

# Not Who, but Rather How: The Ideal Resuscitation Team Leader

There are approximately 292,000 adult in-hospital cardiac arrests in the United States annually, and survival rates remain low.<sup>1</sup> Team leadership skills have been identified as a key area of focus for improving cardiac arrest outcomes, but these same guidelines do not define who the team leader should be.<sup>2,3</sup> In current practice, the code team leader is often the health care professional with the most credentials, but outcomes based on this tradition had not been studied previously. In this issue of *Mayo Clinic Proceedings: Innovations, Quality & Outcomes*, Hejjaji et al<sup>4</sup> report their study on the survival outcomes of adult patients with in-hospital cardiac arrest (IHCA) across hospital groups based on the credentials of the resuscitation team leader. The authors included hospitals participating in the American Heart Association's Get With the Guidelines—Resuscitation registry and conducted a 62-question survey of hospital resuscitation committee directors assessing the structure of their resuscitation teams. The survey response rate was 88%. Hospitals were categorized according to who leads the resuscitation efforts at their institution (attending physician vs physician trainee vs nonphysician), and the primary outcome was the risk-standardized survival rate at each institution. The final patient cohort had broad representation from 193 hospitals in the United States with 44,477 patients with IHCA. The investigators found no difference between the groups in the rates of survival to discharge or other secondary outcomes, including return of spontaneous circulation, or favorable neurologic performance.

In this study, 63% of the resuscitation team leaders were attending physicians and only 7% were nonphysicians, which is consistent with historical assumptions that the resuscitation team leader should have the most professional credentials. However, this work suggests that these credentials do not result in greater rates of survival compared with resuscitative efforts led by nonphysicians. The

authors were unable to determine if attending physicians were present for resuscitations in hospitals in which the resuscitation team leader was a physician trainee, but this factor would not limit their ability to compare the outcomes in hospitals with nonphysician-led teams. This information is valuable for 2 main reasons: (1) smaller hospitals with limited on-site personnel may benefit from building resuscitation teams with nonphysician leaders and (2) improving resuscitation team performance and outcomes should focus on the nontechnical skills of their designated leader.

A growing body of evidence exists regarding the role of nursing leadership in resuscitation teams. Of the 7% of hospitals in this study with nonphysician team leaders, 71% were critical care nurses. The CANLEAD (Cardiac Arrest Nurse Leadership) study found that adding a nurse team leader role to cardiac arrest resuscitation teams off-loaded the cognitive burden of the physician leader as measured by the NASA Task Load Index score and improved performance of the entire team.<sup>5</sup> Previously, this same role has also been reported to benefit trauma resuscitations in the emergency department in a similar manner.<sup>6</sup> These studies established the benefit of a nurse leader as an additional role on the team, but there is also evidence that hospitals with higher performance in advanced cardiac life support (ACLS) have more nurses assuming the primary leadership role.<sup>7</sup> These higher-performing hospitals empower nurses to practice to the full scope of their nursing license, which includes nurses performing rapid defibrillation without the presence of a physician. When compared with ACLS-trained senior house officers, ACLS-trained nurses performed as well in the same simulation scenarios.<sup>8</sup> Both groups were assessed for their understanding of the clinical scenario, rhythm recognition, time to defibrillation, appropriateness of interventions, and theoretical knowledge. This information, in addition to

the findings by Hejjaji et al,<sup>4</sup> support the rationale and added value for nonphysician ACLS team leaders.

As highlighted by the American Heart Association 2019 guidelines, strong leadership skills are critical to successful outcomes in ACLS, and this procedure is now an area of focus in this skill set training.<sup>2</sup> In addition to the technical skills of the individual team members, the nontechnical skills such as communication and leadership abilities highly influence the coordinated efforts of resuscitation teams.<sup>9</sup> Lack of leadership and poor teamwork lead to worse clinical outcomes in ACLS and other emergency settings. Incorporating team building and leadership training with the use of simulation is suggested for strengthening resuscitation teams. In a study performing a thematic analysis of detailed interview questioning regarding resuscitation efforts at both high-performing and low-performing hospitals, communication training was considered imperative and good leadership was highly valued irrespective of whether the team leader was a physician or nurse.<sup>10</sup> Yeung et al<sup>11</sup> found that leadership skills are related to successful technical skill performance and specifically resulted in shorter preshock pauses, shorter hands-off ratio, and better overall ACLS performance. Role assignment of team members, team instruction, and debriefing are also influenced by the leadership skills of the team leader.<sup>12</sup> Standardizing the language used during resuscitation has also been reported to reduce the total number of chest compression pauses during cardiopulmonary resuscitation when compared with closed-loop communication alone.<sup>13</sup> This tool also may be incorporated into ACLS training and may be executed effectively by a strong team leader irrespective of their credentials.

When the characteristics of high-performing ACLS teams were qualitatively assessed, Nallamothu et al<sup>10</sup> identified 4 main domains related to success. These domains include a dedicated or designated resuscitation team, multidisciplinary team composition with well-defined roles, strong leadership incorporating effective communication, and training that includes mock resuscitation events. The authors propose that these are the key areas to focus efforts for improvement of outcomes in IHCA. Regarding the team

composition for each hospital, they suggest considering both the cognitive and technical skills required of the team members for successful execution of ACLS. In this approach, team roles could then be assigned on the basis of specific qualifications and not simply by professional degree. What is even more important for organized and effective resuscitation is that each team member understands their responsibilities within the group.

The study by Hejjaji et al<sup>4</sup> is the first to compare the survival rates of patients with IHCA based on resuscitation team leader credentials. The limitations of the study are secondary to survey-based research, but there was a strong response rate from a broad range of hospitals across the United States. Based on their findings, hospital practices should shift the focus of interventions for improving ACLS performance away from the specific credentials of team members and concentrate on developing programs that incorporate simulation and real-time feedback to build strong communication and leadership skills of the resuscitation team leaders. Teams built on individual qualifications and competencies rather than tradition that focus on cognitive skill execution may improve future outcomes in ICHA.

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