS, it also plays a proactive preventative role by teaching the community and interested groups the principles of first aid. Furthermore, it delivers community-based activities in order to increase the awareness of the Omani society to recognise the signs and indicators of life threatening conditions and to deal with the condition appropriately until the arrival of trained AEMTs. It also plays a role in research and the teaching of medical students, specialised emergency doctors and paramedics.

### 4. Training

There is a set of pre-requisite criteria which has to be met by candidates before entering the ambulance division:

- (1) Completed general science secondary school certificate with 70% or above grade.
- (2) Physically and medically fit.
- (3) Never been convicted in any criminal record.

After passing the recruitment process the training program for AEMTs is divided into three periods:

*First period:* this lasts for 6 months and it covers basic police sciences and police training. This period is spent at the Sultan Qaboos Academy of Police Sciences.

*Second period:* this is a foundation course that lasts for 1 year and covers English language, Physiology and Anatomy and basic computer sciences.

*Third period:* this is a 1-year period of specialized training. This is divided into three semesters of 16 weeks each:

- a- 1st semester: covers trauma and patient assessment.
- b- 2nd semester: covers medical emergencies and patient assessment.
- c- 3rd semester: covers special cases and selected topics.

After each semester students are assessed by written and practical exams. In addition, they are attached to tertiary hospitals that provide them with a learning environment in order to increase their exposure to emergency cases and the skills required to deal with them. Fresh graduates are usually coupled with senior AEMTs for a period of 6–8 months before they are allocated to their designated ambulance unit.

Teaching is provided by specialized Omani instructors with EMS affiliations and licenses from respected international EMS institutes such as the American Heart Association (AHA) and the US National Association of Emergency Medical Technicians (NAEMT).

AEMTs are provided with internationally recognised courses such as Basic Life Support (BLS), Advanced Cardiac Life Support (ACLS), Basic Trauma Life Support (BTLS), Pre-Hospital Trauma Life Support (PHTLS), Pediatric Advanced Life Support (PALS) and many other emergency care courses. The training course itself is intended to enable AEMTs to have a sense of continuous self-learning.

There is also a continuous process of up-skilling AEMTs to become instructors and field supervisors. This is done in association with the Ronald Reagan Institute of Emergency Medicine in the United States of America. Currently, six paramedics are training in an advanced emergency care course in the USA to become instructors.

This training program is designed to provide a comprehensive good quality EMS education and prepare AEMTs for real life situations and field work. The program was originally adopted from the US National Highway Traffic Safety Authority (NHTSA) EMT-paramedic curriculum.

### 5. Funding

The EMS system in Oman is a national system funded totally by the Royal Oman Police. The service is provided free of charge for all users regardless of their ownership of health insurance. The system is 100% funded by the government. There is a 5 yearly plan of continuous development and improvement to the EMS system and the cost is covered fully by the government. Currently, the EMS is in its second fifth-yearly strategic plan. Studies about the cost of operating ambulance services in Oman are yet to be done. This will help in future planning and prioritization of needs.

### 6. Communications and operation strategies

Communication is a very crucial element in EMS. In Oman, there is a nationwide free-toll emergency number which is 9999. This number is connected to a central answering point which is for

all calls requiring public safety resources (such as civil defence, police and EMS). Once a call has been received the dispatcher will direct the service that is appropriate to attend the event. In the case of EMS, the central center will communicate with the ambulance dispatch center via radio and/or cell phone and give some basic information about the event and the situation such as the location, nature of the event and dispatch code. The attending ambulance will communicate back with the central center once they have arrived at the scene and evaluated the situation. If transfer is required the central center will communicate essential information to the receiving health care facility.

Overseeing this communication are offline duty medical advisors, who are physicians either in the hospital or in the ambulance division, with knowledge and training in pre-hospital care, whom the AEMTs can seek advice from when needed, as part of the online medical direction. Also, there are duty service supervisors with paramedic training and qualifications, who supervise the quality of service provided by personnel as per approved standard operating procedures and medical protocols, and they are first line if urgent medical assistance is required. They are also in regular contact with the duty service medical director regarding urgent medical advice and assistance. Currently, the central center does not provide medical advice for callers. In Muscat, AEMTs use a digital communication system called TETRA that provides a sophisticated ambulance-exclusive communication between ambulances and the central center, excluding emergency calls that do not require EMS. Out of the capital city (i.e. Muscat), ambulance vehicles use Very High Frequency (VHF) devices, which are connected to the central communication centers, and special mobile phones for communication between ambulances.

The locations of ambulance stations have been carefully selected to ensure a rapid response to emergency calls and are located in strategic points around the country, having taken into consideration the black spots of RTAs and high density areas. The aim is to have a call-to-needle time of less than 10 min in 80% of cases attended in urban areas and 20 min in rural areas.

The EMS in Oman has a fleet of very modern ambulances. Each ambulance vehicle is staffed with two personnel with AEMT training and one ambulance operator who is an ambulance driver with knowledge and special training in ambulance driving and with first aid training.

## 7. The seven core values of AEMTs in Oman

In the provision of emergency medical care, providers must place patient well-being and best interest above all else, bearing in mind personal safety. All decisions and interactions between providers and patients should be directed solely toward the patient's benefit.

The following core values should be kept in mind while interacting with the medical community, citizens, and providers:<sup>4</sup>

1. *Respect*: treating all people with the highest regard for their personal dignity regardless of gender, ethnicity, religious affiliation and all other factors.
2. *Honesty*: earning and maintaining the trust of department personnel. Basing decisions upon an objective viewpoint and treating all people while presenting a positive image for oneself and the Department.
3. *Excellence*: using skills, training, and knowledge to understand and successfully handle situations in the most effective manner possible. Continually performing to the best of one's ability.
4. *Compassion*: being aware of the distress of others, as well as being willing to assist in alleviating the distress, and the readiness to respond when needed.
5. *Accountability*: taking responsibility for all personal actions.

6. *Team work*: contributing to the efforts and advancement of others; being able to work as a part of a team to achieve the highest outcome possible.
7. *Foresight*: being able to have a vision for community needs and develop a proper plan to meet these needs utilizing the best knowledge and capabilities available.

## 8. Challenges and future plans

The EMS system in Oman is still relatively in its embryonic stage but it is growing very rapidly. There are some challenges ahead but there are also some very promising plans in place to improve the system so as to provide first class pre-hospital emergency care.

One main plan is to develop and run a medically oriented EMS exclusive dispatch center. This will enable a more effective communication within EMS and between EMS and other emergency agencies in the country. It will also enable dispatchers to provide online medical advice to callers until the arrival of specialized help. This will improve the outcome of patients receiving the service. Another possible improvement by having a new dispatch center is that it will provide a better initial triage for cases and will allow the in depth assessment of whether the case requires the dispatch of an ambulance or just online advice only. Also, the quality of the initial information collected from the caller will be more sophisticated and will provide a better initial impression for AEMTs about the case before their arrival.

The target coverage is to cover the whole country within 5 years time and to have about 55 land ambulance units by 2012 to serve the Sultanate. There is also a plan currently in process to incorporate an aero-medical ambulance into the system. The ambulance division is working closely with the Directorate General of Police Air-Wing in order to establish this service. Current staff will be trained in aero-medical paramedicine to be instructors and supervisors for the service. The service will be particularly useful in rugged areas of Oman and in disaster situations.

The ambulance division also intends to extend its training and education to interested community agencies other than the Royal Oman Police. This is to increase society awareness about the importance of basic skills in saving lives.

The integrated approach that the ambulance service in Oman has adopted with other community agencies is to be strengthened and the ambulance division is currently playing a major role in the national disaster and search and rescue teams.

The EMS system in Oman is very unique in the region and it is improving very dramatically. The aim of the future is for a multi-sectorial and well incorporated society-based EMS in Oman under the leadership of the Royal Oman Police-Ambulance Division.

## Conflict of interest

There is no interest of any one in this paper.

## Acknowledgments

Our thanks to the Royal Oman Police-Ambulance Division, for their support and contributions to this article, and to all the paramedics who save lives.

## References

1. Al-Kharusi W. Update on road traffic crashes progress in the middle east. *Clin Orthop Relat Res* 2008;2457–64 (3).
2. Al-Lawati JA, Mabry R, Mohammed AJ. Addressing the threat of chronic diseases in Oman. *Prev Chronic Dis* 2008;5 (3).
3. Demographic and social statistics. New York (NY): United Nations Statistics Division; 2007 [<http://unstats.un.org/unsd/default.htm>. Accessed February 27, 2007].
4. Royal Oman Police Ambulance Division, Advanced EMT Medical Protocol. Version 2; 2006.