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Simulation and CRM

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Patients are harmed as a result of incidents. Both poor interdisciplinary communication and teamwork are contributing factors to such events. The principles of crisis resource management are meant to help prevent and manage difficulties and reflect both, the social-team-oriented and cognitive-individual-oriented aspects of human factors. This article explores the importance of human factors training for safe care of patients and the role of simulation. Based on the available literature, the need to integrate this type of training to increase awareness of the importance of human factors and to change attitudes appears obvious. A combination of different training methods appears to be useful. Simulation-based training appears to be favourable, although the number of studies demonstrating the impact of training is limited. It is important to develop training programmes for individual teams, based on the knowledge of challenges and deficiencies, and to monitor behavioural change. Several methods, including patient safety data, interviews, observational studies and simulations, can be used to specify learning objectives. The training should be established for the real team(s). Furthermore, leaders need to implement training in the organisation and establish databases to monitor the impact on patient outcome.

Anaesthesiology was one of the first specialities to demonstrate the impact of human factors in 1978.[1] An increased interest in learning from incidents was observed,[2] and resulted in considerable improvements in patient safety during anaesthesia over the past 30 years.[3] Although a recent review questions the results, due to methodological challenges,[4] it is widely believed that anaesthesia is safer

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today than it was earlier.[5,6] Patient safety has been improved by analysing and learning from events, and implementing necessary changes, such as introducing equipment for monitoring patients' vital parameters and evidence-based, standardised guidelines for procedures.[5] Furthermore, the first attempt, in the early 1990s, to systematically tackle such challenges was the introduction of the concept of anaesthesia crisis resource management (ACRM), which addressed human factors in the operating-room setting.[7,8] ACRM courses emphasised the importance of team skills and training for the actual team. Since then, several centres around the world have implemented simulation-based ACRM training. Those efforts emphasise the benefit of concerted analysis-and-intervention strategies. As the concept extended into different domains and specialities, it was called crisis resource management (CRM).

However, in the last two decades, several studies have emphasised that hospitalised patients are harmed as a result of errors and incidents occurring during their care.[3] Besides the suffering of those affected most – patients – their relatives and friends as well as health-care professionals suffer.[9] Several studies have shown that poor interdisciplinary communication and teamwork are important contributing factors to adverse events in general, in the operation room (OR) and in the area of perinatal deaths.[10–12] Poor communication was identified as the primary root cause in more than 70% of perinatal sentinel events recorded by the Joint Commission on Accreditation of Health Care Organisations.[13] This indicates that it is important to provide health professional teams with training in competencies; such as communication, teamwork, decision making and situation awareness, in addition to medical knowledge and practical skills.

The principles of CRM are intended to help prevent and manage difficulties during medical care, and they reflect both the social-team-oriented and cognitive-individual-oriented aspect of human factors.[14] Acquiring CRM abilities is, often, associated with a change of attitudes and behaviours as well as learning of new skills and de-learning of former habits. Change is necessary at the individual, team and organisational levels. As health professionals may constitute team members in different teams, it is important to develop a set of generic learning objectives (e.g., how to effectively communicate with unknown health-care professionals) as well as a set of specific objectives for a given team (e.g., solving a conflict in an existing team). The training of complete multi-disciplinary teams has been described to enable teams to function well, in both unexpected events and routine cases, to improve patient safety.[15,16] It is important to emphasise that simulation not only has a role in training people to handle catastrophes. CRM is equally important when handling common challenges and, in fact, can prevent a routine situation from deteriorating because early warning signs were missed. Simulation-based training has been recommended as a method to train teams in learning these skills for pedagogical and patient safety reasons, and the use of this tool is increasing across the world.

This article explores the importance of human factors training for high quality, safe care for patients and attempts to define the role that simulation can play with regard to these topics – both in terms of an analysis and as an interventional tool.

Aspects of patient safety and CRM in the medical domain

Like medicine, other high-risk domains such as the aviation industry, nuclear power plants, petroleum and maritime industries acknowledge the complexity of errors. Thus, error-management strategies need to be developed and implemented, focussing on reducing error as much as possible, while acknowledging that the zero-error rate will not be achievable. Reducing human error and minimising their negative impact might be tackled at different levels: at the system-design level, one might attempt to reduce error-triggering situations and, thus, make it easier to recognise errors and recover from them. Safety redundancies, multiple data sources, improved displays and alarm philosophies are examples of this level. The next level is to establish protective measures that shield patients and health-care professionals from errors that may occur (e.g., improved medication labels, double-checking of procedures). Education and training constitute another possible level to help health-care professionals avoid, recognise and recover from errors. This article focusses on this final level, emphasising, however, that integrated improvement strategies are required, and that they can be developed by applying CRM principles.