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REVIEW

Leadership in different resuscitation situations

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SUMMARY

There is empirical evidence that leadership has a positive influence on resuscitation performance. Nevertheless, shortcomings in establishing and enacting leadership are amongst the most important complaints after resuscitations.

Leadership behaviours during resuscitation have to be adapted to task and coordination requirements that change during the resuscitation process. We suggest that different leadership behaviours are important in the initiation and the maintenance phase of resuscitation. The main leadership challenges in the initiation phase are (1) to establish a leadership structure and (2) to integrate arriving group members while at the same time, the resuscitation has to be started; as well as (3) to swiftly pass on the lead to an arriving, more competent team member, if necessary. The main leadership challenges in the maintenance phase are (4) to assure that the global perspective is maintained and that the resuscitation guidelines are properly followed; (5) this includes encouraging seamless cooperation to avoid unnecessary interruptions.

Leaders in resuscitation not only need to build a behavioural repertoire, but also need to be aware that leadership needs to be task-contingent to respond to specific cooperation requirements at different times in the process.

1. Introduction

Although cardiopulmonary resuscitation (CPR) can be performed by a single person, it is typically done as a team, at least in the in-hospital setting. Thus, resuscitation quality depends on effective team-coordination, which can be facilitated by leadership. It is therefore generally recommended that a leader should be identified in every resuscitation situation.[1] Furthermore, in large enough teams, the leader should stay "hands-off" and concentrate solely on the leadership task.[2,3]

Considerable empirical evidence supports the importance of leadership for resuscitation performance. In their seminal work, Cooper and Wakelam[2] found that more leadership increased adherence to guidelines and decreased the time to intubation in real resuscitations; they report large effects. Other studies confirmed the relationship between leadership and resuscitation performance.[4–6] The findings hold for medical student teams[7] as well as for experienced physicians[8] and for multi-professional teams.[9,10] They also hold across different situations, ranging from pre-hospital settings[11] to trauma resuscitation,[10,12] and have been confirmed in simulator settings,[7–9,11,13] and in real resuscitations.[10,12,14]

However, establishing and enacting good leadership in resuscitations are challenging. Coordination problems and suboptimal leadership are among the most frequent complaints of rescue team members,[10,15] and 9% of the reports in a patient safety database mention coordination or leadership in resuscitations.[16] A mock-code study identified collaboration problems in all of the observed resuscitations; in a third of them, the team either failed to establish leadership, or the participants disagreed afterwards on who had been assigned the leader role.[17]

The difficulties to establish and enact leadership may be partially due to the fact that leadership behaviours have to be adapted to specific task coordination requirements. This means that different leadership behaviours are needed in different phases of the resuscitation.[18] We discuss leadership and coordination

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requirements related to the initiation and to the maintenance phase of resuscitations, and show which leadership behaviours are important in each phase. Wherever possible, we base our contentions on empirical findings. We limit the discussion to in-hospital resuscitations.

2. Cooperation and leadership requirements of resuscitations

Recommendations on leadership behaviours pertinent in resuscitations range from few general behaviours to very detailed lists of specific behaviours. Researchers emphasizing the coordination function of leadership[19] stress task prioritization, work distribution and coordination of team members as the main leadership tasks.[1] Other authors present comprehensive lists containing up to 20 leadership behaviours useful during resuscitations.[2,5,20,21] Aside from the difficulty to master many different leadership behaviours, probably the most important challenge for a leader is to recognize which leadership behaviour is optimally adapted in a specific moment.[9]

The resuscitation guidelines by the American Heart Association[22] allow us to determine leadership requirements for the initiation and maintenance phase of a resuscitation (see Table 1). (1) The main challenges in the initiation phase are to rapidly start the treatment, while at the same time, constitute the resuscitation team; (2) In the maintenance phase, adherence to resuscitation guidelines has to be assured, and treatment interruptions have to be minimized. In a third phase, the team has to establish the underlying causes and to make decisions on further care; this phase is not discussed here.

3. Leadership in the initiation phase: assuring rapid onset of the resuscitation while constituting the resuscitation team

In the first three to 5 min of a resuscitation, the main tasks are to recognize the cardiac arrest as such and take immediate action.[17,22] Leadership is most crucial in this phase. Simulator studies found that more directive leadership in the first few minutes, but not later on, increased the overall resuscitation performance.[7,9]

3.1. Coordination requirements in the first phase

Specialized rapid response or emergency room teams may start a resuscitation as an intact, preformed team.[23] In most other situations, the resuscitation team has to be constituted ad-hoc while the emergency unfolds.[6,17,24] Often, a single first responder activates the emergency response system,[25] after that, other team members join the resuscitation sequentially. The leadership challenge here is to initiate resuscitation, while, at the same time, establish a working group structure, and both under high time pressure.

Table 1
Task- and coordination requirements derived from resuscitation guidelines.[25]

Phase	Task and team coordination requirements
Early phase	Task • Rapid recognition of cardiac arrest • Rapid onset of BLS, including rapid defibrillation • Organize material (i.e. defibrillator) Constitute the resuscitation team • Call for help, activate the emergency response • Establish leadership • Integrate new team members • Assign or reassign tasks to team members • If useful, pass leadership to a more experienced person
Maintenance phase	Task • Assure adherence to sequences specified in resuscitation guidelines • Minimize interruptions Team • Maintain global perspective/situational awareness • Assure coordination between adjacent tasks • Avoid common team focus on secondary tasks

3.2. Challenge 1: establish leadership

For ad-hoc resuscitation teams, the status and the competence level of joining members may not be clear. In such teams, leadership has to emerge, or a leader has to be assigned or self-declare. Even if clear rules exist on who takes the lead, resuscitation teams often fail to swiftly establish a leadership structure.[10,12,15] An additional challenge, particularly for equal status teams, is to assure that leadership is taken by the most expert member.

An implicit rule in resuscitation may be that the first responder defines the patient as “my patient” and takes the lead. This has indeed been found in a simulator study in an intensive care environment without a pre-assigned leader. In most teams, the first responding nurse rapidly and clearly emerged as leader, even if two other nurses joined only seconds after the onset of the cardiac arrest.[9] However, if roles remain unclear, assignment of leadership may be more difficult or fail.[4,8,17]

The situation is different for preformed teams, for example in emergency departments or trauma centres. There, even a short waiting time prior to resuscitation can be used to clarify leadership, pre-distribute tasks, assign roles, and work through checklists.[23,26]

There are known factors that may hinder ad-hoc teams to swiftly establish leadership. Sometimes, first responders lack leadership skills or hesitate to take over the leadership role. This seems to be particularly true for ward nurses, even if 75% of them report experiences as first responders in resuscitations.[27] An analysis of 500 cardiac arrest alarms showed better patient outcomes if physicians, rather than nurses, were first responders.[28] This difference may be explained by the fact that many nurses lack confidence in their own leadership (and technical) abilities.[29,30] Even ADLS-trained general ward nurses are often reluctant to use a defibrillator if no physician is present.[29–31] Paradoxically, if a specialized code-team is expected to arrive soon, nurses initiate even less early actions themselves.[30] The hesitation of nurses to assertively lead the initiation phase of a resuscitation is an important problem, because it takes a mean of four to 6 min until specialized cardiac arrest teams arrive.[17]

Previous experience alleviates this problem.[32] A simulator study with experienced ICU-nurses as first responders showed that recognition of the cardiac arrest, onset of chest compressions and time to first defibrillation did not differ between a condition where a resident arrived early (after 50 s) or late (after 2.5 min).[33]

Similar to nurses, resident physicians often feel unprepared and uncomfortable to take the lead in resuscitations. Even after training, their confidence levels with regard to leading a resuscitation team remain low.[34] This seems especially true for females, particularly in mixed gender groups.[35–37]

3.3. Challenge 2: integrate joining group members and assign tasks

A second leadership challenge in the initiation phase is to integrate new people that join an already acting team. On average, six or more professionals are present during a resuscitation[2,14]; thus, coordination requirements are high: A study comparing 50 ad-hoc teams (one physician as first responder, two others join) with 50 preformed teams (arrest in the presence of three physicians) found performance impairments for the ad-hoc teams. Flow time was significantly lower (69% vs. 51% in the first 3 min) and