Crisis Resource Management In Emergency Medicine - A Review

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ABSTRACT

A key component of expert practise in emergency medicine is effective team management. Emergency physicians have historically acquired these "non-technical" skills on the fly or through trial and error, with varying degrees of success, during their training in emergency medicine. Up until now, training in emergency medicine has primarily focused on medical and technical skill proficiency. In conjunction with medical and technical knowledge, the behaviours described in this study can lower the occurrence of clinical mistake, promote efficient teamwork, and ensure the efficient operation of an ED. In other high-risk fields, like aviation, the teaching and practise of these behaviours is increasingly a crucial component of training and skills maintenance. Anaesthesiologists are starting to receive this training on a regular basis. They cover topics including delegation, leadership, environment knowledge, anticipation and planning, getting help when needed, attention management, and workload distribution. We describe how these behaviours are used in the field of emergency care and

propose that crisis resource management principles should be taught and put into practise as a component of the curriculum for training and certifying emergency medicine doctors.

Keywords: emergency medicine, leadership, patient safety, teamwork, communication, crisis resource management.

INTRODUCTION

The training of emergency health professionals has traditionally placed a strong emphasis on developing the individual technical skills necessary to perform a variety of tasks proficiently, with little emphasis placed on the behavioural skills necessary to work successfully in a challenging and dynamic team environment. [1] Training in crisis resource management (CRM) focuses on the non-technical skills essential for productive teamwork. CRM was inspired by the aviation sector, where crew resource management training was widely used after it was realised in the late 1970s that over 70% of airline crashes were the consequence of human mistake brought on by poor collaboration. [4,5] The foundational principles of CRM were derived from research that identified specific behaviours, notably in aviation, that contribute to poor results in crises. [7–10] More recent study has emphasised critical components of successful collaboration. [11]

These principles have been incorporated into the essential themes, and we also discuss how they might be applied to help manage an ED. The handling of crises, both medical and departmental, will likely be improved with the use of these behaviours, even if the settings of aviation and healthcare are different [12,13], leading to an increase in patient safety. [14] These behaviours, which have been extensively studied in other fields such as aviation, business, and defence, are especially pertinent in the practise of emergency medicine, which involves highly complex work that must be completed under time constraints and calls for not only the best medical and technical skills but also the best communication skills in order to provide the best care for patients with acute illnesses and injuries. [1]

OBJECTIVES

The objective of the review were to provide information on the following:

- What are the fundamentals of CRM in health?
- What role does CRM play and how is it used in emergency medicine?

METHODS

PubMed and the Cochrane Database of Systematic Reviews were searched as part of a review of the literature. The included articles were written in English and released up until November 2010. Manual searches of indicated papers' bibliographies and studies of particular references were conducted. Additionally, searches for "grey literature" were made on a number of official and open websites.

The following database search phrases were used: "teamwork and patient safety," "critical care medicine and simulation," "non-technical skills in acute medicine," "crisis resource management," and "crew resource management." Other extensive searches were carried out using terms derived from CRM principles and phrases, such as teams, leadership, communication, and patient safety. Information was gathered from all papers with pertinent abstracts after searching through the abstracts of all pertinent titles.

RESULTS

Six hundred and sixty-seven titles were found in the PubMed search for "crisis resource management." Seven out of the twenty-two pertinent abstracts were used. 130 titles came up in a search for "crew resource management." There were 52 pertinent titles, and 19 of their abstracts were read. 340 titles came up in a search for "critical care medicine and simulation." Six of the abstracts from the 18 pertinent titles were used, while four more were repetitions from previous searches. Three books came up when you searched for "non-technical abilities in acute medicine," and one of them was pertinent. 5 publications were picked from 336 titles that contained the phrase "teamwork and patient safety" after 21 abstracts were reviewed.

No titles were found in the "crew resource management" Cochrane search, but four were found in the "crisis resource management" search. The one relevant abstract was a rehash of a previous search, but the other two abstracts of the three pertinent titles were read. There were four titles returned from the search "critical care medicine and simulation," but none of them were pertinent. Performing searches on "teamwork and patient safety" and "nontechnical skills in acute medicine" respectively turned up 11 and 32 titles, none of which were pertinent.

DISCUSSION

CRM's core tenets are:

- Know your surroundings;

- Anticipate, share, and review the plan;

- Ensure leadership and role clarity;

- Communicate effectively;

- Call for help early;

- Allocate attention wisely - avoid fixation;

- Distribute the burden; and • Support team members.

These fundamental ideas, which the authors refined from work by Gaba [10] and Salas [9], provide a framework for teaching teamwork skills to emergency medicine trainees. They may also serve as a mental tool for clinicians to assist them maximise team performance in emergency situations. The broadly related domains of communication, task management, situational awareness, decision-making, and leadership were identified by a 2009 Delphi research to assist identify critical training topics for health-care teamwork proficiency.[15]

Know your environment

Environmental expertise is useful in both the physical and cultural spheres. In the majority of situations, the emergency department serves as the practitioner's physical environment. In order to permit quick and efficient intervention, a working understanding of the location and purpose of equipment is required. While the proper equipment is being sought out, rarely done but time-sensitive surgeries like cricothyroidotomy can be fatally delayed. The patient's stay and the wait time before the next patient is seen may be impacted by the time lost searching for equipment for less urgent tasks like suturing and plastering. In addition to cognitive assistance like equipment maps, a logically organised and well labelled environment can help practitioners locate equipment efficiently. Safe practise also depends on regular training to make sure that physicians are familiar with critical care equipment and how to utilise it properly.

Understanding the environment also means understanding its human resources. Knowing each person's function as well as their level of experience is important when there are ten individuals present for a resuscitation. Understanding the competencies and mindset of ED staff as well as that of team members from other disciplines facilitates work allocation and

team collaboration in the multidisciplinary setting of the ED. Studies have shown that there is a direct correlation between team culture and performance, which suggests that the cultural environment may potentially have an impact on patient care. [16] The practise of emergency medicine brings together medical professionals from many fields and cultural backgrounds. This could lead to misunderstandings about roles and conflict. Teams can behave differently in two areas: adaptability and the capacity to "share the mental model."[17]

High power distance is another aspect of some cultures that can hinder the functioning of teams and has been linked to aviation accidents. High power distance occurs when there is a significant power gap between those in authority and their subordinates. [18] An asset is having knowledge of the cultural environment and how it affects team performance. It is also important to be aware of how team dynamics might be affected by a leader's style. [19] A collaborative method to resolving conflict may strengthen team members' sense of interdependence and reduce social distance, whilst participatory decisionmaking processes may increase the level of team identification experienced by personnel. All of these results may help to build a team that is more efficient, professional, and cohesive. [20]

Anticipate, share and review the plan

The phrase "anticipate and plan" is applicable at all performance levels, from roster creation to direct patient care. A lot of the difficult tasks carried out in the ED require advance planning and preparation. Results can be improved by planning for potential outcomes and preparing for them. This is especially true in situations where "a need for haste must be anticipated," such the intra- or interhospital transfer of ill patients. [21]

Patients may not always be aware of delays caused by results availability and inpatient clinical evaluation, but ED clinicians are. Patient satisfaction may rise concurrently as a result of anticipating these delays, their impact, and having a plan to notify patients of delays. [22] This can make the ED atmosphere more tranquil. Complex task performance is acknowledged to be hampered by both internal (fatigue, inexperience, illness, lack of information) and external (interruptions, handovers, production pressure, equipment failure) variables. [23,24] Planning ahead will help you avoid some of these problems as well as the HALTS elements of being hungry, angry, late, tired, or stressed. A person's capacity to properly execute a number of important tasks can be significantly improved by using checklists in a range of circumstances. [25–28] The paper "Minimum Standards for

Intrahospital Transport of Critically Ill Patients" is an example of a patient checklist used in the ED setting. [21] and there is the potential to use cognitive tools like this more frequently to decrease mistake in the ED. Experience is necessary to develop the skill of seeing probable signs of deterioration. Giving less experienced personnel tools like required vital sign reporting requirements (similar to MET call criteria) or other "red flags" may aid in the early detection of patients who are more likely to deteriorate. Sharing this strategy with those involved in its execution is helpful for effective action in addition to planning for anticipated events. When the team members have the same perception of the circumstance, they can collaborate more successfully to accomplish their shared objectives. [9]

Effective cooperation depends on having a common knowledge of the objectives, tasks, environment, and individual roles and specialties. [11] By using briefings, "thinking out loud" (verbalising priorities, goals, and clinical findings as they change), as well as by encouraging team members to express pertinent thoughts and observations, team leaders can promote shared cognition. [29]

To recognise and adjust to unexpected changes in the patient's state, it is essential to continuously observe, interpret, and communicate patient information. To find flaws and adjust planned actions, it's crucial to keep examining the plan and to maintain dynamic scepticism about prior diagnoses or assumptions in reaction to new evidence. [30]

Ensure leadership and role clarity

In the practise of emergency medicine, the position of leader is crucial. In order to balance the needs of the individual patient with those of other stakeholders, such as family members, community care providers, inpatient units, and hospital bed capacity, the ED clinician directs and coordinates patient care. This leadership position is best carried out in a collaborative way, although in more urgent situations, a more dictatorial approach may be required. Even though, the leadership style should adopt the least confrontational strategy that still achieves the objective, with the understanding that keeping positive connections will help to ensure the best results in subsequent interactions. Patient outcomes can be enhanced by a direct leadership style that fosters a feeling of purpose among team members, a results-driven mind-set, and a collaborative setting. [26] Instead of delivering a list of instructions, involving the team in the discussion about how to accomplish a given goal can be more effective, [31] and

making sure that team members' duties are clearly defined can help prevent role misunderstanding.

Three key responsibilities of the team leader enable efficient teamwork. Initially, in assigning team roles and defining the conduct and output standards for team members. By creating and upholding the team's shared cognition, second. Thirdly, to optimise adaptability and make sure the team is not "caught off guard" by unexpected events, the team leader monitors the team's internal and external environments to promote team performance.

An effective team member must share a common understanding of the team's objectives, be clear about their own task-related responsibilities, provide feedback to the team leader, keep an eye on and support other team members as needed, and advocate or assert the need for corrective action when necessary. [32] Debriefing can be offered as part of the leadership role, as can pointing people in need in the direction of peer support or counselling services. Additionally, clinicians must learn the proper self-care behaviours and recognise when they are under stress. Patient safety may be impacted by clinical governance leadership that formalises reporting structures and establishes processes for quality enhancement.[33] The preservation of professional standards for emergency physicians includes activities like criterion auditing, guideline writing, peer case review, and participation in mortality and morbidity meetings. These are examples of quality improvement efforts. [34] The 1999 United States Institute of Medicine report "To Err is Human" and the 2001 report "Crossing the Quality Chasm," which elaborated on the original issue of preventive mistake management, both emphasised the necessity of routinely reviewing systems and results. [35]

Communicate effectively

Ineffective communication is the main factor in medical patient damage. [36] In the practise of emergency medicine, effective departmental management and patient care depend on effective communication. Effective teamwork allows for the constant updating of the shared mental model and the distribution of necessary information to other team members. Several factors can cause communication breakdowns. Information transfer may be hindered physically by factors like noise or language barriers.

Different communication philosophies, problems with hierarchy or the gradient of power, and a reluctance to question presumptions can all be factors. Misunderstandings may result

through the use of jargon or other unconventional communication styles, especially in interdisciplinary teams. Because of their own viewpoints or prejudices, people frequently interpret the same information extremely differently. They may also fail to understand the message if they are preoccupied with their own task load in stressful circumstances. Effective communication is also influenced by cultural considerations. Cultures can differ significantly on topics like the impact of sex, individualism-collectivism, and the need to avoid uncertainty. [27, 37]

Closed loop communication is a powerful strategy for overcoming communication challenges. [9] It entails:

- The person who sends a message
- The sender guaranteeing that the intended message was received by the recipient; the receiver receiving the message, understanding it, and acknowledging its reception.
- To ensure the right dosage and method of administration, closed loop communication may, in its most basic form, entail a verbal restatement of a prescription order.

Aside from acknowledging different viewpoints and focusing on the topic at hand without resorting to personal attacks, other skills that are likely to increase the likelihood of effective communication, particularly under pressure, include striving for assertiveness rather than aggression or submission, and following the advice given in Desiderata to "speak your truth quietly and clearly and listen to others."[41]

These methods of communication are probably going to lead to better dispute resolution, better relationships between the many stakeholders, and the creation of teams that can work well together to reach the common objective of the best outcome for the patient.

Call for help early

All clinicians, even those at the highest level, can benefit by asking for assistance as soon as possible. At both the junior and senior levels, there might be a reluctance to ask for assistance due to concerns about criticism or being perceived as incompetent. Patient outcomes can be affected by the prompt application of the right skills in situations like septic shock42 and ischaemic stroke. [43]

The MET call has been proven to be an effective tool in the clinical context for criteria that require calling for assistance. [44] These requirements eliminate the obstacles to seeking assistance mentioned above, and similar guidelines have been applied to encourage prompt assistance in other situations, such as trauma and stroke. When there are not enough beds in the ED to meet demand, "access alert" calls are a formalised request for assistance. All levels of inpatient hospital employees may be required to "create" additional beds as a result. Patient outcomes may be affected by any subsequent expansion in inpatient beds. [45]

In larger emergency departments, it is conceivable for subordinate staff to treat ill patients while the supervising specialist is occasionally unaware of a patient who needs assistance. To notify senior ED doctors of the presence of patients needing expert assistance, an automated call for help system, similar to the MET call, may be useful in the ED setting.

Allocate attention wisely – avoid fixation

When under stress, there is a known propensity to concentrate on one particular issue that may be under the person's control. [44] Situational awareness is decreased by this "fixation error." When a patient's oxygen saturation is declining, the junior resident can be more concerned with where to place the saturation probe than with understanding the reality of the situation and acting appropriately. While other adequately competent co-workers may be present during an arrest, a registrar may choose to concentrate on doing effective CPR while the position of team leader is left vacant. When attention is wisely allocated, the emphasis may shift from performing CPR to analysing the heart rhythm and providing definite care while delegating other chores.

Distribute the workload – monitor and support team members

To allow the emergency care practitioner to keep an eye on the big picture, it's crucial to divide the workload. To maximise situational awareness, duties must be delegated effectively and other team members must be involved. This idea can be applied both in the context of managing individual patients and at the departmental level. Instead of taking on a heavy patient load themselves, the supervising ED doctor contributes more to overall patient management by making sure staff is enabled to safely see patients in reasonable time frames45. In situations where there are an excessive number of patients, it is helpful for a

senior physician to conduct a quick assessment of patients, create an initial treatment plan, and assign following patient chores to less experienced staff members.

At the level of the individual patient, the need for task distribution has been legally acknowledged in circumstances like major trauma, where the trauma team is made up of team members with well-defined roles. [46] This formally established work allocation aids in the development of a comprehensive and integrated strategy to the care of critically ill patients.

CONCLUSION

Principles of crisis resource management are crucial for both the best possible patient outcomes and the effective operation of an ED. Being aware of the CRM's fundamental elements, especially in the areas of leadership, communication, and forward planning, can help with dispute resolution, job satisfaction, and, most crucially, patient safety. Evidence suggests that teaching the CRM principles to ED teams can significantly reduce clinical mistake while not adding to caregiver workload. [47] Multidisciplinary teams, such as trauma and medical emergency teams, have also demonstrated improved performance as a result of this type of training. [48–52]

It would be beneficial to conduct more study on the impact of CRM training on error rates in both the clinical and organisational domains. Since the Institute of Medicine noted in 1999 that healthcare professionals "train as individuals, yet perform as teams," there has been a greater emphasis placed on teamwork training with the goal of enhancing patient safety. 35,53 CRM principles are required training in other high-risk professions, like aviation6, are becoming a routine component of training in some high-risk specialties in medicine,[54-59] and are valued and considered helpful by students in such programmes. [60–62] and would be helpful for all practising and prospective emergency medicine professionals' initial training and continued education. The management of patients with acute illnesses and injuries is a challenging task for emergency physicians, where use of CRM's essential elements can lead to better performance and outcomes.

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