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Utilizing Relational Coordination Theory to Evaluate and Improve Interdisciplinary
Communication During Emergency Cesarean Sections:
A Quality Improvement Project

Submitted to the Faculty
Yale University School of Nursing

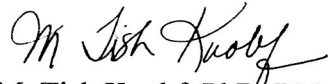
In Partial Fulfillment
of the Requirements for the Degree
Doctor of Nursing Practice

Angelarosa DiDonato

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This DNP Project is accepted in partial fulfillment of the requirements for the degree
Doctor of Nursing Practice.



M. Tish Knobf, PhD, RN, FAAN

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Signed: 
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March 29, 2018

Running head: Utilizing Relational Coordination

Utilizing Relational Coordination Theory to Evaluate and Improve Interdisciplinary
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Abstract

Interdisciplinary communication is a complex, dynamic process that can be difficult to achieve during an emergency cesarean section. Poor communication can have negative effects on patients and providers. The Relational Coordination Model focuses on improving team function by embracing the interdependence of team members and building a shared vision. The Relational Coordination Survey 2.0 was used to assess gaps in communication and collaboration. An education program was implemented to address team specific weaknesses. Reassessment of the teams showed improved an RC Team Score within most groups. The Relational Coordination Model provides a viable theoretical framework with which to institute organizational change.

Effective interdisciplinary communication positively impacts patient outcomes. Yet, complex clinical scenarios and each individual's perspective can challenge the process. During an emergent cesarean section (c-section), interdisciplinary teams commonly struggle to reach a consensus regarding the patient's plan of care.¹ The goal of every team is a positive outcome for mother and baby, but individual team members often have different perceptions of what defines a successful outcome and different strategies for achieving that outcome. Current medical and nursing training models focus on individual competence, assuming that a collection of competent individuals will form a competent team. However, each clinician brings a unique perspective to the care of the patient based on experience, training, and the prevailing culture of the institution. Team-members tend to perform in silos, each working independently in a parallel fashion without regard for the priorities of other disciplines.² Providers may function using "implicit assumptions" based on their specific training and experience. These assumptions are built on the a false conception that all team members share the same priorities and knowledge base.² This phenomenon has the potential to create conflict within the group if interdisciplinary providers begin to compete with each other rather than work together to accomplish goals. The existing paradigm lacks the coherence that is paramount to success in a crisis situation. A focus on effective communication can facilitate collaboration and teamwork; translating to an approach in which each team member is cognizant of the goals of the other disciplines and collaborates to achieve a positive outcome.²

Crisis situations will inevitably stress team dynamics often clouding professional behavior. The sense of urgency during an emergent c-section can negatively influence the dissemination of information and frequently create conflict among providers. The exigency requires a steep influx of information. Unclear transmission, of information or intent, will impede the collaboration

necessary for optimal patient care and positive provider and patient experiences. Clinicians must quickly prioritize tasks and information in the setting of cognitive overload and constant interruption. Emergency c-sections are interrupt-driven environments, which have been shown to stress working memory and increase the likelihood of miscommunication.³ Poor communication within a team can have deleterious effects on mothers, babies, and teams. Half of maternal deaths in the UK have been noted to be avoidable and poor communication has been shown to be the most common root cause in infant death.¹ Highlighting the challenges of emergencies within obstetric populations, Cornthwaite et al¹ noted that effective communication has positive effects on team dynamics. Teams that are trained to use clear, closed loop, structured communication have been shown to improve patient outcomes.^{1,4}

Effective communication is one of several team behaviors that are integral to exemplary team performance. Literature regarding information sharing and team performance reveals a strong correlation between the openness of the team to share information and team performance.⁵ Research has shown that groups are more open to information sharing when the team is made up of similar roles, necessary information is common knowledge among the group, and members can make decisions independently.⁵ Conversely, teams are least likely to share information when the group is heterogeneous and critical information is known only to certain members.⁵ Teams made up of similar providers, such as members of an anesthesia team, generally have a shared vision of what is happening, value the same information, and openly share that information. Interdisciplinary teams with different providers, such as anesthesia and obstetric providers, may not view the situation through the same lens, place value on different kinds information, and may not openly share what they know or need to know. This incongruity in the basic nature of team function can have a significant negative impact on the performance of emergency teams,

potentially leading to adverse patient safety outcomes.⁵ In a review of sentinel events reported to the Joint Commission,⁶ communication breakdown, not technical skill or knowledge, was found to be the root cause in greater than 60% of cases. Although most practitioners would agree that effective communication is necessary for successful outcomes, it is often considered a soft skill, of lesser importance than technical skill, education, or role.

In an observational study describing communication patterns and behaviors in the operating room, Lingard et al.,⁷ reported communication failures in approximately 30% of all relevant team exchanges. Of these failures, 33% were shown to have immediate negative impact on patient safety by “increasing cognitive load, interrupting routine, and increasing tension in the operating room”.⁷ Communication failures are often not isolated instances but symptoms of problems within the system as a whole. This study noted the importance of recognizing that failures in communication often highlight problems at other points in the system or process.⁷ The ability of practitioners to effectively communicate can have a profound effect on team culture, collaboration, and cooperation. Poor communication can decrease efficiency, increase frustration, and degrade morale leading to a negative effect on patient safety. A small number of communication failures may not have any immediate effect, but can lead the team to a false sense of safety allowing poor communication practices to propagate until a serious event occurs.⁷ While minor failures during critical events are inevitable, subsequent minor failures will magnify the stress burden on the team. Each minor failure that occurs will degrade the ability of the team to recover and future mistakes become more likely to happen. When teams communicate effectively, they can attenuate the compounding effect of multiple minor failures and decrease the likelihood of a major safety event.⁸

Despite the overwhelming evidence supporting the importance of effective communication in

healthcare,¹⁻¹⁰ communication and interpersonal skills are rarely, if ever, formally taught and practiced. Barriers to effective communication in healthcare teams can be related to education, the culture of the organization, and the level of psychological safety in the team.² The focus of communication in medical and nursing education is often centered on patient-provider communication rather than inter-disciplinary communication. Differences in culture and training among disciplines can result in a myriad of expectations surrounding the what, when, and how of information transfer as well as an unclear understanding of roles and priorities.¹ Professional identity and a typically hierarchical power structure within a team can separate members into us and them, inferior and superior, limiting the flow of information.^{2,3,9} A survey of operating room personnel reported significant discrepancies in the perception of teamwork.⁹ Nursing and other support personnel rated teamwork as high when they felt their input was valued. Overall, their perception of good teamwork was significantly lower than that of physicians; who rated teamwork as high when other team members followed their instructions and anticipated their needs.⁹ This stark difference in perception can limit the flow of important information among team members.³ Steep hierarchies may discourage team members from speaking up when safety concerns arise.⁹ Environmental and organizational factors such as decisions regarding team composition, the culture of accountability, and conflict resolution policies of the organization can influence the flow of information within a team.²

Alvarez and Coiera¹⁰ criticize the majority of studies that recommend “improving communication” as a nebulous mandate. They point out the lack of consensus regarding a common definition of “good” communication and no description of what minimal criteria should be met in order to ensure effective communication has occurred. The absence of specificity surrounding communicative habits contributes to immediate and latent error within the

healthcare system.¹⁰

The overall goal of this project is to utilize the theory of Relational Coordination to identify common barriers to effective communication among the interdisciplinary team on the Labor and Delivery Unit at a large, academic medical center and develop and implement an evidence-based, interdisciplinary educational intervention to improve communication during emergency cesarean sections.

A review of the literature regarding methods of teaching healthcare teams better communication and collaboration skills reveals important common themes. There is a global emphasis on the importance of effective communication and the gap in professional education regarding inter-professional communication and team-working skills.^{1-3, 7-13} Both SCRIPT and TeamSTEPPS are structured communication training tools that utilize standard language and a framework for the delivery of information. Building on observations of general internal medicine teams in clinical practice, Zwarenstein et al.¹¹ developed an intervention devised to encourage a “culture of collaboration” among inter-professional teams. The authors noted there are standard communication expectations used during formal encounters, such as inter-disciplinary rounds, however, informal, opportunistic encounters lack common structure which can potentially lead to communication failures.¹¹ The direct aim of the intervention is two-fold: to reduce role confusion and anonymity in the inter-professional team and to promote the mutual sharing of professional perspective characteristic of collaborative teams.¹¹ TeamSTEPPS (Team Strategies and Tools to Enhance Performance and Patient Safety) is an educational training program developed jointly by the Department of Defense and the Agency for Healthcare Research and Quality (AHRQ). TeamSTEPPS aims to develop leadership skills, improve communication and situational awareness, and foster a sense of mutual support in healthcare teams.¹² After organizational

implementation of a TeamSTEPPS program, a survey of nurses showed an improvement in the perceptions of communication, mutual support, and situational monitoring within the interdisciplinary team and a higher level of awareness regarding the need for strong leadership and definitive team structure.¹² The Canadian MORE^{ob} (Managing Obstetric Risk Efficiently) obstetrical risk management program is an extensive interdisciplinary training module. Focusing on core clinical knowledge, patient safety, team communication, and ending a culture of blame, the MORE^{ob} program integrates principles that have been successful in other high reliability organizations such as accountability, open collaboration, and placing value on all team members.¹³ Evaluation showed significant improvement in several team behaviors including: empowering people, learning, open communication, patient safety, teamwork, and valuing individuals and showed a 40% reduction in liability cost on obstetric units and a reduction in catastrophic infant claims of two per year.¹³

Andersen, Jensen, Lippert, and Østergaard¹⁴ noted gaps in Advanced Life Support (ALS) training that may lead to ineffective leadership and poor communication during cardiac resuscitation. The authors assert that educational programs, such as ALS training, focus on the technical skills necessary to treat a patient in cardiac arrest such as medications, dosages, and the use of resuscitative equipment.¹⁴ Although non-technical skills (NTSs), such as leadership and effective communication, are known to be critically important to successful teams, there is a gap noted in ALS training pertaining to NTSs.¹⁴ The authors recommend adding an educational focus on skills training to enhance leadership, standardized communication, use of cognitive aids, attention to task overload, and mutual performance monitoring.¹⁴ Leonard, Graham, and Bonacum¹⁵ describe the experience of implementing crew resource management, briefing/debriefing, and SBAR (Situation, Background, Assessment, and Recommendation)

through several quality improvement projects attempting to standardize communication and enhance collaboration in specific areas of the Kaiser Permanente Health System. The organization developed structured educational pieces using key factors that were meant to ensure staff buy-in and sustainability in practice.¹⁵ Staff education focused on the redundancy of system error and dissociating error from perceived personal failure.¹⁵ Several authors highlighted the profound effect of organizational culture on team collaboration and acceptance of culture change in the workplace and recommend strategies to support staff engagement and facilitate sustainability.^{2, 8,11-12,15}

The labor and delivery department at an urban academic medical center is a high volume, high-risk unit that is the setting for over 5,000 live births each year. With an expanding number of high-acuity patients and an increasing number of births, there has been a steady increase in the number of c-sections. According to unit statistics, 39% of unscheduled c-sections were characterized as emergencies.¹⁶ The dynamic of this team is complicated by its emergent composition during emergency c-sections. Although the provider roles are consistent, any combination of individuals can come together at a given time. Under these conditions, there is little time for the team members to acclimate to each other, creating opportunities for miscommunication to occur. This phenomenon has been observed in the literature broadly in terms of ad hoc healthcare teams and specific to obstetric emergencies.^{1-2, 4-5,10,14}

Theoretical Framework

Relational coordination is a theory that recognizes the interdependence and complexity of high-functioning interdisciplinary teams. Typically, highly trained healthcare professionals work to perform their tasks efficiently and attempt to minimize the interference from other parts of the system. They work in silos to insulate themselves from the disruptive impact of outside interference. Relational coordination makes no attempt to minimize interference but instead,

embraces the work of other disciplines and integrates their goals.¹⁷ The RC model maintains that teams that value communication, coordinate their efforts, and integrate tasks into a shared vision, operate more efficiently with fewer errors.¹⁷ (Figure 1) Relational coordination is pertinent to this project because it focuses on the development of relationships between roles rather than individuals, which is extremely important in the context of ad hoc interdisciplinary teams.

Methods

This quality improvement project was reviewed and categorized as exempt by the Institutional Review Board of the University of Pennsylvania. This is a pilot project which consisted of: a review of evidence from the literature and an environmental scan, a collection of baseline data utilizing the Relational Coordination (RC) 2.0 survey to measure the current status of effective communication within the interdisciplinary teams, development of an interdisciplinary educational intervention, and evaluation of the effectiveness of the intervention. The interdisciplinary team in this context is comprised of attending and resident obstetric physicians, certified nurse midwives, neonatal physicians and nurse practitioners, the anesthesia care team—consisting of physicians, CRNAs, and SRNAs, nurses of varying roles, unit clerks, and operating room technicians.

Environmental Assessment.

An environmental scan of the unit was performed. Barriers specific to the unit include: a reluctance of staff to change, a significant nursing staff turnover with a loss of several senior nurses and hiring of new to practice nurses in the last year, lack of resources to cover staff for extended educational training, and rotating resident, anesthesia, and attending coverage. The constant shifting of people and schedules reduces the likelihood for consistency when teams come together. Facilitators to change include: institutional and departmental leadership support, staff dissatisfaction with current lack of process, and an influx of new staff. The integration of

new staff into the unit is seen as both a barrier and facilitator in this scenario. While new staff members lack the experience of how to function effectively in emergency scenarios, they have the potential to be moldable and may quickly adopt a new paradigm.

Educational Intervention

An educational intervention was developed to address gaps in coordination and communication. The educational content was developed to serve as an introduction to a larger, more comprehensive training program. The content was delivered as part of morning sign out on the unit, as part of regularly scheduled meeting time for the anesthesia department, and professional development time for the neonatology providers. Content was designed to be concise, focus on one topic at a time, and introduce strategies for clinical implementation. A summary of topics was posted on the unit communication board in an effort to reach those not present during the presentation. The staff was instructed to implement learned strategies with every cesarean section in an effort to practice team behaviors in a controlled situation.

Data Collection

The RC survey was administered before and after the educational intervention. It is a validated tool that measures 4 domains integral to effective communication: frequency, timeliness, accuracy, and problem solving nature of communication as well as 3 domains that address the nature of relationships: shared goals, shared knowledge, and mutual respect.¹⁷⁻¹⁸ The RC survey rates these qualities on a 5 point Likert scale and has been shown consistently to positively correlate with quality of patient care and patient and staff satisfaction. High levels of relational coordination also correlate with decreased post-operative pain, length of stay, and staff burnout.¹⁸ Team members were then resurveyed to evaluate any potential changes in relational coordination.

Results

The RC 2.0 survey was distributed to 225 clinicians and staff members who routinely participate in emergency c-sections. Completed responses were received from 117 people, a

response rate of 52%. The RC survey is scored using a 5-point Likert scale for each of the 7 dimensions of relational coordination. The dimensions are scored both *between* workgroups (nurses rating physicians) and *within* workgroups (nurses rating nurses). Scoring between and within groups is described as having weak, moderate, or strong relational ties. (Figure 2) Strong ties denote characteristics of high performing teams, while weak and moderate ties suggest opportunities for improvement. The overall RC TeamScore© showed moderate ties *between* workgroups. Strong relational ties were noted in the frequency of communication and the perception of shared goals. Moderate ties were noted in accurate and problem solving communication, mutual respect, and shared knowledge. Timely communication was the only weak tie noted *between* groups. Moderate relational ties were noted *within* workgroups with the exception of midwives, who overall showed strong relational ties within the group. Dimensional scoring *within* workgroups was very unique to each group. Problem solving communication was the sole weak relational tie experienced by every group except midwives, who showed a moderate relational tie. For the purpose of this pilot, the focus was placed on weak and moderate relational ties *between* workgroups with attention to problem solving communication as it was a weak tie within the majority of groups.

The follow-up survey was distributed to 239 clinicians and staff who routinely participate in emergency c-sections. Completed responses were received from 129 people, a response rate of 54%. The overall *between* group RC TeamScore© showed very little change. Timely communication increased to a moderate tie, while shared knowledge was seen as a weak tie. There were positive changes noted in the *within* group scores for all but two groups (Figure 3). There was a decrease in overall scores within the nursing group and midwife group. Although there was a reduction in the numeric score, the midwife group maintained strong relational ties overall.

Discussion

The goal of this pilot project was to determine if a Relational Coordination theory based educational intervention could improve upon interdisciplinary communication during emergency c-sections. It was interesting to note that problem solving communication was shown to be a global weakness within workgroups. There is often conflict between groups when problems arise in an emergency however, it seems that many clinicians feel there is more blame among members of the same workgroup. This is a stark difference to the misconception that groups will blame other disciplines and protect their own. This revelation opened up much discussion on how to begin to focus on problem solving rather than blame.

The post-intervention survey showed small positive change within the majority of workgroups. This is consistent with previous observations made regarding team function. Homogeneous workgroups are more likely to function at a higher level than heterogeneous teams.⁵ It stands to reason that any positive changes would begin within the workgroups and later expand between the workgroups. This project was implemented as an introduction for a unit based TeamSTEPPS initiative. Although the pilot has been completed, it provided the foundation for the longer term initiative As TeamSTEPPS training is implemented, there is a renewed interest in the original content and the concept of focusing on one skill at a time continues to be utilized as a tool to reinforce what was learned in TeamSTEPPS training. Relational coordination is a viable theoretical framework with which to initiate positive cultural and behavioral change.

Conclusions

Emergency c-sections are high stress, dynamic situations. Each experience is unique and the teams are rarely the same. In order to improve, teams should begin to change focus from one of individual competence to one of collective competence. Relational coordination is a valuable tool that has the potential to positively affect the way individuals function within a team.

Limitations

The project was limited by a short timeframe. The time from baseline survey to follow-up survey was about 18 weeks, which is likely not a long enough timeframe to significantly impact the culture of such a large unit. It was challenging to reach all ~240 individuals who participate in emergency c-sections due to revolving schedules, different staffing models between groups, and vacation schedules and holidays.

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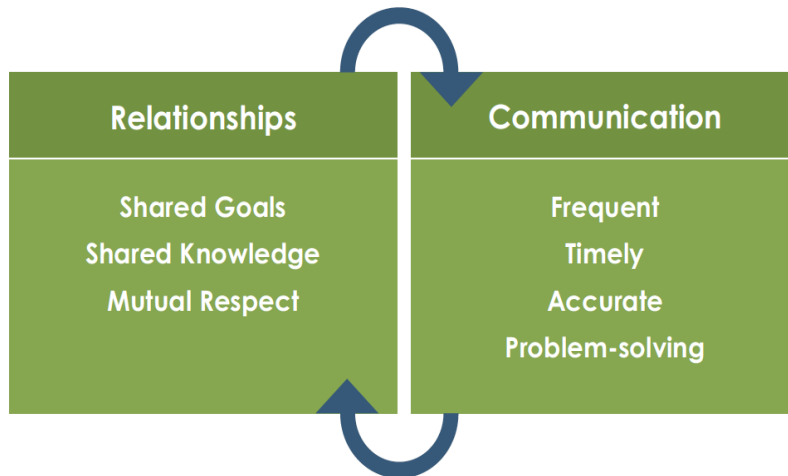
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Figure 1

Relational Coordination:

- Drives quality, efficiency, satisfaction, and engagement
- Is enabled by effective management practices
- Matters most for work that is complex, uncertain and time constrained



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Figure 2

	Within Workgroups	Between Workgroups
Weak	<4.1	<3.5
Moderate	4.1-4.6	3.5-4.0
Strong	>4.6	>4.0

Norms updated based on terciles of RC data collected 2012-2015.

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Figure 3

