



Teamwork in a Shock Trauma Unit: New Lessons in Leadership

Published : October 06, 2004 in [Knowledge@Wharton](#)

Imagine that you, as a mid-level manager in your company, have been assigned to a six-person team asked to complete a top-priority project on a very short deadline. As it turns out, some of the people have never worked together before, members of the team change every hour or so, leadership constantly shifts between three different individuals, and any mistake by even one person could have disastrous, even fatal, consequences for the project's outcome.



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Wharton management professor [Katherine J. Klein](#) spent 10 months studying such teams in action at the Shock Trauma Center in Baltimore, Md., a world-renowned urban facility that treats more than 7,000 patients each year, most of whom arrive with severe, often life-threatening injuries. The project and research were funded by the U.S. Army Research Institute as part of its efforts to gather information about leadership strategies for teams working in highly dynamic and stressful situations. The results of this research are presented in a paper titled, "A Leadership System for Emergency Action Teams: Rigid Hierarchy and Dynamic Flexibility," co-authored by Klein, Jonathan C. Ziegert, a visiting scholar at Wharton, Andrew P. Knight, a Wharton doctoral student, and Yan Xiao, a professor and lead researcher at the School of Medicine, University of Maryland, Baltimore.

Klein and her colleagues studied the trauma resuscitation unit as a way to analyze team leadership in diverse settings. "It is surprising that there hasn't been much research on team leadership, because there is lots of research on teams and lots of research on leadership," Klein says, adding that traditional research is usually based on "dominant" or "transformational" models which emphasize the leader's "inspirational" role in motivating his or her followers and which assume a long-term leader-follower relationship.

Yet in many current organizations, the researchers note in their paper, these "emphases and assumptions appear increasingly inapt." The tempo of work today is not only faster but also more unpredictable, the work is more complex and there is greater employee turnover. In addition, Klein says, recent scholarly studies focus on the idea that errors in certain kinds of organizations have huge consequences; think nuclear power plants and airlines. But other organizations - from consulting firms to fire-fighting units - struggle with these issues as well. "There is the need to incorporate new people, bring them up to speed quickly, and at the same time, maintain reliability and never commit an error. These are enormous challenges."

Instead of relying on traditional 'dominant' leadership models, Klein and her colleagues offer a more novel, and counter-intuitive, way of viewing leadership. They see it "as a system or a structure - a characteristic not of individuals but of the organization or unit as a whole." It is a different approach to how you build leadership, says Klein. "The lesson for a company would be not to focus only on selecting better people or training better people; think about putting structures and norms in place that allow leaders to be more effective. The role should be sufficiently established, and the norms sufficiently clear, so that whoever steps into the role will do it effectively."

This approach, taken to its extreme, is perhaps nowhere more evident than in a trauma unit, where terms like "life and death decision" and "working on deadline" have an unambiguous urgency. And while these trauma units present a "microcosm of many of the challenges contemporary organizations face," it wasn't

initially clear to the researchers just how the teams functioned. As Klein notes: "We walked in there and said, 'This leadership system doesn't look like anything we have ever heard of.'"

Emergency Room Observations

When patients arrive at the trauma resuscitation unit, they are immediately seen by a team of specialists that includes an attending surgeon (the most experienced surgical member of the team), a surgical fellow (the second most experienced surgical member), one or more surgical or emergency medical residents, an anesthesiologist, a registered nurse and a trauma technician.

The composition of the team changes frequently "as the individual members cycle on and off the team. Team members work shifts of differing lengths. Thus, the make-up of the team that assembles to treat one patient may differ from the make-up of a team that assembles to treat a second patient one hour later," the authors note in their paper. Team composition also shifts from day to day, week to week, and month to month especially as team members complete their trauma unit rotations and others begin. The lifetime of a team is short, usually 15 to 60 minutes - about the time it takes to stabilize the patient.

As part of their initial data collection, the researchers interviewed more than 30 members of the trauma unit and spent more than 150 hours observing the treatment of approximately 100 patients, including observation of operating room procedures. (One anesthesiologist said to Klein, as she was suiting up in surgical scrubs to observe an operation: "I am going to introduce you as Dr. Klein. Don't touch anything.") The researchers supplemented their interviews and observations with additional data, such as an analysis of the 184-page Resident Training Manual, a study of orientation meetings and interview transcriptions from other researchers.

Their initial goal was to answer two questions: "Who is the leader of the trauma unit team? And what leadership functions does this individual fulfill?" Although Klein and her colleagues had assumed that each trauma unit team had a leader, "we were wrong. Not only does leadership not reside in a single person, it does not reside in a single position," the authors write. Rather, trauma unit team leadership resides in a hierarchy of three positions: the top-ranked position, held by the "attending" surgeon, followed by second-ranked "fellow" position, followed by the third-ranked "admitting resident." ... The active leadership role shifts frequently and fluidly among the three individuals who occupy the team's three key leadership positions."

The researchers also wondered *how* leadership shifts from one position to another, *when* and *why* it shifts, and why such a system does not result in "chaos, conflict and error."

Among their findings: The system of investing leadership in three key positions "accommodates frequent changes in team composition. Individual leaders come and go but the leadership positions remain. Second, it creates redundancy, enhancing the reliability of patient care ... Finally it allows relatively novice leaders (i.e. the admitting residents) to assume a primary leadership role in a setting that affords them and their patients, protection and support."

The researchers note that trauma unit leaders perform three key functions: They provide strategic direction, monitor the performance of the team, and teach team members by providing instruction - all tasks that match those the researchers identified in the functional team leadership literature and which are applicable to business settings. (The fourth function of the trauma unit leaders, providing hands-on treatment of the patient, could refer to situations where leaders, instead of just supervising team members in key tasks, actually jump in to perform those tasks when the need arises, as in the idea of a store manager helping to ring up customers.)

Two functions that are referred to frequently in leadership research - "ensuring that team members are motivated and engaged, and establishing norms and routines that enable a positive and safe climate" - are

not part of the trauma unit approach, for two reasons. One, the team's efforts to save patients' lives is "inherently motivating." Two, because the trauma unit teams change so frequently, there is little time to develop norms and routines. "More influential are the norms of the trauma unit as an institution," the researchers note.

Passing the Baton

While this description of the trauma unit suggests a shifting leadership structure, it nevertheless is based on a clear pecking order. As the researchers note, the attending, the fellow and the resident "are ranked in a clear and rigid hierarchy," with the attending having more expertise, experience, status and power than the fellow, and the fellow having more than the resident. The leadership role changes essentially because the attending allows it to, depending on the circumstances of the individual case.

"Leadership ... seems to be a baton, whose possession is controlled by the most senior members of the hierarchy," the researchers write. "These individuals may assume control, taking possession of the baton, at any time. Yet, often they relinquish possession of the baton to those lower in the hierarchy." These shifts of leadership are based on such factors as the patient's condition and the personal styles of the doctors (for example, "hands-on" vs. "laidback").

While the researchers use the baton image to describe the active leadership role, the trauma unit leadership system as a whole, they suggest, is ultimately better described "not as a relay race, but as a dance in which the three team leaders step forward or back in response to the patient's changing condition and to the actions, competence, and confidence of others in the leadership hierarchy. The picture that emerges from this description is far more dynamic than that of traditional leadership models. In the trauma unit, leadership is ... a system, or dance, of moving parts."

In looking at the treatment of patients in the trauma unit, the researchers also wondered why there were so few errors and conflicts, especially given the very real pressure to act quickly and competently during the first few minutes of patient treatment. The researchers attribute this to a set of "enabling conditions," including such things as expert support staff (the nurses), the awareness among the fellows and residents that they are only in the unit for a short time (which makes it easier for junior leaders to accept the intervention of senior leaders) and the strong role that routines, tradition, and values play in the unit.

For example, "the initial treatment of patients is guided by routines or protocols that organize and prescribe the team's activities, protocols which the personnel observe and also teach to others." One attending anesthesiologist described the Advanced Trauma Life Support manual as "the handbook we are singing from during the first ten minutes of any resuscitation." Another fellow, referring to the manual's "ABC's of patient care, said: "To an outsider looking in, it looks like chaos. But everything is done in an orderly fashion. So, when a patient comes in, airway's first (A), breathing's second (B), circulation's third (C) ... It all looks unorganized, but it's organized."

As for surgical tradition, hierarchical authority is ingrained in, and valued by, every surgeon in the operating room." And in terms of value, all members of the team are committed to training junior personnel. "The traditional mantra of surgical training is to 'see one, do one, teach one' - that is, see a procedure, do one (or more) and then teach others to do the procedure."

This structure, the researchers say, leads to a "paradoxical leadership system characterized both by rigid hierarchy and dynamic fluidity." The hierarchy means that junior members know whom to defer to in times of uncertainty or crisis; when senior leaders delegate authority, junior leaders benefit from the learning experience; and when called for, senior leaders seamlessly reassert their authority to prevent errors in patient care. "It is a dynamic, integrated system," the authors write, whose very fluidity is one of the reasons for its success.

'Leadership Does not Occur in a Vacuum'

So what can the leadership system of a trauma unit teach teams in non-emergency situations? The researchers suggest that organizations where "immediate task performance is critical, goals are clear, team members vary in their expertise, experience, and need for training, and the composition of the team changes frequently" may have something to learn.

On the other hand, the rigid hierarchy and dynamic delegation of the trauma unit teams would, the researchers suspect, "interfere with the performance of teams tasked with the development of creative new products and processes." Even the challenges that cardiac surgery teams face in implementing a new surgical procedure are significantly different from those faced by a trauma team; the cardiac group, for example, benefits from continuity of team membership - clearly not an attribute of trauma units.

In general, however, Klein's findings bolster studies suggesting that leadership can be shared among the members of a unit or team, rather than residing in one person in charge of leading his or her subordinates. Such sharing can, in turn, help to develop the abilities of other team members, resulting in more effective functioning of the team as a whole.

Also, while most dominant models of leadership "present a largely static picture of leadership" in which the leader is "assumed, implicitly, to display the same style over time," the researchers point out that leader identity and behavior in today's world "evolve as a team matures and also vary as a function of team task cycles."

And where existing models also indicate that leaders shape their organizations' culture, staffing and norms, "our findings suggest that these effects may well be reciprocal," the researchers write. Just as leaders influence the development of team members, so too do team members influence their leaders. "In short, leadership does not occur in a vacuum."

Finally, dominant models of leadership see leadership "as a behavioral style, an individual difference, characterizing an individual leader's interactions with his or her subordinates(s) ... Leadership is thus inextricably linked to the person who occupies the leadership role."

Yet Klein and her colleagues offer a very different conceptualization of leadership. The trauma unit system suggests "that leadership is a role - or, more specifically, a dynamic, socially enabled and socially constrained set of functions which may be filled by the numerous individuals who, over time, occupy key positions of expert authority on the team. Leadership ... is not the product of a leader's individual differences, but of any organization or unit's norms, routines and role definitions."

Peaceful Coexistence

The characteristics that distinguish the trauma unit teams are likely to become increasingly common in the years ahead. As the researchers note, organizations "increasingly rely on interdisciplinary action teams ... work is more dynamic and unpredictable ... organizational complexity is increasing ... and long-term employee relationships cannot be assumed."

Says Klein: "What we kept coming back to was that these trauma unit teams were simultaneously extremely hierarchical and extremely fluid and flexible. The idea that these attributes could coexist, and in fact be complementary, was very surprising. The hierarchy allows team leaders to be flexible, because they can be comfortable delegating as long as they know they have the right to rescind that delegation whenever they see fit.

"You hear people talk about the need for more participative, less hierarchical, structures in the workplace," Klein adds. "And yet in trauma units you have very strong hierarchy simultaneously

with very strong delegation and flexibility, and it works, in part because everybody understands it.
There are tremendous opportunities for all involved to learn and to take action."

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