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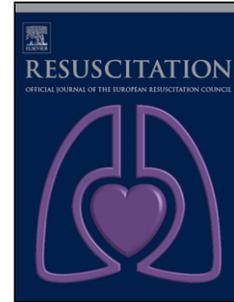
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Transforming a team of experts into an expert team

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The importance of education and training in resuscitation is key to improving patient survival.¹ Linking high quality science, effective education and local implementation can ensure that rescuers are delivering the best quality cardiopulmonary resuscitation (CPR) to every patient.² It is now well known that high quality CPR relies not on individual experts who can deliver defibrillation shocks, chest compressions and ventilations competently, but on an expert team that can work closely together and respond to the challenging and complex situation of a patient in cardiac arrest.

Non-technical skills describe human behaviour and conduct that are important to support teamwork. The core principles of non-technical skills (NTS) in resuscitation are communication, situational awareness, task management, leadership and decision-making.³ Poor non-technical skills can lead to significantly more interruptions in CPR and longer pauses between defibrillation, potentially leading to poor patient outcomes.⁴ The recognition of the importance of NTS has led to more research in the area and novel tools designed to guide the NTS assessment and training.⁵ In resuscitation training, validated instruments include Observational Skill-based Clinical Assessment tool for Resuscitation (OSCAR) and Team Emergency Assessment Measure (TEAM) and Imperial Paediatric Emergency Training Toolkit (IPETT), but their use is more limited to the simulation training.^{6,7}

As part of guidelines review, the International Liaison Committee on Resuscitation Science (ILCOR) reviewed published evidence in 2015 on team and leadership training.⁸ It concluded that there was a lack of evidence in relating team and leadership training and patient outcomes. One randomized controlled trial reported no difference in actual resuscitation performance between doctors who underwent immersive simulation training with debriefing and those with no additional training.⁹ Limited evidence from two observational studies have reported improved survival rates from paediatric cardiac arrests and reduced surgical mortality.^{10,11} Despite the paucity of high quality data, it is recommended that leadership training should be incorporated into advanced life support

training based on its potential benefit, high level of acceptance of team and leadership training and lack of harm.

TEAM tool was first formulated by Professor Cooper to assess non-technical skills in resuscitation teams in 2010.¹² It has since been validated in terms of its validity, consistency and reliability in the simulation setting.¹³ In their paper, Malgnan et al translated TEAM score from English into French (f-TEAM).¹⁴ Ten teams of four participants divided into groups by their perceived level of expertise (novice/medical students 3 groups, intermediate/residents 4 groups, expert/board certified physicians 3 groups) were recruited to participate in cardiac arrest scenarios. Blind assessors rated video recordings of their performance. Rather interestingly, the novice group outperformed the intermediate group which may suggest that exposure to such training method may play a role in scenario performance. This study demonstrated that TEAM tool can be translated into other languages effectively but due care must be taken to ensure its consistency and validity. This may be the first step in minimizing the impact of cultural and language barrier for non-English speaking countries. The ability to tailor assessment and training tools to suit different settings, can make NTS training more accessible and portable to a wider audience.

A second paper using TEAM tool is also found in this issue, which examined the validity and feasibility of its use in the Emergency Department.¹⁵ Over the period of ten months, a member of the cardiac arrest team was asked to rate the team's performance after the resuscitation attempt. The study concluded that TEAM is a valid tool that can be used with ease and minimal training in the clinical setting. It is possible that ratings may have been influenced by the dual role of the team member also acting as the assessor and that the TEAM tool would have used as part of debriefing thereby improving the overall performance, this also reflect partly how a tool such TEAM tool could be used in the clinical setting. The study has demonstrated that non-technical skills assessment can part of routine evaluation of team performance even in a busy clinical environment.

The challenge of resuscitation lies in the uncertainty and unpredictable nature of a cardiac arrest patient. Simulation and scenario training in all its high fidelity glory cannot replace clinical experience of being part of the cardiac arrest team. Whilst most experts agree that NTS training is important, the supportive evidence remains lacking. Questions remain around the optimal method of NTS and team training and whether the use of a NTS tool or checklist is effective in improving skill performance and retention in the clinical setting. What is becoming apparent is that training of the resuscitation team does not and should not end in the classroom simulation environment. The inclusion of leadership and NTS training within resuscitation courses serves as the mere beginning of training and evaluation. In order to become an expert team, a systems approach of continual team training in the clinical setting, with regular debriefing and performance evaluation using CPR quality data will be required.^{16,17}

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