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## Team Briefings in the Gynecological Operating Room: A Cognitive Task Analysis

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Briefings are suggested to be an important mechanism for establishing and maintaining cohesive teams. However, there is still much to learn about briefings and how best to design and implement them for surgical teams in the operating room. Currently, there are no formally recognized protocols or methodologies for conducting surgical team briefings. This research reports preliminary findings from an effort to develop a model of team briefings for gynecological surgical teams. Semi-structured interviews were conducted using techniques derived from Applied Cognitive Task Analysis (Millitello & Hutton, 1998) with thirteen surgical team members spanning six different roles including surgeon, surgical resident, registered nurse, certified surgical assistant, certified scrub technician, and anesthesia. Findings reveal that informational needs are consistent across the team but also vary by individual role, illustrating the importance of addressing all stakeholders in potential interventions. Implications for the development of a team briefing model are discussed.

### INTRODUCTION

Teams are an increasingly important aspect of today's world, especially in the operating room where surgical teams are an essential component of providing safe patient care. Despite the importance of teamwork, teams often perform below par due to poor awareness of team goals and breakdowns in coordination and communication (Ashoori & Burns, 2013). In fact, communication is one of the most often cited causes of error in the operating room (Lingard et al., 2004; Gawande, Zinner, Studdert, & Brennan, 2003). For almost 10 years, communication has been one of the top root causes found to lead to sentinel events (Joint Commission, 2014). It has been suggested that difficulties in team communication in healthcare may be due to lack of standardization and team integration (Awad et al., 2005).

In recent years, team briefings have been proposed as potential mechanisms for standardizing team communication and functioning in the operating room. In aviation, briefings and safety checklists have long shown benefits to individuals and teams for establishing shared cognition and facilitating effective communication (Wauben et al., 2012; Russ et al., 2013). In healthcare, briefings in the operating room have been shown to reduce

breakdowns in team communication (Lingard et al., 2005, Lingard et al., 2008; Henrickson, et al, 2007, Papaspyros et al., 2010), improve perception of team performance (Makary et al., 2007; Papaspyros et al., 2010) and reduce the occurrence of non-routine events (Henrickson et al., 2009; Einav et al., 2010). However, the approaches to performing briefings in the operating room are extremely varied and their relationship with outcome variables is still not well understood. For example, research has proposed holding briefings prior to the surgery and patient entering the room (Lingard et al., 2005; Lingard et al., 2008), after the patient has entered the room and before anesthesia (Einav et al., 2010), or after anesthesia has been given but prior to the first incision (Makary et al., 2007). Some research suggests the use of briefing checklists (Lingard et al., 2005) while others promote visual aids (Einav et al., 2010; Wauben et al., 2011). Finally, some research promotes the active inclusion of all team members (Henrickson et al., 2009) while others recommend interaction only by representatives for the key areas of the surgical teams (e.g. surgeon, nurse, anesthesia) (Makary et al., 2007). One of the reasons there is so much variability is that most research to date has only focused on feasibility of implementing briefings and not necessarily on a

better understanding of how the quality of briefings impact outcomes (Russ et al., 2013).

Due to the lack of consistency in team briefing research, a standardized protocol or methodology for conducting surgical team briefings in the operating room has not yet been developed. However, it has been suggested that team briefings should not necessarily be standardized, but rather specialized to improve perceived importance (Rydenfalt, 2013), increase likelihood of adoption (Whyte et al., 2008), and importantly, to reduce surgery-specific non-routine events (Einav et al., 2010; Henrickson et al., 2009).

### **Purpose of Present Study**

The larger goal of this research is to develop a model of team briefings for gynecological surgery. The purpose of the current study was to take a first step towards better understanding the informational needs of teams and individual team members with regards to briefings in gynecological surgery. Understanding the needs of key stakeholders is critical to the successful development of any briefing intervention (Defontes & Surbida, 2004).

Currently, team briefings do occur within the institution where the research was conducted; however, there are no protocols or defined standards for how to perform the briefings. There is one team briefing held per operating room in the morning prior to all surgeries and all surgical team members that will be working in that operating room for the day are expected to be present.

A modified cognitive task analysis was chosen as the methodology for this research for its ability to elicit the cognitive strategies used to accomplish tasks and describe the cognitive knowledge necessary for judgments and decision making (Millitello & Hutton, 1998).

## **METHODS**

### **Participants and Setting**

Team members were recruited from the Surgical Gynecology Department at a large medical teaching institution to participate in an informal interview. Thirteen team members participated including 3 surgeons, 1 surgical resident (RES), 3 anesthesia (ANT) team members (1 anesthesiologist and 2 certified registered nurse anesthetists), 2 certified

surgical assistants (CSA), 2 certified scrub technicians (CST), and 2 registered circulating nurses (RN). Experience of these team members in their given role ranged from 2 years to 30 plus years.

### **Interview Procedure**

Interviews were conducted by a human factors researcher and typically lasted 20-30 minutes. The interviews were kept short intentionally as time is valuable for surgical team members. The questions for the interview were semi-structured and were derived from the methods outlined in the Knowledge Audit component of the Applied Cognitive Task Analysis methodology (Millitello & Hutton, 1998). The interview included the following questions:

1. Tell me about the steps involved in a briefing?
2. Why do a briefing? What is the purpose?
3. Who should be involved in a briefing?
4. Tell me about the briefing content that is important for your role?
5. Give me an example of a briefing that frustrated you.
6. Give me an example of a briefing that pleased you.

A human factors researcher met with surgical team members individually in an empty operating room to conduct the interviews. The researcher asked the interview questions in the same general format being sure to probe further for "situation assessment actions, critical cues, and potential errors" (Millitello & Hutton, 1998) in regards to what, how, and whether specific information should be provided in a team briefing. The researcher took notes during the interview which were later transcribed for analysis.

### **Data Analysis**

The transcribed notes from all interviews were independently reviewed by two human factors researchers who have experience in the operating room and have previously observed multiple team briefings. The human factors researchers then jointly reviewed the data, combining and dividing coded topics as needed until a consensus was met.

Common themes and topics were coded across all questions and then by individual role on the team. As the goal for conducting the interviews was to identify the informational requirements and cognitive needs of teams and team members, two different coding strategies were used. Descriptive coding (Saldana, 2013) was specifically used to identify broad content topics that are important in a team briefing to all team members. Process coding (Saldana, 2013) was used to more specifically understand the critical steps involved in a good team briefing from the team and individual team member perspective. Frequency of coded items was recorded for all questions at the team level and by role on the team.

### FINDINGS AND DISUCSSION

The findings from the cognitive task analysis revealed general consensus among teams regarding critical information and knowledge required for team briefings in gynecological surgery. However, there were some nuances when data was analyzed by individual team role.

Based on the interviews, the coded data was organized into three tables to better understand the knowledge and information that all team members feel are most important for briefings in gynecological surgery. Table 1 shows the top ten most frequently identified reasons provided during the interviews as rationale for holding the team briefings. The findings in this table represent all roles on the surgical team.

*Table 1. Top ten reasons for the purpose of a team briefing in gynecological surgery.*

<b>Purpose of a briefing</b>
1. Get on the “same page”
2. Promote team communication
3. Coordinate team tasks
4. Clarify information and ask questions
5. Review patient information
6. Discuss surgeon preferences
7. Discuss expectations and risks
8. Facilitate teamwork
9. Review special needs for procedure
10. Introductions of team members

Interestingly, almost every person interviewed mentioned that a briefing was important for “getting on the same page”. While this is not necessarily a technical term it implies that establishing a shared understanding of the upcoming surgical procedures may be a critical component of a quality briefing. Further, this may suggest that metrics assessing team cognition, shared mental models, or situational awareness could be appropriate methodologies in evaluating the quality of team briefings or the effectiveness of different briefing interventions.

During the interviews team members were asked to break down the common steps of a briefing to identify the most critical components. Team members consistently identified the same 6-8 factors, shown here in Table 2. These factors had significant overlap with the items from Table 1 but tended to be more specific with regard to information needed for individual surgical procedures. For example, identifiers and co-morbidities of specific patients were recognized as vital steps to cover during the briefing.

*Table 2. Eight critical steps for conducting a team briefing in gynecological surgery.*

<b>Critical steps of a briefing</b>
1. Conducting introductions
2. Providing patient identifiers
3. Discussing co-morbidities
4. Providing the surgical plan
5. Discussing anticipations/expectations
6. Discussing surgeon preferences
7. Identifying special needs
8. Asking questions/discussing concerns

The coding analysis also revealed that promoting team communication was not only frequently identified as important to the purpose of a briefing, but it was also implicitly inherent in each of the 8 critical steps of a team briefing (Table 2). Each critical step involved the communication of knowledge for some aspect of the patient or the surgical procedure. For example, Step 1, “conducting introductions”, would require all team members to communicate who they are and what their role is on the team. Step 5, “discussing anticipations”, implies that the surgeon will communicate their thoughts on they expect the

surgery to proceed, including things like excessive bleeding or a difficult retrieval of a specimen due to patient factors. So, while team communication is still one of the most cited causes of error in the operating room (Gawande et al., 2003; Lingard et al., 2004), the findings from these interviews suggest that surgical teams recognize the important opportunity team briefings provide to foster and facilitate team communication. Thus, briefing interventions designed to promote and facilitate communication meet team expectations, and also likely provide the team with additional benefits including improved team cognition (Cooke et al., 2013) and shared mental models (Entin & Serfaty, 1999).

Overall, coded items were consistent across teams, however when the data was analyzed by individual role, there were specific topics that emerged by role. Table 3 shows the three most frequently discussed topics by role on the surgical team throughout the interviews. Again, the roles that make up a gynecological surgical team include surgical resident (RES), anesthesia (ANT), certified surgical assistant (CSA), certified scrub technician (CST), and registered nurse (RN). The surgeon was not included as they typically lead the briefing and provide the information.

*Table 3. Critical briefing content by team role for gynecological surgery.*

	ANT	CSA	CST	RN	RES
Chance of proceeding			•	•	
Patient information		•			•
Surgeon preference	•	•	•		•
Anticipations/Expectations					•
Special needs		•	•	•	
Patient Characteristics	•				
Medications	•			•	

From this analysis, three new topics that emerged as being critical for gynecological team briefings including: chance of proceeding, patient characteristics, and medications.

In gynecological surgery, there are often many ways that the surgery may proceed once the surgical team has gone in and evaluated the patient. Thus, “chance of proceeding” refers to the fact that the surgical plan may be to start a procedure laparoscopically however, there may be a 50% chance that once they begin the procedure they will see signs of cancer and if so, the surgical plan may then change to an open surgery. Accordingly, it’s important to specific team members (e.g. the CST) to know possible directions the case may go so that appropriate equipment can be pulled from the core and be prepared for potential use. However, the interviews revealed that not only is it important to know which way the case may go, but to know the chance (likelihood) the case may proceed.

Patient characteristics refer to the personality or emotional state of the patient prior to surgery. Members of the anesthesia team commented that this was critical information to know, as they are the ones who interact with the patient and have to keep them calm prior to administering anesthetics. For example, it was mentioned that it’s helpful to know if the patient is unusually upset so that the anesthesia care provider can prepare for how to handle the patient. This information could only be covered at a briefing as it would depend on the surgeon’s pre-operative visit and their evaluation of the patient just prior to the surgical procedure.

Not surprisingly, medications were discussed as important information by the anesthesia team, since they administer the medication, and the registered nurses who must chart the medications being administered. Providing the right information to the appropriate team member at the briefing is critical to ensuring that the right tools and medication are available in the operating room when needed.

## CONCLUSION

The goal of this research was to take a first step towards better understanding briefings in gynecological surgery. Overall, the interviews revealed a consensus among team members regarding the purpose of a briefing and the critical

steps for a quality briefing. These findings were consistent with other protocols identified in the literature (Einav et al., 2010; Henrickson et al., 2009; Makary et al., 2007; Papaspyros et al., 2010) providing further evidence for the appropriateness for including these items in a briefing model or protocol. However, when analyzed across individual team roles, there were specific topics that emerged as being critical specifically for gynecological surgical team members indicating that a general protocol may be inadequate and implying the importance of including surgery-specific information for all team members in the development of any briefing models or interventions.

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