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Crisis Resource Management in emergency medical settings in Qatar

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Key words

Crisis Resource Management; Qatar; Ambulance Service; Teamwork; Communication

Abstract

The principles of Crisis Resource Management (CRM) aim to mitigate the risks associated with a potential crisis and improve patient safety. Effective teamwork and communication are key CRM elements in emergency care medicine. This article will explore their importance in the context of pre-hospital emergency care in Qatar, which is provided by the national Ambulance Service (HMCAS). The national and organizational environments are culturally very diverse which presents particular challenges that can impede the CRM principles, and

ultimately affect patient care. This is especially worrying if emergency care practitioners (EMC) are not forthcoming with their concerns and allow patients to be endangered. To partly counteract the individual cultural diversity within the organization, HMCAS recognized the importance of trying to inculcate a different organisational culture promoting an environment whereby practitioners can speak up, irrespective of culture, nationality, or the presence of more senior or experienced colleagues. To that effect CRM principles are a core element of the HMCAS EMC practitioners' orientation programme and continuing professional development (CPD) courses. Special emphasis is made on the key principles of teamwork and communication, and in relation to mutual support, feedback, and speaking up when concerns arise. Regular training involving all role players (including supervisors) in different settings, and appropriately simulated scenarios that call for application of CRM principles is required to further improve the quality of EMC service in Qatar.

Introduction

Crisis Resource Management (CRM) had its humble beginnings with the training of airline pilots in the 1960s, prior to being quickly extended to include the whole crew (Howard et al, 1992). Teamwork and effective communication were subsequently identified as essential principles of CRM in the clinical context (Gaba, 2001). These components were then adapted and adopted into the training of many medical practitioners (Holzman et al, 2005). These principles therefore intend to encourage teamwork, situation awareness, and effective communication through empowering people to speak up in an emergency scenario. The aim of CRM is to ultimately improve patient safety and even prevent at risk situations or events. Researchers in pre-hospital emergency medical care have identified teamwork and effective communication as essential components in the delivery of high quality and safe patient care (Leonard et al, 2004). Moreover, the team leaders have been identified as an important link in fostering a positive teamwork environment. These leaders are encouraged to inspire the emergency medical care (EMC) practitioners to speak up. Being vociferous in such situations and giving productive input will translate to providing effective care to patients.

EMC practitioners should be advocates of patient safety and are therefore encouraged to follow the “Concerned, Uncomfortable, Safety” (CUS) principle and two-challenge rule (Hunt et al, 2007). These principles, if utilised correctly, minimise patient risks and maximise patient benefits.

This article explores the emergency medical service (EMS) environment in which EMC is performed in the State of Qatar. Furthermore, the importance of working as a unified team in the context of CRM in pre-hospital care is highlighted.

The State of Qatar

The population of Qatar is in excess of 2.6 million (76% male versus 24% female) (MDPS, 2016). Almost 90% of the country’s population comprises expatriate workers, who reside in the capital city, Doha. The country’s most populous migrant workforces include: Indians, Nepalis, Filipinos, Egyptians, Bangladeshis, Sri Lankans, and Pakistanis (Goodman, 2015). Both the population and the infrastructures have rapidly expanded since the turn of the century. These rapid developments bring about particular challenges from a cultural, economic, and workforce view point.

Healthcare in Qatar

The Ministry of Public Health regulates healthcare in Qatar. The country maintains high healthcare standards (Goodman, 2015), and its investment in healthcare has increased over the years. In 2014, Qatar invested \$4.7 billion in healthcare (Hussin et al, 2015). This expenditure is very significant in relation to the population size; however, the country’s healthcare system is being hampered by high rates of obesity, diabetes, and genetic disorders. Sixteen percent of the adult population were diagnosed with diabetes in 2013 (Walker, 2014). The top 10 causes of death in Qatar in 2012 were: ischaemic heart disease (14.7%), diabetes mellitus (8.9%), road injury (7.6%), stroke (4.4%), self-harm (3.5%), falls (2.8%), trachea/bronchus/lung cancer (2.6%), kidney diseases (2.4%),

endocrine/blood/immune disorders (2.2%), and colon and rectum cancers (2.0%) (WHO, 2013).

Hamad Medical Corporation (HMC) is the main government healthcare provider in Qatar. HMC operates eight hospitals (HMC, 2017). In addition, there are also 21 government funded Primary Healthcare Centres and three main private hospitals in the country. HMC also operates an ambulance service and a mobile doctor service (HMC, 2017). These healthcare resources are strained. There were 210 734 emergency calls and 1 696 834 adult and paediatric emergency visits nationally in 2015 for a population of around 2.2 million inhabitants (HMC, 2015).

Pre-hospital emergency medical care in Qatar

The provision of pre-hospital EMC in Qatar is provided by the national Ambulance Service (HMCAS). EMS operations are labour and resource intensive. HMCAS depends on the professional preparedness of its culturally diverse EMC practitioners. HMCAS operates a hub and spoke model with a tiered response approach. This involves ambulances with a crew of two paramedics (AP), rapid response vehicles with a critical care paramedic (CCP) and an ambulance paramedic, and supervisors credentialed at the AP level of clinical practice.

In the local emergency environment, the CCP works with other practitioners from various linguistic and cultural backgrounds. The APs (n=1331) at HMCAS. are recruited primarily from Tunisia, India, Philippines, Jordan, Morocco, Egypt, Great Britain, and the USA (Figure 1). CCPs employed by HMCAS (n=100) have been recruited from various countries including: South Africa, Australia, New Zealand, Canada, and the USA. These practitioners have received diversified training in their home country. They are trained to provide the highest level of care in the pre-hospital environment. They are knowledgeable and skilled in performing various invasive and non-invasive procedures as highlighted in the organisation's Clinical Practice Guidelines (CPG) (HMCAS, 2016).

Within the State of Qatar, the CCP and AP function in numerous roles including; clinical operations, aeromedical, management, education, and specialised medical services. Qatar's multinational population adds to the diversity of EMC practice in the country. This diversity is accounted for in the recruitment process of new staff alongside clinical practice experience and educational requirements. Similarly the scheduling team constantly strives to create mixed ambulance crews in terms of language abilities with English being the commonly spoken language by all EMCs. In addition to the organisation's internal cultural diversity among staff, structures within HMCAS are hierarchical. These factors may create an environment which is not conducive to effective communication and may inherently suppress free expression of speech in the emergency situation and in the day-to-day working practices.

Practitioners are expected to possess excellent judgement to allow them to function optimally and independently in unstructured and constantly changing environments. Furthermore, these practitioners are equipped with the knowledge, skills, and experience to be able to make sound clinical decisions in haste, but at the same time need to take into consideration cultural and language differences.

Patient safety is a vital component of professional practice (Fanning, 2013) for healthcare practitioners. It is impacted upon by various factors in the pre-hospital environment at HMCAS including clinical decision making by practitioners, adverse events and medication errors, communication within the organisation, emergency driving during patient transportation, safety around aircraft operations, inter-facility transportation of patients, extreme weather conditions, and rapid sequence induction of the critical patient. Essential familiarisation and adherence to the 15 CRM principles (Rall et al, 2005) has been identified to enhance patient safety (Table 1).



Figure 1: Common cultural mix of Ambulance Service staff responding to an emergency in Qatar

As was highlighted in the aviation industry, the lack of non-technical skills is commonly related to mistakes and oversights that may put a patient's (or passengers') safety in jeopardy and can have disastrous consequences (Helmreich and Wilhelm, 1991). Practitioners are the most salient port of call in pre-hospital emergencies. These practitioners are expected to possess excellent judgement to allow them to function optimally and independently in unstructured and constantly changing environments. Furthermore, these practitioners are equipped with the knowledge, skills, and experience to be able to make sound clinical decisions in haste.

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communication within the organisation, emergency driving during patient transportation, safety around aircraft operations, inter-facility transportation of patients, extreme weather conditions, and rapid sequence induction of the critical patient. Essential familiarization and adherence to the fifteen CRM principles identified by Rall et al. (2005) has been identified to enhance patient safety (Table 1).

Table 1: Key Crisis Resource Management principles (Rall et al., 2005)

| Decision making | Teamwork and resource management |
|------------------------------------|---|
| Know the environment | Call for help early |
| Anticipate and plan | Exercise leadership and fellowship |
| Use all available information | Distribute the workload |
| Prevent and manage fixation errors | Mobilize all available resources |
| Cross check | Communicate effectively |
| Use cognitive aids | Use good teamwork/mutual support |
| Re-evaluate repeatedly | |
| Allocate attention wisely | |
| Set priorities dynamically | |

The impact of teamwork and effective communication in pre-hospital EMC

Very little research has been done on CRM in the pre-hospital setting. Most CRM research has been conducted in other medical areas, mainly anaesthesia (Howard et al, 1992; Gaba et al, 2001).

Communication between practitioners, in a situation where time is critical and decisions need to be made, is of great importance. It is one of the major processes of group dynamics and may be supported by commonly adopted tools, such as in the case of a patient handover (Shah et al, 2016). Mediated by a team leader, if required, good communication climate in a team aims to encourage and empower each member to speak up if and when

there is a concern to be raised (Howard, 1992), or to give feedback when it needs to be provided to one or more team members to improve patient care. Feedback needs to be timely, considerate, and specific (Ramani and Krackov, 2012) to promote the highest standards of patient care possible. Practitioners should really be “watching each other’s back” (cross monitoring or cross check) (Ferguson, 2008).

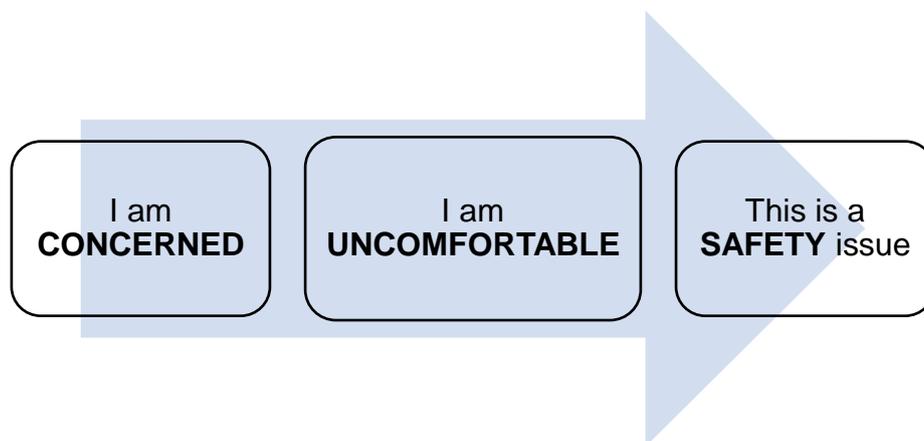
Table 2: Teamwork principles promoted in the HMCAS orientation training programme (Adapted from Carbo et al, 2011)

| | |
|----------------------|--|
| Team structure | Relates to team size, membership, leadership, composition, diversity, identification of goal, and distribution of tasks. |
| Leadership | Ability to coordinate the activities of team members by ensuring team actions are communicated, understood, that changes in goal prioritisation are dynamically shared, and that team members have the necessary resources and guidance. |
| Situation monitoring | Process of actively scanning and assessing situational elements to gain information, understanding or maintaining awareness to support the team function progressing toward its goal. |
| Mutual support | Ability to anticipate and support other team members’ needs through accurate knowledge about their responsibilities and workload, and the provision of feedback. |
| Communication | Process by which information is clearly and accurately exchanged among team members, according to pre-set standards and processes. |

CRM training was introduced into HMCAS to overcome patient safety compromises. The tenets of teamwork training included the individual’s characteristics, individual skills, group

processes, and quality and safety outcomes (Table 2). Initially it was included as part of the orientation programme of all newly recruited practitioners. Improvements stemmed the inclusion of CRM in specialised continuing professional development (CPD) educational courses (Alinier et al, 2014). This wider implementation aimed to standardise team dynamics and promote good communication and teamwork among staff of differing seniority levels and cultural backgrounds, irrespective of whether they are new recruits or are long standing employees. At HMCAS, implementation relies primarily on the tools presented in the TeamSTEPPS training package, which advocates for a team structure founded around leadership, situation monitoring, mutual support, and communication competencies (Henriksen et al, 2008). To that effect patient safety is dependent on the skills, knowledge, vigilance, and judgement of all trained EMC practitioners (Murray et al, 2000) working collaboratively in a wide range of direct and indirect patient care aspects.

Figure 2: The “CUS” mutual support tool of preventing incidents or errors (Hunt et al., 2007)



Certain communication tools including CUS and the two-challenge rule are appropriate for early identification of patient safety risks in the prehospital setting within a team. The CUS principle can be identified as an informal “verbal warning” to the EMC team about the issue and its magnitude in the case of a first occurrence (Hunt et al, 2007). It is predicated on a three-step technique. The first step includes the EMC practitioner stating their concern about a particular issue. In the second step the EMC practitioner identifies why they are

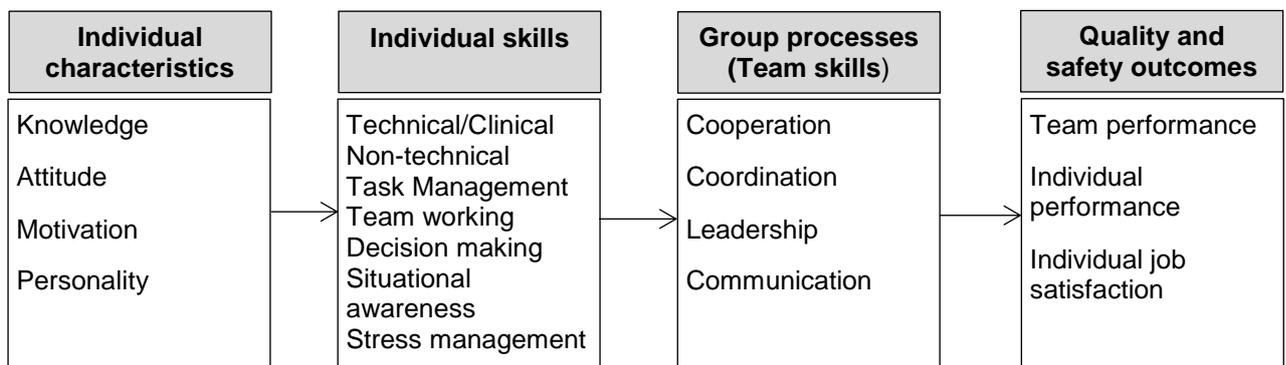
uncomfortable about the issue. The final step identifies the safety issue and potential consequences if the course of action is not altered. In this third step, the EMC practitioner identifies why they highlighted the safety issue and what different action is required to remedy the breach in safety (Figure 2). If used to raise a concern previously identified and not resolved, it may have to be formally escalated for mediation by involving line managers. It then falls out of its primary “mutual support” usage among colleagues or the provision of feedback, and the primary concern is the wellbeing of patients.

The hierarchical pre-hospital EMC setting and varied staff cultural and ethnic backgrounds may be deterrents to effective communication in Qatar. EMC practitioners may not be forthcoming with their concerns to the detriment of patient safety. Managers should therefore be encouraged to create an environment whereby practitioners can speak up, irrespective of culture or nationality, as opposed to feeling suppressed by the presence of more vocal, senior, or experienced colleagues. These practitioners must be able to openly raise the “red flag” with their concerns regarding patient safety. The two-challenge rule helps identify patient risks and allows junior practitioners in particular to challenge decisions taken by their senior counterparts (Pian-Smith et al, 2008).

The two-challenge rule was therefore designed to be invoked when the team leader’s decisions become questionable and are not agreed upon by at least one or the rest of the team members. These team members are encouraged to “stop the line” when a safety breach involving the patient and or practitioners is discovered. Members are informed to be assertive in a respectful manner to the senior practitioners. When the first assertive statement is ignored, the team member should raise their assertiveness once more. This should stimulate the senior practitioner to acknowledge the challenge and rethink their pathway of patient care, minimising the risk. Failure by the senior practitioner to acknowledge the patient safety concern must be immediately escalated through the management chain of command (Pian-Smith et al, 2008). Incorporating the CUS principle and two-challenge rule into the realm of EMS practice is challenged by team dynamics and ingrained cultural norms. Getting different people to work together in unison to meet the

organisation's goals may create challenges to management structures. These goals may sometimes be misinterpreted or conflict with the practitioners' personal goals. It is therefore imperative that the right EMC practitioners are employed and that they are further tuned to operate in harmony with the expected organisational culture that advocates for patient and EMC practitioner's safety over the dominance of questionable principles that are in conflict with good teamwork and communication principles. Regular training programmes must be offered to these practitioners to overcome barriers that promote poor teamwork or cultural or ethnic dominance. As endorsed through our training programmes, EMC practitioners must be encouraged to call for help early, exercise leadership and followership, practise mutual support, distribute the workload, mobilise all available resources, communicate effectively, and use good teamwork (Tables 1 and 3).

Table 3: Individual factors influencing performance in teams (O'Connor, 2006)



EMC practitioners are affected by barriers related to the individual, the team, and the environment in which they function. The individual's ability to work safely is potentially affected by fatigue, sleep deprivation, anger, stress, ill health, inexperience, lack of knowledge, external pressures, and fear of reprimand. Team dynamics such as role confusion, authority, and ineffective communication skills labour the process of effective teamwork. As expatriates, HMCAS EMC practitioners need to develop a particular cultural awareness and learn to work alongside colleagues from very different backgrounds (life experience, religion, culture, language). They treat patients who are even more diverse in all

possible aspects, encompassing some low or high expectations from a national EMS provider, and many with total reliance on its services for minor ailments or life threatening cases. In addition, environmental and cultural factors add to teamwork pressure. Equipment failure, noise, interruptions, unfamiliar places all contribute to poor teamwork (Reznek, 2003; Hicks et al, 2008).

The involvement of all team members during an emergency situation is essential to minimising patient safety risks and optimising their outcomes. The teamwork principles presented in Table 2 must be promoted. Education and training in CRM using simulations will improve team dynamics. During the simulations, team members must be encouraged to speak and contribute meaningfully towards the patient's treatment. Clearly identified roles and responsibilities of each team member will create an environment which is conducive to quality patient care. CRM training should be a continuous process commencing during employee orientation. CRM training must then be conducted regularly with all role players in different settings in the form of CPD. This will ensure that participants overcome individual, team, and environment pressures in a controlled setting (Alinier and Newton, 2013).

CRM must involve the training of individuals to function in teams whereby non-technical skills such as: collaboration, mutual support, communication, task management, teamwork, and leadership are taught and are accompanied by practice and feedback encouraging reflection on the part of the practitioners.

Although much work has gone into CRM over the past two decades, more work still has to be completed (Gaba, 2010). Various dynamics exist in articulating an appropriate CRM model for EMC. Repeated regular training will facilitate effective teamwork and help minimise risks in patient care (Jankouskas et al, 2007). Logarajah and Alinier (2014) proposed an acronym (ABCDE approach) to help recall the CRM principles and to increase patient safety.

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Conclusion

This article explored CRM in relation to empowering people to speak up in the context of a Middle Eastern ambulance service with a highly heterogeneous workforce providing emergency care to an even more culturally diverse population. While it is a very enriching experience, it is also particularly challenging, and expatriate EMC practitioners need to be adequately prepared so they can rapidly become effective team members. Researchers in this field encourage teamwork and effective communication as a means to bridge cultural and communication barriers. In order to overcome these barriers and encourage EMC practitioners to “speak up” during clinical practice, the researchers recommend that the CRM principles are enforced regularly. Training on the CUS, two-challenge rule, and other TeamSTEPP principles must be entrenched in all EMC learning programmes. Furthermore, these principles must be reinforced through continuous professional development activities. Evaluation and monitoring systems must be instituted to identify at risk situations and prevent patient safety breaches.

Training on the principles of CRM and teamwork are expected to improve compliance and patient safety. HMCAS is well underway of inculcating CRM principles into its EMC practitioners. They are well incorporated as part of the EMC’s orientation programme and specialised CPD courses; however, CRM training should be conducted more regularly with all role players, including supervisors, in different settings, and using scenarios that help create specific situations calling for the application of the communication tools and teamwork principles. We now aim to monitor changes in attitudes and organisational culture over time, and how it impacts on case reviews and patient outcome. Training on the principles of CRM and teamwork are expected to improve compliance and patient safety. HMCAS is well

underway of inculcating CRM principles into its EMC practitioners. They are well incorporated as part of the EMC's orientation programme and specialised CPD courses, however CRM training should be conducted more regularly with all role players, including supervisors, in different settings, and using scenarios that help create specific situations calling for the application of the communication tools and teamwork principles. We now aim to monitor changes in attitudes and organisational culture over time, and how it impacts on case reviews and patient outcome.

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Conflict of interest

The authors have no conflict of interest to declare.