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The Importance of Both the Technical and Social Domains in Creating a Culture That Accelerates Improvement in Healthcare

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Abstract

Driving improvement in healthcare can be challenging related in part related to the degree of complexity. We break down the aspects of culture needed to accelerate improvement into a technical domain and a social domain. Task processes can be considered an organization's technical domain. The social processes, how those doing the work interact, can be thought of as the organization's social domain. The technical domain focuses on the work related to tasks and the social domain on the relationships that make efficient and effective work possible. We argue that work requirements and social relations are inexorably intertwined—each profoundly impacting, reflecting, and even determining the other. In this review, we argue that in order to accelerate healthcare system improvement, focus must be given to processes that take into consideration both on the social and technical domains.

Keywords

1. The Importance of Both the Technical and Social Domains in Accelerating Improvement

Healthcare is arguably one of the most important and certainly one of the most complex of all industries. This challenge has increased as healthcare organiza-

tions get larger and medical care more complex. Healthcare is often described as an interdependent sociotechnical system [1] because both *process* and *culture* are important drivers of high reliability in healthcare, and both are often stressed as essential components of improvement work [2] [3] [4]. We discuss contributing factors to a culture of improvement and propose a nomenclature, which 1) challenges the distinction between culture and process, 2) suggests that culture has both a technical domain and social domain, and 3) demonstrates that both need to be taken into account in improvement work [4].

The art and practice of improving how groups and organizations work have a rich history based on the steady ongoing integration of the technical concerns of what needs to be done in order to survive and grow with the human concerns of how to organize to get along with each other. In the original group dynamics literature, this was described as the dual tasks of any group: 1) being able to complete the task while at the same time; 2) building, maintaining, and evolving the group [4].

Task processes, how work is being done, can be considered an organization's *technical domain.* The social processes, how those doing the work interact, can be thought of as the organization's *social domain*. The technical domain focuses on the work related to *tasks* and the social domain on the *relationships* that make efficient and effective work possible [4] [5]. In this review, we offer a perspective on improvement practice that brings these views together, one that is based on a sociotechnical view rather than on a "culture vs process" discussion.

The improvement question then shifts from whether it is better to launch initial change interventions in the task domain or in the social domain, or in both at once?

2. Driving Improvement through a Primary Focus on Tasks (Technical Domain)

The question for organizations that desire to create change is often where to start? What are the actionable items to catalyze such a change? Some would argue that the initial focus should be on the social domain (*i.e.*, communication and teamwork behaviors), create a "culture of safety" or a "culture of improvement", do a culture survey, study the identified deficiencies in the social processes and create an action plan with countermeasures.

Others would argue that to catalyze change, it is best to first focus on the tasks, the work at hand in the technical domain [2] [3] that would involve making process improvements by solving specific problems through such means as standardization, waste elimination, reducing waiting time, changing task sequence to make it easier to provide patients with the right medication at the time, establishing practices that inhibit or prevent interruptions when staff are performing critical tasks, daily management systems, visibility boards, goal achievement, and developing processes for measuring and recognizing perfor-

mance. Focusing on how leaders lead and managers manage and building behavioral expectations into those processes creates actionable items to drive change and foster improvement.

The converse, launching the improvement process by focusing primarily on the social domain, is less true. Producing change in the social domain does not magically foster procedural excellence. People may become more comfortable but the work process may not improve. Focusing first on the technical domain connects the change initiative to the greater purpose of the organization and its work. By focusing on the task at hand and the work process to achieve that task, the team becomes more closely connected to the purpose of the work and the basic mission of the organization. Purpose can be a very engaging factor and can secondarily help the organization move toward desired social behaviors, thereby stimulating alignment between that purpose and the needed supporting processes in the technical domain. Changes in the technical domain will, of course, impact the relationships between the people, the social domain. Mann stated [3] in reference to what we are calling the social domain that "Culture is no more likely a target than the air we breathe. It is not something to target for change. Culture is an idea arising from experience." Similarly, Bussell stated that putting purpose of the work at the center, and over ego, drives social culture [6]. From this point of view, the way to foster improvement is to focus primarily on the technical domain in order to improve the work processes and secondarily have a positive effect on the social domain.

In 1983, General Motors (GM) took one of its worst performing factories and converted it into a joint venture between Toyota and GM, called the New United Motor Manufacturing Incorporated or NUMMI. In a period of one year after inception, NUMMI improved from one of the worst performing GM locations to a model performing factory [2]. Absenteeism of workers was reduced from a baseline of 20% to 2% [2]. Labor disputes dramatically decreased. Quality indicators improved from worst in the GM system to the best [2]. This all occurred with the same workforce in the same building and was described as a highly successful culture change.

However, the primary focus was on changing the way the technical dimensions of the work were to be carried out. Actions aimed directly at "employee involvement" were in the service of execution and improvement of technical tasks. Verbalized efforts to create a "culture of improvement" and use of the word "culture" were secondary in describing the transformational goals of NUMMI [2]. The *Toyota Production System* (which included defined management functions) was introduced at NUMMI and the focus was primarily on what people do to get their job done, not on how they got along [2], first defining what people do and then incorporating the desired work behaviors into related training.

The primary procedural changes at NUMMI were how work was designed and carried out ("standardized work") so that individuals could successfully ac-

complish their tasks while also easily identifying and tackling problems—as a central part of their job responsibility. Focusing on the processes of how work is done and problems are treated naturally affected the social domain [2] because work processes were built around the concept that work is designed to be "worker-friendly" with problems easily identified and rapidly addressed [2]. The processes at NUMMI were constructed around the concepts that it is the primary job of managers to establish the processes and environment that identify and fix problems that all employees have the right to be successful every time they do their job, and that part of front line employees' jobs is finding problems and making improvements [2]. The changes in the technical domain then fostered desirable change in the social domain.

For an example in healthcare, we look at some examples of initiatives that have occurred at our children's healthcare system—Stanford Children's Health. Our children's hospital has had multiple initiatives to attempt to improve the social domain for over the past decade and recent success in improvement initiatives has certainly built on that. However, the emphasis of improvement initiatives performed over the past 2 years has been primarily on the technical domain. These initiatives have focused primarily on key drivers in three areas: standardization, data transparency, and accountability [7] [8]. Standardization of processes, equipment, and procedures for front line workers across the enterprise were agreed upon and implemented. For data transparency, dashboards were created to get feedback to front line providers on their performance on the tasks at hand. For accountability, the importance of following these newly defined processes was built into our daily management system as well as emphasized via a number of mechanisms by leadership. Using this approach, the prioritized key performance indicators were improved. The central line associated blood stream infection (CLABSI) rate had decrease from 2.13 to 0.97 (event per 1000 central line days), a reduction of 54% [7]. The HAPI rate had decreased from 0.32 to 0.07 (event per 1000 adjusted patient days), a reduction of 82.5% [8]. Serious Safety Events (SSEs), as defined by definitions created by HPI and adopted by SPS [9] [10] [11] had been reduced from 24 to 7, a 71% reduction. The time to determination of an SSE had reduced from 38.4 to 4.8 days, an eight-fold reduction. The time for root cause analysis completion reduced from 188 to 26.2 days, a 4.5-fold time reduction [11]. The social domain of the culture was only assessed during this same two-year time frame, by means of the mandated AHRQ culture of safety surveys which showed no change in performance during that time. Also, interestingly, the clinical unit which originally had the most unfavorable scores (compared to all other clinical units on surveys both in the areas of employee engagement as well as a culture of safety), was the clinical unit that achieved the most dramatic improvement in all of the previously mentioned quality and safety key performance indicators. This suggests that even with limited survey tools for assessing the social domain, changes in the technical domain may actually produce changes in the social domain.

3. Driving Improvement through a Primary Focus on Social Interactions and Relationships (Social Domain)

Initiating improvement in the technical domain is desirable for all of the reasons given above. However, a major challenge in achieving long range quality and reliability in health care is the ever increasing complexity of its processes, which are often dependent on human beings and their interactions with one another. A successful journey to high reliability requires that people collaborate to solve problems and accomplish work that is ever evolving and becoming increasingly interdependent. Basic technical knowledge and skills are foundational, but success also requires non-technical skills such as communication and teamwork, and leaders who understand and espouse the importance of mutual respect, psychological safety and relationships.

In organizations across the United States today, employees at all levels spend much more time collaborating than they did twenty years ago, but in the world of healthcare, acknowledgement of the need for teamwork and collaboration has been slow to develop. Behavioral norms, reflecting the "culture of medicine" have been described as an impediment to safe and reliable care [12]. In 2007, Darrel Kirch, then President of the Association of American Medical Colleges (AAMC), delivered an address entitled "Culture and the Courage to Change" [13], in which he described "code words" he encountered during visits to numerous American medical colleges. Words such as autonomous, hierarchical, individualistic, scholarly, high-achieving and expert-centered, were often used in describing a social culture that had served medicine well in many ways in the past. But as the world around medicine changed, American medical colleges were caught in a culture clash: the growing complexity demanded effective teamwork, yet teamwork skills were not taught in healthcare training. The teachable, learnable skills of teamwork are best acquired through experiential training and a new type of "humble leadership" that supports effective communication, mutual trust and psychological safety [4] [14].

As organizations face more *complex interdependent* tasks, leadership and management must become more personal in order to insure open trusting communication that will make more collaborative problem-solving and innovation possible. Human systems are complex organic networks of relationships; therefore, defining what a relationship *is* and how close it must be between the members of the system is critical in order to mitigate resistance to change. [4] [5] [15].

All too often, the theory and practice of designing and running organizations today is still based on "traditional" management which defines job roles, rules for how employees should interact with each other, and the underlying assumption that professional distance between roles is critical for the organization to scale and adapt most efficiently. Professionally distant relationships work well when the organization's tasks are well-understood and stable, when tasks can be easily broken down into jobs and roles, and when those roles are largely inde-

pendent of each other, as in an assembly line of robots, or in transactions between separate "nodes" handing-off work in a linear sequential fashion [4].

However, in such professionally distant relationships there is little incentive to perceive opportunities to help one another, in part because individuals only know each other in their roles. Second, and more important for the implementation of improvement work, professionally distant relationships may inhibit information flow. Especially in the area of safety and quality, in an organization characterized by mostly professionally distant relationships there may be no established incentives to share what one knows and observes, thereby limiting both the design and implementation of improvement processes in the technical domain.

When managers make an effort to get to know their people at a more personal level, above and beyond their formal roles and job descriptions, employees generally become engaged and motivated to be more collaborative. These "*personized*" relationships are beneficial in situations where the work itself is interdependent and, therefore, requires more open communication and trust, as in most healthcare work.

We have observed that in improvement projects, resistance to change is almost always based on mistrust between the change agent and the change target [4]. The more agent and target get to know each other as people and the more they develop open and trusting relationships, the more the change targets are likely to see that the improvement will be of benefit, and therefore will help with the implementation instead of resisting or sabotaging it. Equally important is the realization that in a personalized relationship, the change targets may be more motivated to engage in helping to plan the best possible improvement by revealing front-line information that the designer did not know and thereby not only guarantee implementation, but actually improve the solution.

The implication here is that with greater complexity, working on both the technical and social culture domains must become a central concern of improvement projects. In order to "drive improvement", we need both a set of overall behavioral norms that acknowledge the need for change in what we work on, and new norms for how we work in our interpersonal interactions and in our relationships. This culture would be described by code words such as open, collaborative, team-based, service oriented and patient centered.

At Stanford Health Care (SHC), the adult healthcare arm of Stanford Medicine, although we are using a combined approach to improvement, with attention to both the technical and social domains of culture, we will here emphasize the approach to the social domain to provide an example. Within the social domain, we are championing a focus on "people development" to cultivate an environment of mutual respect, transparency and trust, which serves as the foundation for our annual plan to improve quality and patient safety. As part of this approach, an integrated wellness and patient safety culture survey was administered in June 2019, and a 75% response rate (n = 7948 respondents) was achieved.

Meetings with unit-based clinical teams and physicians, both faculty and residents, were held to debrief and discuss the survey data, and priority action items were integrated into performance plans at the unit level. Debriefs with program directors and residents have led to discussions about teamwork and psychological safety in the training environment. Further, teamwork metrics are now integrated into improvement plans at the level of Clinical Departments across SHC. We provide integrated training on critical social and teamwork skills, to teach practices and behaviors that collectively enable world-class safety, service and employee engagement. Prior to moving into a new hospital on campus, more than 1500 employees attended live sessions focusing on the social environment we are committed to creating across Stanford Health Care.

The results of our focus on the social domain of improvement efforts, together with our work on the technical domain, to date are encouraging. Over the past three years, Stanford Health Care (SHC) improved from a rank of 71 in national *Vizient* rankings to a current rank of 8, as benchmarked against academic medical centers across the country. SHC is on the Honor Roll for *US News and World Report* hospital rankings, earned an "A" grade for *LeapFrog* in the spring and fall of 2019, and earned a top teaching hospital award from *LeapFrog* in December, 2019. Also, Stanford Medicine was one of only 2 organizations nationally to earn gold level designation in the American Medical Association's (AMA) *Joy in Medicine* Recognition Program.

4. Conclusion

Work requirements and social relations are inexorably intertwined—each profoundly impacting, reflecting, and even determining the other. At the *Stanford Medicine Center for Improvement*, we are committed to deepen the body of knowledge and practice pertaining to this complex dynamic of mutual causality by pursuing approaches that focus equally on the social and technical dimensions of needed healthcare system improvement.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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