Creating Order out of Chaos: A Leadership Approach

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ABSTRACT

Communication is of the utmost importance for effective teamwork, yet promoting effective communication and overcoming the cultural belief that conflict is “bad” are key challenges for leaders. To provide optimal patient care, perioperative nurse leaders should assess the culture in which they work and develop strategies to build solid credible relationships within their teams.

This article introduces the Complex Adaptive Leadership Model, which has underpinnings in complexity science, as a means to promote culture change and promote productive conflict. The concepts and relationships presented in this model reflect real-world situations and provide strategies for leadership and team development.

This model was implemented at one Pennsylvania facility and led to improved outcomes in the perioperative arena related to the Surgical Care Improvement Project indicators during a one-year period. AORN J 91 (January 2010) 154-170. © AORN, Inc, 2010

Key words: complexity science, physician-nurse collaboration, leadership, culture, productive conflict.

Myriad issues face any nurse leader in today’s world. One challenge is communication. Everyone on the perioperative team wants to be heard; when conflicts arise, most issues usually are related to communication or the lack thereof. Health care organizations can no longer function under the traditional view of the “machine model,” where standardization and control are the primary drivers, and still achieve success. Nurse leaders must have a variety of skills to promote healthy communication, facilitate successful and effective teams, and effect positive culture changes. The challenge in the current environment is that there is no tangible framework for nurse leaders in the field that connects all the pieces to accomplish this.

The intent of this article is to provide such a framework, a leadership model based on complexity science, which will assist leaders in creating order out of chaos. Such a framework must be visionary, but at the same time useful, in that it presents concepts and relationships that reflect the real world and suggests directions and activities that offer alternatives to the traditional solutions that seem to be ineffective in contemporary society. As Oriol stated,

The integrated use of technical proficiency and generic nontechnical skills, such as effective decision making and interpersonal communication, are essential to the management of threats and errors in high-risk operations.1(p404)
This article introduces a new conceptual model, called the Complex Adaptive Leadership Model (CALM), which clarifies the underpinnings of relationships among OR staff members. This model is intended to provide support and assistance to guide nurse leaders in proactively facilitating ongoing changes and creating order within the complex OR environment.

The model illustrates a number of concepts and the relationships among those concepts. It is a three-dimensional framework of intertwining spirals that intersect at various points, depicted as a spiral ladder, where the concepts actually fuse at the points of intersection. By understanding the components of the CALM, leaders can anticipate staff member and physician behaviors and reactions—ranging from early adoption of initiatives to complete resistance—and facilitate a culture in which it is acceptable to agree to disagree while providing strategies to move key initiatives, such as culture change, forward. By applying this framework in the nursing community, nurse leaders will have the tool they need to give organizations the opportunity to remain competitive from a leadership standpoint during these difficult times.

**STATEMENT OF PURPOSE**

The motivating force of this work is to ensure the survival of core nursing principles, those that assist nurses in assessing patients’ responses to treatments. As leaders, we cannot allow the impact of nursing to be minimized because of the many constraints facing health care. When navigated with confidence, the CALM is intended to help physicians and other health care personnel evolve as members of a successful and effective team.

While observing the workings of the OR environment, it became clear to me that I needed to make sense of all the complex intertwining relationships and power struggles that take place in an environment filled with people from a multitude of educational backgrounds. In addition to hours of observation and the journaling of these observations, I conducted two activities that resulted in the development of the CALM.

I started by reviewing the literature to see what had already been written to explain why the OR can be so chaotic yet accomplish so much in such a short time. Then, I conducted a survey using the Jefferson Scale of Attitudes Toward Physician-Nurse Collaboration from the Jefferson Medical College in Philadelphia, Pennsylvania, to get a baseline measure of the OR environment at Saint Vincent Health Center in Erie, Pennsylvania, related to perceived collaboration. My rationale for conducting the survey was to help health care facilities be successful in implementing evidence-based practices like those included in the Surgical Care Improvement Project, knowing that it could be problematic or dangerous if administrators make assumptions that physicians and nurses will warmly embrace the additional responsibilities. It is important for all parties involved in the care of the surgical patient to understand that the success in patient outcomes related to the Surgical Care Improvement Project initiative are highly dependent on the level of collaboration among diverse team members. Would it not make sense, if an organization were going to invest time and energy into the implementation of such projects, to establish a baseline evaluation related to the willingness of key stakeholders to participate?

By implementing the CALM, leaders can develop a set of skills that result in subtle culture changes over time and ultimately improve patient outcomes. The use of the CALM is a journey, not a one-time implementation that ends all problems. The model is intended to give leaders a skill set to create an environment in which staff members and physicians alike are empowered to address issues in a timely manner, much like our chief executive officer challenges us to function like a shallow draft craft that can navigate waters swiftly while staying precisely on course.
REVIEW OF THE LITERATURE

I conducted a review of the literature using the following databases: CINAHL, MEDLINE, Business Source Premier, PubMed, and Google. This review was conducted to find literature that explains the way people work together and how to best create a culture that embraces diversity, particularly in a group that comprises members with varied educational levels, from high school to medical school. Additionally, my purpose was to identify the best strategies for getting these groups of people to embrace strategic initiatives such as the Surgical Care Improvement Project so that, as an organization, Saint Vincent Health Center is providing patients with optimal care.

The theoretical literature includes four articles3-6 retrieved between June 5, 2007, and September 1, 2007, that describe complexity science7: the Swiss Cheese Model,3,4 quantum theory,5 and the Kirton Adaptation-Innovation Theory.6 Research literature includes three correlational (ie, descriptive) research articles2,8,9 that were retrieved in the same time frame. The Jefferson Scale2 (Figure 1) was obtained in 2007 from Mohammadreza Hojat, PhD, from the Jefferson College in Philadelphia, Pennsylvania. Dr Hojat also shared two other articles10,11 with me related to the Jefferson Scale.

**Theoretical Literature**

Complexity science is the conceptual model I selected to explain the underpinnings of the variety of issues that affect the surgical suite in any hos-

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**Jefferson Scale of Attitudes Toward Physician-Nurse Collaboration**

INSTRUCTIONS: Please indicate the extent of your agreement or disagreement with each of the following statements by circling the appropriate number (4 = strongly agree, 3 = tend to agree, 2 = tend to disagree, and 1 = strongly disagree). For the purposes of this survey, a nurse is defined as "a registered nurse (RN) who is engaged in providing or directly supervising the care of hospitalized patients."


You are: [1] Nurse Please specify your degree: ____________ and specialization: ____________

[2] Physician Please specify your primary specialty: ____________

1. A nurse should be viewed as a collaborator and colleague with a physician rather than his or her assistant. 4 3 2 1
2. Nurses are qualified to assess and respond to psychological aspects of patients’ needs. 4 3 2 1
3. During their education, medical and nursing students should be involved in teamwork in order to understand their respective roles. 4 3 2 1
4. Nurses should be involved in making policy decisions affecting their working conditions. 4 3 2 1
5. Nurses should be accountable to patients for the nursing care they provide. 4 3 2 1
6. There are many overlapping areas of responsibility between physicians and nurses. 4 3 2 1
7. Nurses have special expertise in patient education and psychological counseling. 4 3 2 1
8. Doctors should be the dominant authority in all health care matters. 4 3 2 1
9. Physicians and nurses should contribute to decisions regarding the hospital discharge of patients. 4 3 2 1
10. The primary function of the nurse is to carry out the physician’s orders. 4 3 2 1
11. Nurses should be involved in making policy decisions concerning the hospital support services upon which their work depends. 4 3 2 1
12. Nurses should also have responsibility for monitoring the effects of medical treatment. 4 3 2 1
13. Nurses should clarify a physician’s order when they feel that it might have the potential for detrimental effects on the patient. 4 3 2 1
14. Physicians should be educated to establish collaborative relationships with nurses. 4 3 2 1
15. Interprofessional relationships between physicians and nurses should be included in their educational programs. 4 3 2 1

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Figure 1. The Jefferson Scale of Attitudes Toward Physician-Nurse Collaboration, which was used to measure perceptions as they related to collaboration.
hospital. The reason for this choice is that, as the name “complexity science” implies, there are a multitude of diverse relationships that must occur for an OR to function effectively and, ultimately, productively. As identified by Zimmerman et al, “Complexity science is not a single theory. It is the study of complex adaptive systems—the patterns of relationships within them, how they are sustained, how they self-organize and how outcomes emerge.”

Zimmerman et al also stated, “Complexity science addresses aspects of living systems that are neglected or understated in traditional approaches.”

Zimmerman et al reinforce that the scientific principles of traditional thinking are based on the Newtonian model, where the “dominant metaphor in Newtonian science is the machine.” The flaw in this scientific approach is that the health care sector is dealing with humans working with other humans who are then caring for a third set of humans, the patients. The ability to maintain predictability, as with industrial concepts such as building equipment, is decreased with the human factors involved in all aspects of surgery.

According to Zimmerman et al, “Complexity science describes how systems actually behave rather than how they should behave.” This is an incredibly difficult concept for leaders to grasp, particularly for nurse leaders who, as clinicians, hold themselves to a standard of being able to “control” a clinical situation. Rather, leaders need to let go of the desire to control and replace that with the ability to facilitate situations.

This concept of complexity science is meant to challenge the status quo; leaders must become comfortable with uncomfortable situations, such as facilitating productive conflict. Leaders must clearly understand the difference between traditional management theories (ie, adhering to command, control, and micromanagement philosophies) and complexity science. Compared with traditional thinking, complexity science helps make sense of the chaotic environment that we call health care, and it affords the leader the opportunity to create order out of the chaos.

A second model that explains complexity science is the Swiss Cheese Theory, developed by British psychologist James Reason in 1990. The fact that health care is one of the most complex human systems lends itself well to using the Swiss Cheese Model for the analysis of process weaknesses. The model, also known as the cumulative act effect, shows that it is not just one event that triggers a catastrophe but a series of small events that, when added together, create a disaster. The random pattern of holes in Swiss cheese does not often line up; however, if it does line up (ie, a series of small events occur), then a trajectory could travel all the way through the cheese (ie, a patient event could occur).

Patient events often occur after several safety points have been violated either intentionally or accidentally, and the safety mechanisms in health care are ideally running 24 hours a day, seven days a week. As Reason pointed out,

In the ideal world each defensive layer would be intact. In reality, however, they are more like slices of Swiss cheese, having many holes—though unlike in the cheese, these holes are continually opening, shutting, and shifting their location.

Reason’s concern regarding adverse events is not who is at fault for the event, but how and why the safety mechanisms failed.

The third model to support complexity science is the principle of quantum theory. Leaders who are able to thrive on the cusp of quantum theory have the ability to grasp the ongoing challenges in health care as well as energize those they serve. As Porter-O’Grady and Malloch shared,

Quantum theory has taught us that change is not a thing or an event but rather a dynamic that is constitutive of the universe. People cannot avoid change since it is everywhere, but they can influence its circumstances and consequences.
To effectively lead change, a leader must first be able to assess the current environment with reference to what motivates staff members and physicians. Change is inevitable in any environment, so leaders must seize the change, whatever it is, not to control it but to manage it and facilitate the tough dialogues or productive conflicts that need to take place between the key constituents of an issue.

The fourth model that supports complexity science is the Kirton Adaptation-Innovation Theory, which allows a leader to “clump” staff members and physicians into categories related to problem-solving skill sets.6 As identified by Moody et al, “Individuals who are on the adaptive end of the continuum tend to be methodical and prefer precise instructions, reporting difficulty with multitasking and increases in work complexity.”6(p200) Conversely, 

individuals who tend to be more innovative in cognitive style report a preference for work complexity and a variety of tasks, tend to operate well in a crisis, and like to think ‘outside the box.’6(p200)

Leaders can identify colleagues, staff members, and physicians who fit into each of these categories. Leaders need to understand how the people they serve are motivated so that interactions can be tailored to ultimately result in quality patient care.

Research Literature
Using the Jefferson Scale of Attitudes tool, Sterchi conducted a study of physician-nurse perceptions related to collaboration in the perioperative arena.2 Sterchi’s premise for conducting the study was that perceptions “are important in attempting to understand and improve collaboration.”2(p46) A total of 65 physicians and 72 nurses participated in the study. The aims of Sterchi’s study were to gain greater understanding of physician-nurse relationships and collaboration in a complex and diverse setting, as well as examine their different perceptions of collaboration and whether gender, length of experiences, or nursing specialty affected those perceptions.2(p49) Sterchi’s findings indicated that the nurses were significantly more positive toward collaboration than their physician counterparts.2

An ethnographic study conducted by Riley et al8 identified power relationships in the communication interactions between surgeons and nurses during the surgical count. Researchers used data collected during 230 hours of observations by 11 participating nurses in three different operating suites in Australia. Results indicated that nurses used critical thinking during the instrument count process for small incision surgeries in which it would be physically impossible to lose an instrument.8(p371) Additionally, an identified outcome was that experienced nurses held inexperienced nurses to a stricter interpretation of the counts policy than their experienced colleagues.8 More importantly, from a collaborative environment standpoint,

Surgeons seemed to be unaware of the latitude that nurses afforded themselves when conducting the surgical count . . . These power relationships were not limited to the traditional, hierarchical nurse-doctor relationships, but also included hierarchical nurse-nurse interactions between experienced and inexperienced nurses.8(p371,372)

These findings are interesting in light of the concepts of crew resource management, which reinforces that the same checklists need to be used consistently.1 In the OR, it could be the preprocedure final time-out or the timing of the instrument and needle count. The leader’s role is to maintain a sense of vigilance and reinforce to the surgical team the fallibility of humans regardless of the level of competence and experience. It is human nature to become comfortable in the work environment; however, as comfort level increases, vigilance starts to slip, and along with it, so does patient safety.

In a case study of the flow of patients through the surgical arena, Fowler et al9 rein-
forced that the OR can be viewed as a complex adaptive system.

*In a complex adaptive system, one agent’s actions change the context for other agents.*

*Health care organizations are complex systems, each having unique histories, cultures, and processes that have evolved over time.*

Their study involved observing 96 staff members employed in all aspects of surgical services for a total of 103 hours. The investigators found that staff members spent an average of 33 minutes per eight-hour shift dealing with defects and failures.9(p202) The results of this study support the use of ongoing feedback. The investigators concluded, “Leaders are needed who can shape a culture of openness and encourage the reporting of all events—both clinical errors and those related to processes.”9(p206)

**Findings**

The research literature added the value of determining how to assess OR team dynamics. Although traditional relationships in health care are hierarchical in nature and may have been successful in the past, hospitals must sustain a collaborative environment with diverse professionals to achieve positive patient outcomes. The review of the literature reveals that complexity science and the multitude of theories that support it (ie, the Swiss Cheese Model, quantum theory, Adaptation-Innovation Theory) will provide the foundation for future leadership growth. However, these theories go from very broad in terms of the whole environment (ie, quantum theory) to the process level (ie, the Swiss Cheese Model) to the individual level (ie, innovation-adaptation). It was important to synthesize these theories as the foundation for the CALM in the perioperative setting (Figure 2).

**CONCEPTUAL DEFINITIONS**

To understand the model, it is important to understand the operational definitions of its components. This includes the framework of

- leadership,
- culture, and
- the concept of team.

Additional concepts hold the framework together:

- within leadership,
- generative relationships, and
- within concept of team,
- lens of complexity,
- paradox and tension, which includes active listening,
- multiple actions at the fringes,
- situational awareness,
- cooperation and competition, and
- creative destruction.

In the model, color is used specifically to reinforce the combination and fluidity of its components: culture is depicted in yellow and complex adaptive system principles are depicted in blue, which when combined with the guidance of leadership result in the team being depicted in green. Leadership is depicted in gray, because it is the cement that holds this fluid jumble of ideas together.

**Leadership**

One of the sides, or scaffolding, of the spiral is the leadership of a given department. Leadership is defined as the ability to represent masses of people by facilitating dialogue between various levels of professional and nonprofessional staff. The complex adaptive system principle of generative relationships is demonstrated by a leader’s ability to set the general direction and provide departmental structure that is tied to the strategic initiatives of his or her organization. By providing this structure, staff members function autonomously via a shared governance model that empowers them to “own” their workplace.

As identified by Zimmerman et al, “The role of the leader is to foster generative relationships and learn from results, letting direction emerge instead of being set in advance by a central
Figure 2. The Complex Adaptive Leadership Model is a framework to guide nurse leaders in the ongoing changes in the complex perioperative environment to create order out of chaos.

Culture: The general tone of the environment: positive, fun-loving, patriarchal, supportive, or disruptive.
Leadership: The ability to serve and represent staff members, facilitate dialogue, and set the general direction of an organization.
Interconnections of the spiral: Components of the complex adaptive system.
Concept of team: The fusion of leadership and culture along with the concepts of the complex adaptive system.
The expectation is that the leadership structure in this framework is participative in nature. One key component to the leadership aspect of this framework is the concept of servant leadership. When the leader meets the needs of those he or she serves, staff members then move the entire department forward to meet the department goals that roll up into the strategic goals of the organization and ultimately bring to life the mission and vision of a given organization.

Leaders also must be able to facilitate the ability of the team members to reflect and debrief on the situations and the environment within which they all work. Too often, a leader is told he or she is responsible for maintaining department morale. In fact, with the right skill set, the leader can challenge personnel that morale is everyone’s responsibility. The leader must first recognize the need to reflect on how personnel perform as a team from a baseline standpoint.

Culture

The other side of the spiral, opposite leadership, is the culture of the department, which can be defined as the general tone of the environment, be it positive, fun loving, negative, patriarchal, supportive, or disruptive. The culture also can be synonymous with the identity of the department, such as independent identity versus dependent. The ways to change unproductive cultures have been discussed in the literature, with relationships and communication being pinpointed.

Pilette stated, “There are many ways to transform red-zone and ho-hum cultures, but the tipping point is at the conversation level . . . Conversation is the gossamer thread of collaboration and teamwork.”¹²(p26,p28) It is grassroots leadership that creates the necessary relationship building that effects culture change. It is the leader’s role and responsibility to create a safe environment in which difficult conversations or productive conflict based on honesty and truth can take place.

Concept of Team

The interconnections of the spiral are the components of the complex adaptive model: lens of complexity, paradox and tension, multiple actions at the fringes, situational awareness, cooperation and competition, and creative destruction. The fusion of the culture of the department, along with the concepts of the complex adaptive system as facilitated by leaders, is what results in the concept of the “team.” The concept of team is really the combination of the leader’s effectiveness in identifying all the strengths and weaknesses within the department, acknowledging and assessing the various components of the complex adaptive system principles, and melding all of these together to move the department forward in light of the mission and vision of the organization.

Lens of complexity. The ability to view one’s organization through the lens of complexity can be refreshing to a leader in health care who is trying to make sense of the environment. As previously identified by Zimmerman et al,⁷ many organizations are compared with a machine or a military operation. The variability of the surgeons, the patients, the staff members, different departments, and more, presents an extreme challenge for individuals who seek to maintain “control” over processes. The basic problem with traditional hierarchical thinking is that leaders assume everyone should think and act in the same way. This philosophy results in staff members perceiving a lack of respect for their individuality. As leaders in health care, we need to be comfortable with letting go of control. Health care has long been modeled after the industrial sector, right down to the work shifts. As identified in the literature regarding the various challenges in health care, “predicting when and where the next one will come is futile. Learning to be flexible and adaptable is the only sustainable leadership strategy.”⁷(p25)

Paradox and tension. In layman’s terms, the complex adaptive principle of paradox and tension means the ability to get comfortable with
uncomfortable environments. Leaders must be comfortable embracing conflict because growth is painful, so when facilitating especially challenging conversations, the leader needs not have an end point in mind. Leaders should focus on getting the issues on the table and letting the end point reveal itself among the parties involved in the conflict, because this is when true growth happens for an organization.

The ability of leaders to get comfortable in uncomfortable situations takes years of experience and many good mentors. A particular challenge for leaders is personal introspection and understanding their trigger points. As Pilette concluded, “With genuine introspection, defensiveness is advantageous as ‘an early internal warning system,’ which can be used to consciously shift us out of a conflict generating posture to one of relationship building.”

The ability to not only diffuse volatile situations but also get to the core of the issue can be accomplished with three simple words: “Help me understand.” There is incredible power in asking someone to explain his or her perception of an event; it conveys a genuine interest and allows the angry party to take time to explain his or her perception, which will help diffuse the situation and get to the real issue rather than continue to escalate the negative energy. This also allows the leader time to regroup from the initial attack while listening to the parties involved. The ability to develop the skill of actively listening is critical to navigating the waters of paradox and tension.

Multiple actions at the fringes. A cause of anxiety for many leaders is that they have the perception that staff members and physicians expect them to have all the answers. In fact, the opposite is true; staff members and physicians often want to be part of the solution. This also means the leader needs to be comfortable with allowing staff members and physicians to take calculated risks, such as piloting new processes as they relate to throughput, on-time starts, management of inventory, and negotiation of supply costs with vendors. The challenge is that any time someone takes a risk, the chance of a process failing or not working quite the way the group expected is part of that equation; however, there is much to be learned from failure and, frankly, the final solution to an issue may come as the result of a failed intervention that ultimately leads to an effective solution. This is the complex adaptive system principle known as “multiple actions at the fringes.” The concept can be best operationalized as piloting a project or process. Staff members and physicians are much more open to piloting something on a small scale and working out the bugs or changing direction rather than putting large amounts of energy into a huge process change when the outcome is uncertain.

The one constant in health care is change, and as challenging as this is for leaders to cope with, the ability to be flexible and change directions at a moment’s notice is a key competency leaders must develop. The ability to let go of control is a key quality of successful leaders. “People cannot avoid change, since it is everywhere, but they can influence its circumstances and consequences.”

The ability of leaders to recognize and facilitate change rather than feed into the inertia of the status quo will result in successful organizations.

Situational awareness. The concept of situational awareness is multifaceted and involves human factors such as extended work hours that cause fatigue, ability or inability to withstand stress, and being aware of the environment around us and comfortable addressing issues in that environment as they arise. One can connect the components of complexity science to the premises of crew resource management. Crew resource management, as Oriol indicated, uses techniques of simulation, team training, interactive group briefings, and the performance improvement process with an intense focus on how human factors interact with high-risk and high-stress environments.
The surgical time out is an excellent example of situational awareness and the need for all involved in the surgical procedure to use and communicate their perception of the surgery in which they are about to participate. As identified by Patterson, “The briefings, held right before the incision, are an expanded time-out that allows the team to check critical information and establish and atmosphere of open communication.”13(p1)

Again, communication is the common thread woven through this concept.

The Agency for Healthcare Research and Quality introduced the concept of TeamSTEPPS (ie, Team Strategies and Tools to Enhance Performance and Patient Safety). The goal of the tool kit was “to encourage situational awareness and communication by all members of the team and to foster mutual respect among team members, regardless of their roles.”14(p20) The concepts that the Agency for Healthcare Research and Quality identified can be supported by complexity theory and complex adaptive systems. The four core elements identified by Clancy are team leadership, situational monitoring or awareness, mutual support, and communication.14 Nurse leaders must have situational awareness and be able to stand up and advocate for the staff members they serve. In times of high census, do leaders have a blind spot of the total number of beds versus the total number of staffed beds? Do leaders challenge administration that nurse retention may be improved by implementing a shared governance model of leadership that includes a progressive clinical ladder program of development? Additionally, leaders must use situational awareness to assess staff member fatigue, acknowledge exhaustion, and not ask exhausted nurses to work additional shifts.

Cooperation and competition. Another key complex adaptive system principle that leaders must be able to master in this framework is the balance between cooperation and competition. As cited in the literature, “A good leader would be one who knows how to, and prefers to, cooperate, but is also a skillful competitor when provoked to competition (that is, a nice, forgiving, tough and clear person).”7(p42) The ability to encourage healthy competition intertwined with cooperation is essential for the organization to move forward. Although this concept appears to be in conflict, it really is not. For example, our facility has 10 ORs “competing” for on-time start status. This provides a level of competition between rooms; however, the nurse, scrub person, anesthesia care provider, and surgeons assigned to each OR must collaborate with one another to compete in the bigger entity to determine which of the 10 rooms has consistent on-time starts. A key for any nurse leader is to establish a baseline assessment of perceptions related to collaboration between nurses and physicians in the organization in which he or she works. This evaluation will assist the leader in determining which of the complex adaptive system principles to implement and foster according to the baseline level collaboration that is assessed.

Creative destruction. The complex adaptive system principle of creative destruction is very threatening to all health care providers. There are many entrenched behaviors and processes that protect the sacred cows of the health care system. The concept of creative destruction may be the most challenging for leaders to embrace. As Zimmerman et al indicated,

In human organizations, the creative destruction phase may require dismantling systems and structures that have become too rigid, have too little variety and are not responsive to the current needs of the community (or market).7(p174)

A good example of creative destruction at my facility is the implementation of the final time out process immediately before the start of surgery. The challenge was that all surgeons perceived that they were doing the time out correctly when, in fact, some did not participate at all. We hung a
poster in each OR with the final time-out requirements and used the analogy of the airline industry that the case could not “take off” until all of the elements of the time-out were met. Interestingly, some surgeons were outraged and believed this was a huge mockery of medical practice. The surgeons were then asked if they were on an airplane, would they not want to know that there was consistency in what the pilot reviews before the plane takes off? The compromise was to have all surgeons actively participate in the final time out and have them be part of the revision to the final time-out posters in each OR. This is an example of creative destruction: something major needed to happen as the catalyst for disrupting the status quo.

PHYSICIAN-NURSE COLLABORATION SURVEY

A challenge for any leader is getting physician and staff member buy-in or active participation in the day-to-day operations and quality initiatives. To do this at my facility, I needed a baseline understanding of the perception of the level of collaboration between nurses and physicians in the perioperative arena. I discovered the Jefferson Scale as part of my literature review and chose it to measure levels of collaboration between nurses and physicians. In addition to establishing a baseline understanding of the perceptions of collaboration between physicians and nurses, I sought to determine whether nurses in this setting had a different attitude toward collaboration than physicians. I also sought to determine physicians’ perceptions on building collaborative relationships with nurses in the perioperative setting.

Assumptions

It is the leader’s role to use various complex adaptive system principles to facilitate all aspects of communication and delivery of care in the surgical environment. That being the case, I made the following assumptions related to the use of the Jefferson Scale:

- Professional nurses, surgeons, and anesthesia care providers all place value on doing a good job at caring for patients.
- The above entities all come from diverse educational and training backgrounds, which leads to varying perceptions of the same event (eg, a surgical procedure).
- Although all of these diverse professionals may have the knowledge of what is correct to do at any given time, the culture of the department may inhibit effective and open communication.

Design

The type of research design I used was comparative-descriptive in nature. The Jefferson Scale of Attitudes tool examines and describes the differences between physicians and nurses on 15 variables related to their perceptions of collaboration. The results showed the individual scores of the respective groups. Additionally, the scores of the two groups were compared using a t test.

Population and Sample

The population I drew from is the staff and contracted physicians who work in a 380-bed community hospital in northwestern Pennsylvania. This population includes RNs, anesthesiologists, and surgeons.

Sampling Method

The investigation included a convenience sample of nurses from the OR, cardiovascular OR, and postanesthesia care unit (PACU), as well as surgeons and anesthesiologists. The Jefferson Scale and a cover letter were distributed to 54 RNs, 61 surgeons, and 11 anesthesiologists who comprised the main users of the OR in October 2007.

Sampling Criteria

An inclusion criterion was that personnel had to be members of the OR, cardiovascular OR, or PACU staff to participate. All anesthesiologists were included because they all rotate through the main OR as part of their normal work. The surgeons surveyed were those who had used the OR
in the previous 12 months. The groups that were specifically excluded were certified RN anesthetists, the surgical technologists, the OR support staff members, and schedulers because the survey was specific to RNs and physicians.

**Protection of Human Participants**
The required documentation of approval from the institutional review boards at both Saint Joseph’s College of Maine and Saint Vincent Health Center was obtained to proceed with this investigation. Completion of the tool was completely voluntary, and the anonymity of participants was maintained. Participants’ completion of the tool implied consent to participate in the investigation. The only demographic information that was requested (ie, optionally) was gender, age, profession, and specialty.

**Setting**
The setting was an 11-bed OR at which approximately 6,500 surgeries per year are conducted in the fields of neurosurgery, orthopedics, and peripheral vascular, open heart, and general surgery. The PACU staff members also were included; the PACU consists of 10 bays where phase 1 recovery takes place.

**Measurement**
I used the Jefferson Scale to measure responses based on the following directives from Dr Hojat. The respondents must answer at least 12 (80%) of the 15 items; otherwise, the form should be regarded as incomplete and excluded from the data analyses. In the case of a respondent with three or fewer unanswered items, missing values should be replaced with the mean score calculated from the items completed by the respondent. To score the scale items, numbers 8 and 10 are reverse scored (ie, strongly agree = 1, strongly disagree = 4); the other items are directly scored based on their Likert values (ie, strongly agree = 4, strongly disagree = 1). The score is the sum of all item scores. The higher the score, the more positive the attitude toward physician-nurse collaboration.

**Data Collection and Procedures**
There was no personal identifying information on the surveys that could lead the principal investigator or anyone else back to any individual who participated in this investigation. The statistician and I double-checked the spreadsheet data as they were entered into Minitab to run the statistics on the data.

**Data Analysis**
Statistical analysis was conducted using a two-sample t test and Minitab as the statistics software. Descriptive statistics were used to assess the demographics of the population studied. The demographics included profession and gender, respondents by profession and age, respondents by specialty and profession, and nursing respondents by educational level. Of the 54 surveys sent out to RNs, 45 were completed for an 83.3% return rate. Of the 72 surveys sent out to physicians (ie, surgeons and anesthesiologists), 24 were returned for a 33.3% return rate. One physician’s survey had to be eliminated from the results because fewer than 12 questions were completed.

Of the total respondents, the following groups answered fewer than 15 but more than 12 of the survey questions: of the 45 nurse respondents, one answered 14 of the 15 questions; of the 24 physician respondents, three answered 14 of the 15 questions and one answered 13 of the 15 questions. Therefore, per Dr Hojat’s instructions, the mean of their remaining scores was used to fill in the unanswered questions.

**Findings**
With respect to perceptions of physician dominance (Figure 3), there was a significant difference between the two groups ($P = .039$). With respect to nurse autonomy (Figure 4), there also was a significant difference between the two groups ($P = .001$). These results reveal that there is a statistically significant difference between the
nurses and physicians with regard to nurses’ involvement with decisions on patient care and policy development, meaning the nurses believe strongly that they should be involved in patient and policy decisions and the physicians do not share that same sentiment.

With respect to shared education and teamwork (Figure 5), there was a significant difference ($P = .001$). This result means that the nurses lean more toward embracing a collaborative practice environment than do their physician counterparts.

With respect to caring versus curing (Figure 6), there was no difference between the physician and nurse groups ($P = .234$). This result indicates that both the physicians and nurses believe that nurses positively affect the psychosocial and educational needs of patients.

**Summary of Findings**

Establishing baseline data related to the perception of collaboration between physicians and nurses in the surgical arena is an important first step for nurse leaders to determine the best course of action in the change management process. This generation of nurse leaders faces the challenge of bridging the generation gap between older nurses and physicians, who may have a patriarchal or...
hierarchical view of health care, and the younger
generation, which expects everyone to be treated
as equals. The completion of this project assisted
in formulating the CALM by revealing the diver-
sity within the group as well as the underlying
conflicts.

Limitations
The following were potential limitations to this
investigation. The short-stay staff members who
work in the preoperative holding area were inad-
vertently excluded, and future studies should in-
clude this group in the sample size. In communi-
cating directions on how to send the survey out to
surgeons, it was not made clear to those involved
that the return envelopes on the surgeons’ surveys
needed postage added, and they were sent out
without postage. The lack of postage may have
partially accounted for the lower-than-anticipated
return rate for the surgeons’ surveys. In addition
to being the principal investigator in this study,
I am also the administrative director for the OR,
cardiovascular OR, and PACU. This fact was out-
lined in the letter to all the participants and may
have influenced the participants’ answers.

ASSUMPTIONS THAT SUPPORT THE
MODEL
An assumption that is a radical shift from tradi-
tional thinking is that productive conflict is not
bad and should be embraced in the complex adap-
tive system. The ability to manage conflict effec-
tively is what causes growth in this framework.
An additional assumption of this framework is
that leaders, by giving up personal control, actu-
ally gain more power to move their organizations
forward. Therefore, the more staff members and
physicians are empowered through shared gover-
nance philosophies, the more effective we be-
come as leaders. The ability to be objective when
facilitating dynamics is a key assumption of this
framework, and holding oneself as a leader to a
higher level of objectivity is not optional. It is
necessary to have the skill set to recognize our
own biases and be able to look past ourselves
to the bigger picture and the greater good of the
situation.

LIMITATIONS OF THE MODEL
A major limitation of this framework is that it is
newly introduced and will need to be tested and
fine-tuned as it evolves. Additionally, no research
has been conducted related to this framework;
research will need to be conducted to support its
reliability and validity.

IMPLICATIONS FOR PRACTICE
This model can be used as the underpinning for
leadership orientation, specifically for nurses new
to leadership and the interdisciplinary teams with
which they work. For the experienced leaders,
this framework can be used to take teams to
higher-level achievements, such as implementing
a shared governance or professional practice
model of care delivery. The flexibility of this
framework is that it provides the leader, whether
a novice or an expert, with the foundations for his
or her continued journey in leadership.

One may question the effect of using this
model on quality initiatives such as outcomes of
Surgical Care Improvement Project compliance
and incidence of surgical site infection. Data from
an initial Surgical Care Improvement Project
baseline assessment at my facility for April 2006
to June 2006 were as follows:
- antibiotics within one hour—93.8%,
- antibiotic selection—96.1%,
- antibiotics discontinued in 24 hours—93%,
- glucose level less than 200 mg/dL at 6 AM on
  postoperative day 1—96.4%, and
- normothermia for colorectal patients—50%.

The CALM was implemented in the fall of
2007 at my facility, and we measured outcomes of
Surgical Care Improvement Project compliance
and incidence of surgical site infection according
to the National Nosocomial Infections Surveil-
lance system during the three-year period from
2006 to 2008 (Figure 7). Saint Vincent Health
Center was in the top 10% nationally, with a 98.36% compliance rate for Surgical Care Improvement Project outcomes related to composite quality score and total cost by hospital in the Hospital Quality Incentive Demonstration Project (Figure 8). Additionally, Saint Vincent Health Center was one of the low cost leaders for the year from October 2007 to September 2008. This was an improvement from baseline data.

**IMPLICATIONS FOR EDUCATION**

This framework has the potential to have major ramifications in education for the future of nursing. Too often individuals have one small piece of information about an event and rather than seek to understand, these individuals act as judge, jury, and executioner. Although these words may seem harsh, this is the reality of some cultures within health care organizations, and the only way to fix it is to acknowledge it. If this framework is used in nursing and medical schools, it can teach prospective practitioners that a certain amount of conflict is healthy, but the hypercritical environment that consumes our current health care system is unacceptable and will not be tolerated as the norm.
IMPLICATIONS FOR RESEARCH
Research related to testing targeted interventions from the various principles of this framework, both alone and in combination with one another, is certainly necessary. Application of the framework to studies of leadership effectiveness in care settings outside the surgical suite also is necessary. These types of studies could add to the body of knowledge related to leadership interventions and the collaborative practice that results.

CONCLUSIONS AND RECOMMENDATIONS
The CALM integrates traditional theories with complexity science and provides today’s perioperative leaders with real-time tools to assist in the cultural transformation needed to run a successful OR. This is being presented as a framework for the practice of nursing leadership; therefore, research will need to be conducted to test the reliability and validity of these concepts. This framework is a usable model based on my experience as well as patient outcomes as a result of implementing the CALM. This model supports the idea that dialogue promotes understanding between parties in conflict and that the resultant understanding promotes trust between diverse entities. This is a trust that is earned between interdisciplinary teammates and is based on the fact that there is respect for one another’s opinion and that team members are willing to listen and share viewpoints openly. This leads to a stronger team and better patient outcomes. This model reflects that if and when leaders promote an environment in which they are comfortable taking on the challenging dialogues (ie, productive conflict), they can effectively lead change and build respect in the perioperative setting.

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References


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