Foundations for teaching surgeons to address the contributions of systems to operating room team conflict

David A. Rogers, M.D., M.H.P.E. a,*, Lorelei Lingard, Ph.D. b, Margaret L. Boehler, M.S. c, Sherry Espin, Ph.D. d, Nancy Schindler, M.D., M.H.P.E. e, Mary Klingensmith, M.D. f, John D. Mellinger, M.D. c

aDepartment of Surgery, University of Alabama at Birmingham, 1207 FOT, 510 20th Street, Birmingham, AL 35294, USA; bDepartment of Medicine, Western University, London, Ontario, Canada; cDepartment of Surgery, Southern Illinois University, Springfield, IL, USA; dDaphne Cockwell School of Nursing, Ryerson University, Toronto, Ontario, Canada; eDepartment of Surgery, University of Chicago, Chicago, IL, USA; fDepartment of Surgery, Washington University, St Louis, MO, USA

KEYWORDS:
Operating room conflict; Systems contributions; Conflict management education

Abstract

BACKGROUND: Prior research has shown that surgeons who effectively manage operating room conflict engage in a problem-solving stage devoted to modifying systems that contribute to team conflict. The purpose of this study was to clarify how systems contributed to operating room team conflict and clarify what surgeons do to modify them.

METHODS: Focus groups of circulating nurses and surgeons were conducted at 5 academic medical centers. Narratives describing the contributions of systems to operating room conflict and behaviors used by surgeons to address those systems were analyzed using the constant comparative approach associated with a constructivist grounded theory approach.

RESULTS: Operating room team conflict was affected by 4 systems-related factors: team features, procedural-specific staff training, equipment management systems, and the administrative leadership itself. Effective systems problem solving included advocating for change based on patient safety concerns.

CONCLUSIONS: The results of this study provide clarity about how systems contribute to operating room conflict and what surgeons can do to effectively modify these systems. This information is foundational material for a conflict management educational program for surgeons.

© 2013 Elsevier Inc. All rights reserved.

Interpersonal conflict has been defined as “a process of social interaction involving a struggle over claims to resources, power and status, beliefs, and other preferences and desires.”¹ There is accumulating evidence that conflict occurs regularly in operating room teams and has negative effects on members of those teams and patients.²⁻⁶ Despite having received no or inadequate conflict management training, some surgeons have developed effective conflict management skills through a process of trial and error.⁶ These effective conflict management behaviors include maintaining calm and reverting to a form of communication that involves sharing more details about the surgeon’s assessment and plan. Additionally, surgeons and nurses endorsed surgeons engaging in a 2-stage form of problem-solving approach.
solving. In the 1st stage, surgeons purposely focus exclusively on the immediate patient problem. Subsequently, surgeons approach the administrative leadership with the goal of modifying the systems that had caused the conflict.

The original purpose of this research program was to create a conflict management educational program for surgeons with a focus on the behaviors that they should use in the operating room. However, the finding that problem solving involved a delayed stage focused on systems suggested that complete conflict management education would include information about this 2nd stage of problem solving. Therefore, the purpose of this study was to examine the systems that contributed to operating room conflict and to investigate what surgeons did to modify these systems.

### Methods

Narratives and field notes derived from focus groups of operating room circulating nurses and surgeons were the data for this study. The conceptual framework for this program and the data collection and analytical processes have been described previously.\(^5\)\(^-\)\(^7\) During the open and axial coding process, it was recognized that participants were regularly referring to systems that influenced team conflict in the operating room and to strategies that they had used to modify these systems. Because the original focus of this program of research was on the behaviors of the surgeon in the operating room, these narratives were judged to be outside the scope of this work and were collected in an open coding structure but not further analyzed. However, these narratives were then selected for complete coding and analysis when surgeons identified that their problem solving involved a 2nd delayed phase that addressed these systems.\(^6\)

### Results

A total of 31 circulating operating room nurses participated in the focus groups. Of these, 29 were women and 2 were men. Thirty-five surgeons participated in focus group sessions; this group included 8 women and 27 men. The analysis of the narratives that resulted from these focus groups showed that there are 4 system-related factors that contributed, both positively and negatively, to operating room conflict. The 1st of these system-related factors was the overall function and composition of operating room teams. Training programs for operating room staff were the 2nd system as it related to the ability of operating room staff to participate in specific procedures. The 3rd major system that influenced operating room conflict was equipment management, and the final system was the extent to which administrative leadership was willing to engage in managing the conflict.

Effective systems problem solving began with the ability to discern between when interpersonal conflict was related to an individual’s performance and when it had been caused by a system. Effective systems problem solving also included the recognition that these behaviors represented a use of power and involved patient advocacy. Nurse participants described some of the negative consequences of surgeons acting to make system-level changes.

### System-related contributions

#### Operating room teams

Surgeons and nurses described an optimal operating room team as consisting of a group of individuals with whom they worked regularly that remained stable throughout the procedure. Surgeon participants indicated that these types of teams have less interpersonal conflict when compared with situations in which these team features are not present: “I can tell you that in cohesive teams...you have less conflict” (Surgeon, Institution E, transcript paragraph #201). Another surgeon compared multiple team experiences, explaining that “…I worked in a place where we had a team and in some places where we don’t have a team and the difference is night and day…Not having that team leads to a great deal of conflict because it is as if you are teaching a whole new team every single time you do a new procedure…” (Surgeon, Institution B, 54).

Nurse participants recognized that surgeons had a strong preference for stable teams of familiar individuals and could see the positive results of that model. “There are many institutions that give them teams...and they’re used to having those people all the time…and there’s a big difference…” (Nurse, Institution B, 183). However, nurse participants did discuss some of the challenges for creating teams for all surgeons including scheduling problems and difficult surgeon personalities.

#### Training

Surgeon participants attributed some operating room conflict to a lack of adequate training for the operating room staff. This training was related to the specific operative procedures as 1 surgeon explained, “A lot of times there is conflict because other people don’t understand what you are doing or what you are trying to accomplish” (Surgeon A, Institution B, 244).

The importance of procedural-specific training can also be seen as surgeons commented positively when that type of training occurred. “It took us five years to get a nursing course here having to deal with drill, tap, measure, screw...We finally got the operating room managers to agree that they needed to do something about it...” (Surgeon B, Institution B, 250).

#### Equipment management

A lack of preferred or necessary equipment was commonly cited by both participant groups as a source of intraoperative conflict. Some nurse participants were noted to become particularly animated when describing how these systems contributed to conflict. As this participant explains, “…when cases get scheduled, they have to be found in a database...that’s married to a procedure pick list and so you don’t have the right information for the case and that’s really kind of, it’s a system fault...and you’re thinking you really got it going
on and they come in and go ‘No! It’s not xyz, it’s abc! I told them that!’” (Nurse, Institution B, 76).

Additional equipment system issues include policies about nomenclature in which some participants reported that equipment was referred to by colloquial names instead of standard nomenclature. One nurse participant described “We had a surgeon get very, very upset because the scrub called it Dr. So-and-so’s thing and he just turned around and just lost it. He said, “This is not the right name!” He’s a very well-liked doctor, but, um, he just got all mad. I don’t know why we call it one person’s thing because it has a real name” (Nurse, Institution B, 120).

Finally, participants discussed the availability of equipment including the location where they were stored as being responsible for conflict in the team. “The way it’s laid out...is nuts and they don’t understand and this is another part of the problem. Then suddenly he wants something if it isn’t on the one tray we are flying...it becomes conflict from that moment on” (Nurse, Institution D, 224).

**Leadership engagement.** There were institutional and individual differences about what participants meant when they discussed leadership. Both surgeons and nurses would refer to direct operating room leadership, which most often involved a nurse who had administrative responsibility in that area. However, surgeons also discussed overall hospital leadership that they perceived were responsible for hospital systems that affected the operating room team function. Participants expressed the view that poor leadership was characterized by a failure to act and correct sources of conflict as expressed by 1 surgeon, “We had an OR [operating room] manager here that was busy with other things and didn’t pay attention to a lot of the ongoing conflicts...Just let it go, let it go. That to me is very poor leadership” (Surgeon, Institution E, 91).

Conversely, participants endorsed leadership that would make changes that addressed conflict sources. In 1 center, a surgeon had been placed in a formal role that involved active leadership of the operating room. Nurse participants at this institution expressed that this had been a positive change for them because this individual would deal with surgeons whose behaviors were causing conflict. He would ask for their input and hold everyone accountable for their performance in operating room processes. “He’s had to take some heat because of it from the surgeons. Of course we all love him because he makes them accountable. But he holds us accountable, too. He likes to see us improve and he’ll ask for your suggestions...We’re doing it as a team” (Nurse, Institution B, 132).

**Effective systems problem solving by surgeons.** Surgeons who successfully modify the systems began this stage of problem solving by understanding which conflicts are best addressed with the operating room staff and which conflicts are caused by systems and need to be addressed with the individuals responsible for those systems. As 1 surgeon explained, “Different levels of conflict are best handled differently. I mean...a little conflict with a nurse...I find the best way to resolve them is to go talk to that individual...The bigger systems structures...there is no sense in beating on people to fix stuff that is completely beyond them” (Surgeon, Institution C, 227). Nurses also supported this making distinction to avoid “…frustrating the staff because of issues that are beyond their control. So, I think the biggest thing would be to direct their frustration to the area or the person who can handle the problem” (Nurse, Institution B, 112). Another aspect of this stage of problem solving occurred when surgeons recognized that they could use power to advocate for change as this surgeon succinctly summarized, “Well, I mean, you know that if you have the power that you can wield it unjustly like an autocrat or you can wield it where people really appreciate you. You know there are two ways” (Surgeon, Institution B, 330).

A 3rd feature of this stage of problem solving involved surgeons educating administrative leaders about the real or potential impact of systems on patient care or safety. One surgeon described this process when he was advocating for the creation of a team for a complex surgical procedure. “One phone call it did not take. It took e-mails, phone calls, and personal appearances to plead my patient safety case. I was standing on very solid ground with two or three examples of how this situation was not a tenable situation for somebody doing complicated surgery” (Surgeon, Institution C, 141). Surgeons did not frequently comment on the negative consequences of engaging with administration, but some nurse participants did. One negative consequence reported was that surgeons develop a reputation for “running to administration.” Additionally, some nurse participants described resentment if they or nursing colleagues had been removed from a team. “We had some surgeons that went to management and said I don’t want him or her in my room;” (Nurse A) “Oh and those people know it, too;” (Nurse B) “There’s no secret to that” (Nurse C) (Institution B, 339-343).

**Comments**

The goal of this study was to investigate how surgeons can effectively engage in problem solving related to systems that contribute to operating room team conflict. The need for this investigation emerged when prior research showed that effective conflict management by surgeons involved a stage that occurred after the immediate conflict was managed. The opportunity to do this investigation was made possible because surgeons and nurses had commented substantially about the systems that contributed to conflict and about what surgeons had done to modify them. The results of this study suggest that there are 4 system-related factors that contribute both positively and negatively to conflict, and these include team characteristics, procedural training, equipment management, and leadership.
Operating room teams have been the focus of considerable research in the past 2 decades, and a relationship, albeit indirect, has been established between teamwork dysfunction and adverse patient outcomes. The results of the present study show that surgeons and nurses perceive that there is less interpersonal conflict in stable teams composed of individuals who are familiar with one another. Both familiarity and stability have been shown in human factors studies to be associated with improved communication, improved efficiency, and reduced errors. Familiarity occurs when individuals work together, and familiarity among team members has been associated with better surgical team performance. Stability is the constancy of personnel during a procedure, and surgeons describe that the ideal team situation is for the team to remain completely unchanged during the procedure. Our results extend the existing research on teams by showing that surgeons must work in teams marked by their extreme variability in stability. This variability occurs as a surgeon moves between different operating rooms or can occur in a single operative procedure when there are changes in team members who may or may not be familiar to the surgeon. A conflict management educational program for surgeons needs to account for conflict occurring in teams with widely varied familiarity and stability.

Another system-related factor that contributed to operating room conflict was the training that staff received for surgical procedures. The nurse participants in this study did not comment on this factor, but it has been addressed in the operating room nursing leadership literature. This lack of training is a part of a much larger challenge; the educational expectations for nurses who work in the operating room have increased substantially, whereas the exposure of nursing students to perioperative nursing has decreased. Some surgeon participants in this study described that advocating for and organizing educational programs for staff was a constructive approach to solving this problem.

Contemporary surgical care is dependent on a growing array of equipment, and so it is not unexpected that conflict arises around equipment needs. The use of standard nomenclature instead of idiosyncratic and colloquial names for equipment could be resolved through training for both nurses and surgeons. The other sources of equipment-related conflict are the systems that are used to ensure that the appropriate equipment is available and accessibility related to where equipment is stored. Equipment management processes are commonly discussed in operating room nursing leadership literature, including the application of emerging management strategies to improve these processes. Additionally, the management of supplies has also received some attention in the anesthesia literature, with a focus on reducing equipment associated costs and improving operating room efficiencies. The results of our study show that these systems also have significant consequences for the operating room team dynamics.

Although not often addressed in the surgical literature, there is evidence that surgeons can contribute to equipment management. For example, the surgeons involved in the early adoption of minimal access surgery were able to collaborate with hospital administrators to reduce costs associated with equipment management issues related to the use of this new technology.

Both groups of participants expressed a preference for administrative leadership that would engage and make changes that would resolve and prevent conflict. Prior research has shown that there is disagreement about the identity of the leader in the actual operating room, and this same confusion extends to overall leadership in the entire surgical unit or department. A 1st step in developing an engaged leadership model as it relates to conflict is clearly identifying the leader responsible for addressing it. One reason that operating room nursing leadership does not engage effectively to resolve conflict may be that, like surgeons, they have been left to learn to manage conflict through trial and error. Conflict management has been regularly addressed in the operating room nursing literature and endorses a problem-solving approach. There seems to be significant potential benefit for both surgeons and nursing administrative leadership learning to manage conflict in this way. Both nurses and surgeons at the participating center both reflected positively on the impact that the surgeon leader had on conflict management in the entire system. Surgeons placed in this type of formal operating room administrative leadership would likely need to be equipped with a robust set of leadership competencies including advanced skills in conflict management.

The 2nd purpose of this study was to further explore what surgeons could do to effectively solve problems with systems that contributed to operating room conflict. Our results show that this process begins with discernment about when addressing systems is appropriate. This is followed by surgeons recognizing that they are using power to advocate for change. Power has been defined as the relative ability of an individual to control or influence others and has been shown to inhibit the contribution of other team members. Surgeons have been observed to have substantial power in the operating room team and have been encouraged to flatten the hierarchy in that setting to encourage input from other team members. Our results show that surgeons should be taught to use their power to influence others to create positive change. Power allows surgeons to approach administrative leaders, but they must then be prepared to advocate for change using what they know of patient care processes and safety. Social science researchers recently posed the question of whether conflict in medical teams represented an opportunity or a danger. We would suggest that the answer is both and that surgeons can use the occurrence of operating room team conflict and the real and potential danger that it can pose to patients as an opportunity to affect positive system changes. Finally, surgeons should be taught that there could be negative consequences for them when they intervene to
modify the systems that are responsible for operating room conflict if they are perceived as engaging with leadership too often, for their own interests, or if the intervention results in an operating room staff member being removed from a team. Debriefing has been shown to improve teamwork in the operating room.\(^2^9\,\(^3^0\)\) It may be that the team should include a discussion of system contributions to operating room conflict as a part of the debriefing process so that the surgeon’s efforts to modify these systems would be based on the team consensus. Furthermore, nurse participants in this study also reported that they would independently approach administrative leadership and a team debriefing might create an opportunity to create a coordinated effort to effect necessary system changes.

The need for this study emerged as part of a program of research focused on what surgeons do to manage conflict in the operating room. For this reason, operating room administrative leadership perceptions were not collected, and this is a limitation of this study. In fact, the queries developed for this study were predominately focused on conflict dynamics that only occurred in the operating room. Therefore, these results are almost certainly incomplete in accounting for how systems cause conflict between members of the operating room team. Additionally, administrative leadership perceptions of how surgeons engage with them to solve system-level problems would be useful in refining what represents effective surgeon behaviors in this problem-solving stage. Even with these limitations, the results of this study provide some additional clarity about how surgeons might be taught to manage operating room team conflict more effectively.

References


