

## STATE OF THE ART AND SCIENCE

### Teamwork in Health Care: Maximizing Collective Intelligence via Inclusive Collaboration and Open Communication

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#### Abstract

Teams offer the potential to achieve more than any person could achieve working alone; yet, particularly in teams that span professional boundaries, it is critical to capitalize on the variety of knowledge, skills, and abilities available. This article reviews research from the field of organizational behavior to shed light on what makes for a collectively intelligent team. In doing so, we highlight the importance of moving beyond simply including smart people on a team to thinking about how those people can effectively coordinate and collaborate. In particular, we review the importance of two communication processes: ensuring that team members with relevant knowledge (1) speak up when one's expertise can be helpful and (2) influence the team's work so that the team does its collective best for the patient.

#### The Promise and Challenge of Team-Based Cross-Disciplinary Collaboration in Health Care

Across health care, there is an increasing reliance on teams from a variety of specialties (e.g., nursing, physician specialties, physical therapy, social work) to care for patients. At the same time, medical error is estimated to be "the third most common cause of death in the US" [1], and teamwork failures (e.g., failures in communication) account for up to 70-80 percent of serious medical errors [2-5]. The shift to [providing care in teams](#) is well founded given the potential for improved performance that comes with teamwork [6], but, as demonstrated by these grave statistics, teamwork does not come without challenges. Consequently, there is a critical need for health care professionals, particularly those in leadership roles, to consider strategies for improving team-based approaches to providing quality patient care.

Teams offer the promise to improve clinical care because they can aggregate, modify, combine, and apply a greater amount and variety of knowledge in order to make decisions, solve problems, generate ideas, and execute tasks more effectively and efficiently than any individual working alone [6]. Given this potential, a multidisciplinary team of health care professionals could ideally work together to determine diagnoses,

develop care plans, conduct procedures, provide appropriate follow up, and generally provide quality care for patients.

Yet we know that, overall, teams are fraught with failures to utilize their diverse set of knowledge, skills, and abilities and to perform as well as they could [6, 7]. The potentially harmful consequences for patients cannot be ignored: [poor teamwork](#)—such as incomplete communication and failing to use available expertise—increases the risk of medical error and decreases quality of care [2-5].

This article reviews research from the field of organizational behavior to shed light on group structures and processes that facilitate the use of available expertise for more effective decision making, negotiation, execution of tasks, creativity, and overall team performance. First, we highlight what it means to have a collectively intelligent team: one with the capability to perform well consistently across a range of tasks [8]. In doing so, we draw a distinction between having *smart people on a team* and having *smart teams*. We review the importance of laying the groundwork for creating smart teams, which enables two critical communication processes: ensuring that team members with relevant knowledge (1) speak up when their expertise can be helpful and (2) influence the team's work so that the team does its collective best for the patient.

### **Collective Intelligence**

In research and practice, a common belief is that teamwork is best when the team has the best—that is, the smartest—people; yet recent research challenges this assumption. Following methods used in psychology to study individual intelligence, Woolley et al. [8] investigated the possibility of a collective intelligence factor: a latent factor describing a team's general ability to perform on a wide variety of tasks. They brought teams into the laboratory, had them perform a wide variety of tasks [6, 9], and found that a team's performance on one type of task was closely related to its performance on all types. When they calculated a collective intelligence score based on the team's performance on the set of tasks, they found that it was only moderately related to the individual members' intelligence scores and was more predictive of future team performance than was individual members' average intelligence score [8]. This evidence suggests an important question: *If smart teams are not simply teams of smart people, what leads to a collectively intelligent team?*

A series of studies have revealed factors related to collective intelligence, providing some insight into how to more reliably cultivate smart teams. First is the social perceptiveness of team members, or their ability to infer others' mental states, such as beliefs or feelings based on subtle cues [10]. The average social perceptiveness of the team members is predictive of collective intelligence [11]. Second, in both laboratory and field studies, researchers have found that greater amounts of participation and more equal participation are associated with higher collective intelligence [8, 11].

A common thread in this work is the idea that these group structures and processes associated with collective intelligence are enhancing the quality of information sharing in the team [12]. The speculation is that members who pick up on a wider variety of subtle cues, and teams that operate in a manner that incorporates multiple perspectives, will operate with more and better information than they would otherwise. These patterns of interaction among team members allow teams to make good use of members' expertise—a key reason teams could be effective in health care—but capitalizing on a team's collective expertise is surprisingly difficult.

### **Expertise Use**

The process of expertise use in teams is multifaceted. Team members must first share relevant knowledge (i.e., knowledge about the task at hand) with others, and, second, that voiced knowledge must impact the team's work. The communication processes of [speaking up](#) and influencing others both come with challenges.

*Speaking up.* The challenge for effective information sharing begins with identifying who should be on the team, which can help to facilitate knowledge sharing. Members who know the team's boundaries—that is, who else is assigned to the team—also know to whom they can go for information and with whom they should share their information [13]. In this way, having a clear understanding of membership can increase the likelihood that people with relevant knowledge will be included in discussions, a necessary first step to ensuring that those people have opportunities to speak up. As an example, there is evidence from the study of pediatric care that including patients' families and nurses—who are often excluded from physicians' rounds—provides meaningful benefits in the form of better diagnoses and care plan development because these individuals can contribute information not possessed by other team members that can be used in making care decisions [14, 15].

In addition to gathering the right people on a team, those with relevant knowledge must speak up if their expertise is to be used effectively by the team. One obstacle is that members may not realize they have information worth sharing. For example, research on "the common knowledge effect" highlights the tendency for team members to focus on knowledge that is already commonly shared among group members. This is an effect based in simple probability: if all group members know a piece of information, for example an attribute of a job candidate, that information is more likely to be mentioned during a group discussion than information known by only one member [16]. As a result, uniquely held, important knowledge could go unspoken because members are less likely to think of it. Additionally, some evidence suggests that stereotypes about a social group's expertise can lead team members to incorrectly assess their own knowledge relative to that of others. For example, women who have deep knowledge about cars (reflecting a mismatch between the gender of the expert and the stereotype of that

gender's knowledge) may incorrectly assume they do not know as much about cars as a man, while a man may incorrectly assume he knows more about cars than the knowledgeable woman [17]. This can limit the likelihood that all relevant knowledge is voiced. For example, a nurse might believe physicians have more knowledge about a particular clinical treatment (because physicians typically are knowledgeable about treatments) and remain quiet, when in fact the nurse has important information about how the patient has been responding to that treatment. In this way, cognitive biases triggered by a group's composition as well as the common knowledge effect can lead people to withhold knowledge because they do not realize they have relevant and unique knowledge to contribute.

Psychological safety, which suggests "a sense of confidence that the team will not embarrass, reject, or punish someone for speaking up" [18], is another factor affecting the likelihood of speaking up. A lack of psychological safety, which often comes from being in lower status roles or professions, can lead team members to avoid speaking up even when they know they have something to contribute [18, 19].

Despite these challenges, there are some methods to facilitate effective information sharing. At the outset of a team's work, collaborative planning, in which members consider the knowledge of all team members, could facilitate team members' recognition of their own knowledge; it has been shown to enhance team ability to utilize knowledge [20]. Additionally, establishing group norms for critical thinking rather than norms for forging consensus leads teams to engage in more effective information sharing [21]. Once the work is under way, teams benefit from members, particularly high-status members, engaging in [inclusive behaviors](#). Such behaviors include actively eliciting information from other team members—that is, asking questions explicitly and proactively about whether anyone has contradicting or as yet undiscussed information [19, 22, 23]. Inclusive behaviors also include showing appreciation for members' contributions, for example, by stressing the importance of using all information (including mistakes) as a means for enhancing the team's work and learning and by reacting to others' contributions with constructive responses [19]. In studies about interactions among nursing teams, cardiac surgery physician teams, and neonatal intensive care units, researchers have consistently found that when members engage in inclusive behavior, the other team members feel more psychologically safe and are more likely to speak up about information relevant to the team's work [19, 22, 23].

*Influencing others.* If team members' knowledge is to be used to enhance team performance, once that knowledge is voiced, it must be incorporated into the team's work and not ignored or dismissed. When information is overlooked, one culprit could be the common knowledge effect. Research shows that uncommon information, or information uniquely held by at most a few team members, is not only less likely to be voiced but also more likely to be ignored and less likely to be repeated [24]. One reason

group members are unlikely to consider uncommon information is that it cannot be confirmed by other team members and, as a result, tends to be viewed as less credible, accurate, or relevant [25]. This assessment of uncommon information is problematic because unique information, if pooled, can lead to better decisions because it is based on a broader index of expertise [24, 25]. Indeed, the ability to pool such unshared information is an important source of a health care team's potential to offer superior care to a patient than any individual working alone.

Additionally, individual team members' characteristics can determine their capacity to influence the team. Team members are likely to be more influential when they hold high status—even if that status comes from traits that are potentially unrelated to actual expertise, such as gender or age [26]. Team members' social or professional categories can also affect their influence. For example, research on group diversity suggests that looking different from others in a group might increase a member's influence. When a person is different from other teammates, he or she is expected to have different knowledge or perspectives to add to the group, and, if that person speaks up, others are more receptive than they would be to a similar group member [27, 28]. This biased attention to status and categorical cues that are unrelated to expertise and should be irrelevant can lead to undue influence for some members while leaving relevant knowledge of members with low status or from certain subgroups less likely to be considered and, therefore, less likely to influence the group's work.

To ensure that available expertise influences the team's work, team members, and especially [team leaders](#), can implement certain strategies. First, striving to repeat and call attention to uniquely held information can give that information a better chance to be incorporated into the team's work, which ultimately should enhance the work itself. In a study of teams of physicians making diagnostic decisions, teams that repeatedly asked questions to surface unshared information (which only one person initially knew) as opposed to shared information (which all members knew) made more accurate diagnoses [29]. Additionally, to combat devaluation of knowledge based on differences in social or professional group, team members should promote a belief in the value of informational diversity, which can improve communication exchanges and the processing and integration of information [30]. Research shows that when teams have a greater expectation that they will encounter diverse opinions—and value diverse opinions—regardless of the source, they are less surprised by diverse opinions, consider them more frequently, and are overall better able to capitalize on the discussion of alternative ideas [31]. Valuing diverse opinions is helpful even if the idea being discussed is incorrect, as this can still lead team members to think more deeply about the issue, which improves creativity, decision making, and problem solving [32].

## Conclusion

The need for all medical and health professions trainees to understand how to work across disciplinary boundaries is noteworthy, given that the stakes are high and that working together effectively requires more than simply ensuring that team members are smart people. Team members, especially those in leadership positions or with higher status, should actively invite input to ensure that team members voice all of their information. They should also be role models in expressing appreciation for diverse knowledge from all sources to ensure that team members' input—regardless of who the team member is—will be considered and used in the team's work. Such teams will be well suited to capitalize on their expertise, avoid errors, and provide effective patient care.

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