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AOGS COMMENTARY

What makes maternity teams effective and safe? Lessons from a series of research on teamwork, leadership and team training

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Abstract

We describe lessons for safety from a synthesis of seven studies of teamwork, leadership and team training across a healthcare region. Two studies identified successes and challenges in a unit with embedded team training: a staff survey demonstrated a positive culture but a perceived need for greater senior presence; training improved actual emergency care, but wide variation in team performance remained. Analysis of multicenter simulation records showed that variation in patient safety and team efficiency correlated with their teamwork but not individual knowledge, skills or attitudes. Safe teams tended to declare the emergency earlier, hand over in a more structured way, and use closed-loop communication. Focused and directed communication was also associated with better patient-actor perception of care. Focus groups corroborated these findings, proposed that the capability and experience of the leader is more important than seniority, and identified teamwork and leadership issues that require further research.

Abbreviations: KSA, knowledge, skills and attitudes; SaFE, simulation and fire-drill evaluation; SBAR, situation–background-assessment–recommendation.

Key Message

Simple behaviors make a marked difference to team effectiveness and patient safety during obstetric emergencies.

Introduction

A report concluded that maternity teams need clarity about team objectives and roles, effective leadership and efficient communication. It recommended that team training be

offered to all maternity staff to improve patient safety (1). In the USA, in a multicenter survey of 614 multiprofessional staff, fewer than half reported clearly defined roles in maternity teams (2). In Denmark, a survey of obstetric departments revealed that clinical skills training was not organized in a uniform way (3). It has been recommended that training for emergencies should focus on maternity teams and teamwork (4). The literature, however, is not consistent in the description of effective teamwork (5), and factors such as leadership, *situational awareness* and *shared mental models* are difficult to define and teach (6). Teamwork training interventions need to be simple and relevant to specific healthcare settings before they can have a real impact on patient care and safety (7,8).

This article is a synthesis of recent research from our group, based in Southwest England, on the effect of training on teamwork. All studies received approval from the appropriate institutional review bodies.

Findings

Retrospective cohort study of the management of cord prolapse

This study explored the management of a real-life emergency requiring teamwork (9). The objective was to identify whether the introduction of a clinical training program, which improved outcomes dependent on individual performance (10), also improved outcomes for a situation (umbilical cord prolapse) that requires effective team management. We found that team training was associated with improved compliance with key clinical actions (11), and a significant and clinically meaningful reduction in diagnosis–delivery interval, an index of team coordination. However, there was still some variation in team performance after training, indicating that further improvement might be possible.

Staff attitude survey

We used a validated tool (Sexton safety attitude and climate questionnaire) to assess staff attitudes in the same maternity unit and identify ideas for further improvement (12). The results showed a very positive safety culture and teamwork climate after the introduction of team training. There was a perception of high workload and need for senior clinicians to be present outside daytime hours, but not at the expense of job satisfaction.

Knowledge, skills and attitudes (KSA)

We used cross-sectional analysis of pre-training data for 114 maternity staff from six hospitals, in 19 randomly selected multiprofessional teams that had participated in the Simulation & Fire-drill Evaluation (SaFE) simulation study (13). We explored possible associations between team efficiency (based on administration of a critical drug for patient safety, magnesium for eclampsia) and scores in validated multiple-choice questionnaires, or measures of individual manual skill and attitude. We found no relation between conventional (KSA) measures of individual ability and variation in team efficiency (14).

Generic teamwork

In parallel, we sought reasons underlying the variation in team performance besides KSA (15). We used the same set of simulation data from the SaFE study (13), and the same team performance scoring system as used by Weller and colleagues (16). We found a strong correlation between generic teamwork scores and clinical efficiency of the teams, indicating that an important determinant of variation in the performance of maternity teams might be team working; the way they interact to apply their knowledge and skills to practice rather than to pass individual exams or assessments.

Specific teamwork behaviors

The fifth and sixth studies combined clinical and social science methods to describe specific teachable behaviors of effective teams and leaders (17,18). Better teams were likely to have stated the emergency earlier (for example “this is eclampsia”), and were more likely to have used closed-loop communication to allocate critical tasks (directed–acknowledged–executed–confirmed). Better teams tended to have more structured handovers of critical information, akin to Situation–Background–Assessment–Recommendation (SBAR) (19). The number of manual tasks performed by the senior doctor (as an indication of distraction/disruption of awareness) made no difference to the efficient management of the emergency.

Interaction with patient-actors

Further content analysis of the audiovisual simulation records showed significant variation in staff–patient interaction (18). There was a significant correlation between patient–actor perceptions and team behaviors. The patient–actor perception was better when the leader had a directive style of communication, and when the communication with them included certain items of information (cause of the emergency, condition of the baby, aims of treatment).

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Focus group analyses

This multicenter study aimed to enrich the evidence-base with real-life emergencies recounted by frontline staff in the same hospitals as the previous studies (20). Participants identified a need for teamwork training, using several methods suited to different learning styles and levels of seniority; for example with case studies rather than simulation for those learners who perceive observed role-play to be threatening. The focus groups agreed that senior (consultant) presence, as recommended in the staff attitude survey, might be useful, but felt that it was the exhibition of beneficial behaviors by leaders that was more important than formal rank.

The focus groups also suggested that certain behaviors improve team performance or patient perception of care. The results were triangulated within a specific framework (21) to explore similarities and differences between simulation and real-life experiences. For example, whereas focus group participants commented that it might be useful to allocate to a specific member the responsibility to explain to patients and their companions the situation, in simulation it did not make a difference whether one person or many different ones communicated with the patient-actor.

Defining and understanding teamwork factors

Leadership

Whereas it had been shown that leadership is often lacking (22,23), and that deficiency of leadership is associated with poor outcomes (23), there had been no evidence to show how to establish leadership, how to show it, and how to make it effective. Our findings help to address these issues (Table 1).

Situational awareness

This is difficult to define and to measure reliably unless linked to specific clinical actions (24–26). The study of specific teamwork behaviors confirmed that it was difficult to determine the importance of not being distracted, possibly because the scenario was simple and leaders could perform tasks without neglecting leadership (17). The focus groups, however, identified three components of situation awareness, and teachable characteristics for each one: find out the clinical situation, find out the team abilities, keep aware of patient and companion needs for communication and information.

Communication

Analysis of simulated emergencies and focus groups confirmed the usefulness of structured handover, such as SBAR, and the advantages of closed-loop communication (message directed–acknowledged–executed–confirmed), for any team member who might have to handover or lead the team until more experienced staff arrive (17,20).

Shared mental models

The problem for healthcare is that teams are often created there and then for an emergency; individuals might have never worked within the same team, or even met before. Our research showed that clear verbalization (for example, saying "this is eclampsia") of the situation/diagnosis was important for good team performance (5), for

Table 1. Leadership made simple.

Leadership issue	Summary of findings
1. Who should be the leader?	*Experience* – the person with experience of the emergency who knows team members and their roles/responsibilities, not necessarily the most senior – whoever has experience in the emergency at hand
2. Who is the leader?	*Verbal declaration* – declare being a leader verbally or allocate leadership verbally
3. How to lead	*Know the team* (before the emergency, otherwise *stop and ask* who they are and what they can do) – will help with task allocation and determination of leadership
	SBAR – Clarify situation and background, then make an assessment and a recommendation (Situation–Background–Assessment–Recommendation, SBAR), loudly for everyone to hear; including patient and companions who can then be informed in the same simple step even without communication directed specifically at them at that point (if not enough staff)
	Closed-loop communication – use closed-loop communication (directed–acknowledged–executed–confirmed) to allocate critical tasks to team members (know in advance or find out if they can do them); including communication with patient and companions (if enough staff); following simple algorithms that determine the order and/or importance of tasks
	Avoid distraction – it might be useful to focus on leadership and avoid performing tasks that can be done by other members of the team, unless really simple or you are the only one able to do them

keeping patients and their companions informed, and ultimately for good patient outcome.

Lessons for training

Teamwork is essential for managing the rising incidence of complex pregnancies but there is still evidence of poor interprofessional working in maternity. Training together in realistic settings can prevent these problems. Three approaches were identified by focus groups as being a potentially useful addition to clinical training in teams, taking into account different learning styles: (i) debriefing staff after real-life emergencies to learn lessons, (ii) video-recorded role-play to identify personal training needs and stimulate self-reflection, and (iii) case-based discussions for those who might initially feel intimidated by role-play (20). All professions should participate in some or all of these training activities alongside doctors and midwives, as it can result in good collaboration, safety culture and teamwork climate (12). Non-clinical staff might be trained to undertake other tasks such as patient support during emergencies (20). Whereas training in the same team with senior staff can improve learning, the focus groups suggested that for junior doctors and midwives, additional group teaching sessions for them, without senior staff, could allow them to gain experience in leadership. In some countries, senior doctors might be present throughout the day and night, but leadership skills are still useful for those who have to lead emergencies initially, while senior doctors are busy elsewhere or until they arrive.

One of the main issues with current training arrangements, as identified in the focus groups, is that often members of ad hoc (assembled there and then) teams do not even know each other's name, profession, seniority, role, responsibilities, or experience, as a result of staff rotations or turnover. One solution would be for regular training several times per year. Moreover, introductions at the start of each shift would enable senior doctors to know their staff so as to determine and allocate tasks appropriately in the case of an emergency.

The focus groups also agreed that a good clinical outcome is and should be the main criterion for the success of team working. For our research we used the time to administer an essential drug (magnesium for eclampsia) as a measure of team performance. A recent consensus accepted this measure as a clinically relevant surrogate of team performance and safety, and recommended its use for debriefing (27).

Conclusion

We integrated the lessons from seven studies on teamwork, team training and leadership, to understand what makes maternity teams more effective in delivering safe care. We have identified a few simple yet effective behaviors (Table 2), which are often absent from clinical teams, and which could and should be taught, alongside clinical training, to optimize patient outcomes.

Table 2. Integrated list of teamwork behaviors for teaching.

Order	Action
1	Find out clinical situation (and maintain regular update)
2	Know or find out what the team members can do for the emergency at hand
3	Declare or allocate leadership verbally based on relevant experience of emergency at hand
4	Use closed-loop communication to allocate critical tasks to team members
5	Keep patients and companions informed, paying attention to the content of communication
6	Team leader should focus on leadership to ensure effective teamwork unless task is simple or there is no one else who can do it

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