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# Interprofessional Practice in Different Patient Care Settings: A Qualitative Exploration

**Deborah DiazGranados**[a], **Alan W Dow**[b], **Nital Appelbaum**[a], **Paul E Mazmanian**[a], and **Sheldon M Retchin**[c]

[a]Virginia Commonwealth University, School of Medicine, Richmond, United States

[b]Virginia Commonwealth University, Richmond, United States

[c]Ohio State University, Columbus, United States

## Abstract

Increasing interprofessional practice is seen as a path to improved quality, decreased cost, and enhanced patient experience. However, little is known about how context shapes interprofessional work and how interventions should be crafted to account for a specific setting of interprofessional practice. To better understand how the work of interprofessional practice differs across patient care settings we sought to understand the social processes found in varying work contexts to better understand how care is provided. A case study design was used in this study to yield a picture of patient care across three different settings. Qualitative analysis of teams from three healthcare settings (rehabilitation, acute care, and code team) was conducted, through the use of 10 in-depth semi-structured interviews. Interview data from each participant were analyzed via an inductive content analysis approach based upon theories of work and teams from organizational science, a framework for interprofessional practice, and competencies for interprofessional education. The work processes of interprofessional practice varied across settings. Information exchange was more physician-centric and decision-making was more physician dominant in the non-rehabilitation settings. Work was described as concurrent only for the code team. Goal setting varied by setting and interpersonal relationships were only mentioned as important in the rehabilitation setting. The differences observed across settings identify some insights into how context shapes the process of interprofessional collaboration and some research questions that need further study.

### Keywords

Qualitative study; interprofessional collaboration; teamwork; team processes; patient care

Correspondence: Deborah DiazGranados (diazgranados@vcu.edu), Virginia Commonwealth University, School of Medicine, Box 980466, 730 East Broad Street, Theater Row, Suite 4200, Richmond, 23298-0466 United States.

Declaration of Interest

The authors report no conflict of interest. The authors alone are responsible for the writing and content of this paper. The contents are solely the responsibility of the authors and do not necessarily represent official views of the National Center for Advancing Translational Sciences, the Josiah H. Macy Jr. Foundation, the Donald W. Reynolds Foundation, or the National Institutes of Health.

## Introduction

Increasing interprofessional practice has been advocated as a solution to the challenges of quality, cost, and patient experience facing healthcare (Institute of Medicine; World Health Organization). Yet, interventions in interprofessional education and practice redesign have been slow to show consistent impact on outcomes of care (Reeves, Perrier, Goldman, Freeth, & Zwarenstein, 2013). One barrier to improving interprofessional practice is the lack of a unifying conceptual framework to guide the construction and evaluation of new initiatives (Reeves, et al., 2011). Unraveling the complexities of how interprofessional teams work is essential for understanding interprofessional practice and designing the interventions needed to improve the outcomes of care.

In interprofessional practice, team structures are theorized to be shaped by organizational and contextual factors as well as relationships between healthcare providers, patients, and families (San Martin-Rodriguez, Beaulieu, D'Amour, & Ferrada-Videla, 2005; Reeves, Lewin, Espin, & Zwarenstein, 2010). These factors and relationships lead to different team structures that can be described by the degree to which teams work together (e.g., multidisciplinary, interdisciplinary, and transdisciplinary; Choi & Pak, 2006). These team structures are then manifest in observable behaviors of team members – team processes – which can be measured and studied. In specific settings of care, descriptions of interprofessional teams have identified behaviors, affective traits, and organizational structures that support desired outcomes of care (Goldsmith, Wittenberg-Lyles, Rodriquez, & Sanchez-Reilly, 2010; Piquette, Reeves, & LeBlanc, 2009; Reeves, Macmillan, & Van Soeren, 2010; Schaik, O'Brien, Almeida, & Adler, 2014; Sinclair, Lingard, & Mohabeer, 2009). However, developers of interventions to increase interprofessional practice often need to look across more than a single setting to be able to define the best approach to improving care across an interconnected system. One of the authors (SMR) proposed that the urgency of care might be a major factor shaping interprofessional relationships (Retchin, 2008). To inform this conceptual model (the Retchin model), we sought to compare and contrast the work of interprofessional teams across three different levels of urgency and structured authority. The purpose of this article is to examine current examples of interprofessional practice across different contexts and describe the behaviors of team processes within the identified teams.

Foundational research in organizational science has informed the understanding of team effectiveness both within and outside of healthcare by presenting the Input-Mediator-Outcome-Input (IMOI) model, which stems from the Input-Process-Output (I-P-O) model (McGrath, 1984; Hackman, 1987; Ilgen, Hollenbeck, Johnson & Jundt, 2005). According to organizational science approaches, teams engage in cyclical episodes where inputs (e.g., team composition, task characteristics, and organizational context) affect outcomes (e.g., team effectiveness, member satisfaction, viability) through mediating team level processes (e.g., communication, leadership, planning, conflict management). Based on this theoretical foundation, this study focuses on the mediating team processes that define the work of teams in discrete time increments (i.e., transition and action phases) under the Recurring Phase Model (Marks, Mathieu, & Zaccaro, 2001). Episodic theories (Marks, et al., 2001; McGrath & Rotchford, 1983) of team processes, which consider the temporal aspects of work, are

based on the notion that performance occurs in episodes and these episodes or phases represent reoccurring cycles of task accomplishment. Episodic theories therefore consider the impact that time has on team processes and outcomes. That is, team process requirements change at different periods during a performance cycle. Similar to sociological approaches to analyzing teamwork (Hunziker, et al., 2011), which consider context (i.e., hierarchy, task demands and characteristics, etc.), episodic theories also take into consideration context, taskwork and teamwork processes when delineating how teamwork is executed during a performance cycle.

The length of task cycles depends on contextual inputs; for example, in the operating room, each surgical procedure might represent a cycle. While in the clinic, each patient visit or each day might represent a cycle (Dow, DiazGranados, Mazmanian, & Retchin, 2013). Within each cycle, team processes occur in phases of *planning* and *action* (Marks and colleagues, 2001). During the planning phase, teams usually work collaboratively to review past performance, set new goals, and plan the steps to achieve developed goals. In the action phase, teams execute these plans, often working as one team, individually or in several smaller teams. At the end of the action phase, a new cycle is started with the initiation of a new planning phase. This conceptualization of phasic work can be applied to healthcare through structures such as rounds or team meetings (i.e., planning phase activities) that are interspersed with longer episodes of uni-professional work such as patient assessments by physicians or medication administration by nursing (i.e., action phase activities). However, phases of work may be undermined by insufficient structures, a lack of inclusivity, and other factors, leading to team failures (Dow, DiazGranados, Mazmanian, & Retchin, 2013). Applying the Recurring Phase Model to interprofessional practice breaks up complex interactions into discrete episodes and the specific behaviors of meaningful and operational episodes which can be studied.

To advance our understanding of interprofessional practice across contexts, we applied the Recurring Phase Model (Marks, et al., 2001) to identify and further explore team/patient care based behaviors across contexts as defined by Retchin (2008) in the Model for Interprofessional and Co-managed Care (see Figure 1). The Model for Interprofessional and Co-managed Care (Retchin, 2008) provided a framework in which to compare interprofessional collaborative care across domains of authority and urgency. The application of the Recurring Phase Model (Marks, et al., 2001) provided an organizing framework for how teams across contexts function. Moreover, with the emphasis of phases of work (planning and action) we were able to formulate questions that were better suited to elicit description from the interviewees. In order to delineate the team based behaviors, which exist across contexts, we interviewed three teams of healthcare providers from three different patient settings: a rehabilitation team, an acute care team, and a code team. Through this study, we were interested in answering two research questions: how do work processes differ across patient care settings, and how are team based behaviors categorized by the Recurring Phase Model into phases of planning and action phases? Our goal was to increase the conceptual clarity about interprofessional practice by examining current examples of interprofessional practice across different contexts and describe the behaviors of team processes within the identified teams. The work presented here could be used to inform

the development of interventions for improving interprofessional practice and outcomes of care.

## Methods

### Study Design

A case study design (Yin, 2014) was used in this study to yield a picture of patient care across three different settings. Sources of data were used to build a picture of patient care and the teamwork that enabled care. The emphasis of the study design was to focus on the context, roles, responsibilities and teamwork processes in the provision of care.

### Setting and Participants

We utilized the framework presented by Retchin (2008) to guide purposive sampling; we identified three settings within an academic medical center whose teams we anticipated would differ in work processes: rehabilitation, acute care, and emergent resuscitation. Within the framework, these settings could be viewed as extremes on the variables of urgency in care and structured authority with one setting representing an intermediary between the two extremes (i.e., acute inpatient care). In the current study, setting includes: 1) the participants, their characteristics and capacities; 2) interpersonal relations, including the professional relationships that carry the expected behaviors; 3) institutional setting, including the rules, norms, and local standards of care, and 4) the general social, economic, and cultural setting of care (Pawson, 2013). We engaged in this study with certain preconceptions about the individuals who work within these settings and by those who agreed to participate in the current study, such as they are motivated by both self-interest and a desire to improve health outcomes of patients (Eisenberg, 1986; Greenhalgh, 2004; Pawson, 2013).

The rehabilitative care unit consisted of a 27-bed inpatient unit. The majority of patients have sequelae from either trauma or stroke. Nursing, therapists, and physicians are assigned to the team with support from consultative services in other medicine specialties and pharmacy. Interview participants from the rehabilitation team were a resident physician, a physical therapist, and a nurse.

The acute care unit consisted of a 28-bed general medicine unit that focused on the care of non-critically ill hospitalized adults with diagnoses such as pneumonia, congestive heart failure, or kidney injury. Nurses and therapists are assigned to the unit while physicians and pharmacists are jointly assigned to a specific group of patients that might span several different clinical units (i.e. ‘a medicine team’). Interview participants from the acute care team were a resident physician, a pharmacist, and a nurse.

An emergent resuscitation team (i.e. the ‘code team’) includes physicians, nurses, pharmacists, chaplains, and administrators who respond when called by any person across the system when a patient experiences a respiratory or cardiac arrest, another critical condition (e.g., sudden hypotension), or in cases of uncertain illness severity. Generally, members of the code team have not worked together before, but some members may have familiarity with each other. Interview participants from the code team were a lead physician, a fellow, a pharmacist, and a nurse.

## Data Collection

Data were collected by identifying, with the assistance of nursing leadership, a single patient in the targeted setting. We then identified specific individuals caring for that patient based on their professional role to participate in the study. We utilized in-depth semi-structured interviews (Marshall & Rossman, 2014) where each individual on the team, in their respective professional role, responded to questions exploring how the team functioned in the care of the specifically identified patient. This approach provides multiple sources of evidence from which to construct findings. Interviews were typically one hour in duration and followed an interview guide (Appendix A – see online supplementary file) designed to stimulate narrative responses focused on understanding the processes and phases of work (Dow, et al., 2013). When questions did not apply to the care provided to the specific patient, respondents were asked to describe their typical daily actions in their work. Team members were interviewed individually in a private location. Interviews were audio recorded and transcribed for coding.

## Data Analysis

While experimental designs strive to test theory, we used the naturalistic inquiry methodology to further enhance understanding of constructs and contexts by describing, analyzing and understanding team function around patient care in multi-disciplinary healthcare teams (DePoy & Gitlin, 1994). Using an inductive content analysis approach, we interpreted interview responses regarding team function. We relied on the qualitative technique of data triangulation: using data collected from multiple sources (i.e., team members who embodied a different perspective around patient care) to provide support for the events of each case (Arksey & Knight, 1999; Denzin, 1978; Denzin & Lincoln, 2000; Merriam, 2009). This inductive approach allows the shared experiences to develop into propositions to further comprehend the theoretical underpinnings of interprofessional work.

Interview transcripts were analyzed primarily by two authors (both organizational psychologists) through a systematic approach based on three frameworks: Marks, Mathieu, and Zaccaro (2001), the Interprofessional Education Collaborative (2011), and Retchin (2008) (see Appendix B – online supplementary file). First, transcripts were coded to capture the interviewees' description of their work processes and how work was done in caring for the focal patient in each setting. The patient was coded as being a member of the team. Work processes were broken into ten processes: mission analysis, goal specification, strategy formulation, monitoring progress toward goals, systems monitoring, team monitoring and backup, coordination, conflict management, motivation and confidence building, and affect management (Marks et al, 2001). Additional codes of team processes were added as they emerged from the data analysis including interpersonal relationships, a foundational component of effective teams (Sundstrom, De Meuse, & Futrell, 1990). Second, descriptions of interprofessional competencies were coded based on four major domains: values/ethics, roles/responsibilities, communication, and teams/teamwork. Third, to define the context of each work environment, transcripts were coded to capture interviewees' description of each setting in the domains of urgency (e.g., low or high), structured authority (e.g., low or high), and temporality (e.g., concurrent versus collaborative work) (Marks et al., 2001).

Elements of researcher triangulation, using different researchers in the analysis process, and the use of multiple coders were used in order to optimize the rigor of the study (Barbour, 2001). Two researchers coded all transcript data and met to discuss coding results and interpretation during research meetings. The final results presented in this manuscript are based on the coding that resulted from the research meetings. Although the two coders showed substantial agreement, we did not seek interrater reliability as much as completeness of description in order to explore the theoretical constructs in these complex clinical environments. We used research meetings to analyze the transcriptions. This was a valuable strategy given the complexity of qualitative data analysis. The degree of agreement between the coders was not as important as the value of the content of disagreements and insights that the discussion meetings provided while refining and interpreting the codes and developing the themes around the codes (Barbour, 2001). Once analysis of all data was completed, all investigators, who included board-certified physicians (AD, SR), discussed the codings made by the initial two researchers in order to check for understanding and interpretation of transcript data. This continuous process of collaborative coding, analysis and writing featured comparison and contrasting of our individual interpretations of the study results, further enhancing our confidence that the conclusions drawn from this study combine the perspectives of practicing health care providers, organizational scientists and academic physicians.

### Ethical considerations

The study received approval from Virginia Commonwealth University's Institutional Review Board before it commenced. Participants were consented in person prior to the start of the interviews and no identifiers were collected which linked the interviews to the individual or the patient. Each participant was reassured that all information collected would be kept confidential and anonymous. Transcriptions were scrubbed of any names inadvertently mentioned by the interviewees.

## Results

The team processes were clustered into five general domains for interpretation: information exchange, decision making, goal setting, coordination, and interpersonal relationships. Analysis of the data by team process domains revealed differences across domains. Some data did not result in an overall theme or were not consistently present across members of the team; therefore, only domains with substantive data were included in results. Summary findings are presented in Table 3. (See Appendix C, online supplementary file, for a complete reporting of results).

### Information exchange

Information exchange varied across teams. Rehabilitation team members, including the physician, described their communication as bidirectional through both face-to-face interactions and the use of communication boards. The acute care and code teams, on the other hand, were highly structured with most of the information flowing primarily from non-physician team members to the lead physician(s) (i.e. physician-centric).

**Rehabilitation Team.—**Information was shared openly during scheduled weekly team meetings where all healthcare providers were present as well as frequently with the use of asynchronous tools like communication boards in the patient rooms as well as the team room. The resident physician described the weekly team meetings as well as the use of the communication boards:

> 'The role of the team meetings is to make sure that … everyone is on the same page. For example, the therapists are the ones that play the biggest role in deciding when [a patient] is ready to go home…the social worker knows that the insurance is only going to approve someone to stay until a certain date. Those are the things which would come up in a meeting.'

**Acute Care Team.—**Although the physician was the central point for communication among the healthcare providers in the acute care setting, typical communication between the nursing staff and the physicians on acute care teams did not include rounding as a complete team. For example, when the resident physician was asked about the communication that the patient had with each team member, it was described that:

> 'The intern individually spoke with patient A this morning… and then patient A spoke with me and the attending. Patient A spoke with the nurse multiple times throughout the day.'

The nurse usually relied on information found in the electronic medical record or ad hoc communication throughout the day. It was not typical nor expected for the physician(s) to seek out a nurse to be involved in morning rounds. The nurse described the rounding that took place for patient A:

**Q:** 'Did they call you in to discuss this [patient]?'

**Nurse:** 'No, I saw them walk in, so I just walked right in. I try and do that…if I see them I will try to go in with them.'

The pharmacist assigned to patient A was covering additional duties for another pharmacist who was absent. The pharmacist described the care of patient A that day and also the typical role of a pharmacist on the particular unit. The pharmacist acted in a consultative role for patient A. He was not present for rounding, gathered most of the necessary information via chart review, and relied on the hospital system's paging system to contact the medical team. Communication with the pharmacist consisted mostly of one-way communication with physicians and nurses who requested information from the pharmacist.

**Code Team.—**Information exchange for the code team was rapid and usually one directional to the physician lead. The physician asked for information from team members more familiar with the patient. The lead physician explains how information was gathered on the patient:

**Lead Physician:** 'We had the computer next to the patient. I was the one there in the beginning so I went through all the records... I was able to provide that information [to the cardiology Fellow]. The nurses were also there to provide some extra information.'

The duration of the code team case was extremely brief—approximately two minutes—and, thus, the information exchange was quick.

## Decision-making

As with information exchange, decision-making differed between the rehabilitation team and the other two teams. In the rehabilitation team, authority and decision-making were more shared with non-physician team members compared to the other two settings. The acute care and code team described a traditional, hierarchical authority structure of greater physician dominance. However, across all team types, the physician(s) had final decision-making authority.

**Rehabilitation Team:** The decision-making process described by this team was decentralized. For example, the decision to discharge a patient was usually made during team meetings rather than decided by one individual (the physician). As a physical therapist and physician noted:

**Physical Therapist (PT):** 'I mean the decision for the length of stay and discharge planning we have an initial team conference within the first week that they're here [patient] and most team members are present, PT, OT, speech, rehab, psychology, TR, physician, nursing, social work, after care coordinator … we go around the room and give a little synopsis of where the patient is right now and then we make a decision based on the level of function that they're at and then the level of predicted function we think they'll be at by the time they leave'

**Physician:** 'I don't think that there is one team member that makes all the decisions, almost all the orders have to go through the physician, but the decision to ask for those orders comes from almost anybody.'

**Acute Care and Code Teams:** In these interviews, it was reported that the physician made the ultimate decisions on the care for the patient. In the acute care team, residents would make decisions with confirmation of the plan of care from the attending physicians. For the code team, the lead physician made the final decisions for the patient.

**Acute Care Nurse:** 'Sometimes it's the intern or resident that comes up with the idea and then it is always the attending physician's final decision.'

**Code Nurse:** 'Obviously the physician in the room is going to make a final decision on the patient… it really is a team effort [in reference to everyone providing information regarding the patient and their status before the code was called].

## Goal setting

Goal setting was unique across all three team types. The rehabilitation team described each team member developing individual goal(s) and then sharing those goals during a weekly team meeting. In contrast, the acute care team goals were developed primarily by the physicians and shared with the nursing staff. The goal of the code team was defined by the patient's condition (i.e. the need to emergently stabilize the patient).

**Rehabilitation Team:** Scheduled weekly team meetings provided a forum to share each professional's opinion. All members of the team were aware that each team member had their own goals for the patient as part of an overall patient care plan. Goals from each provider were communicated to all team members, and, due to goal sharing, all team members were able to provide care that was consistent with the goals established by other team members.

**Physician:** '…Every specialty has their own goals and then there are goals that are set as a group in the meeting. …with patient R, one of the speech therapy goals was to get him to mouth yes or no rather than just nodding his head. And if that is something that he only did in speech therapy, there wouldn't be as much benefit.'

**Acute Care Team:** Members of the acute care team indicated that the physicians primarily set patient care goals and then inform the nursing staff and any other relevant team members. Other healthcare professionals are incorporated in the conversation around the goals of patient care based on convenience. For example, if a nurse is at the bedside at the time of rounds, then he or she will be involved in the goal setting conversation. However, if the nurse is not present, the physicians do not include the nurse, and nursing staff will rely on communication via the electronic medical record, pages, or phone calls to understand patient goals.

**Physician:** '[There was] face to face contact between intern, resident and attending and then letting the nursing staff know and then letting the patient and the family know.'

**Nurse:** 'A lot of times they [physicians] will talk about it outside the room and some of the doctors will seek you out and bring you in on the conversation but that's probably only 20% of the time. If you see them you usually have to end up going over and approaching them.'

**Code Team:** Since the goal is to stabilize the patient, there is no formal process of goal setting in the code team.

**Pharmacist:** '…the goal was to get [patient R] resuscitated, to get the full code blue team there, and morph into that mode. So they said 'Okay she has no pulse, we have to resuscitate her.' And that was the main goal at that point.'

However, subsequent goals for patient care are set by physicians as the patient's condition evolves. Depending on the case, goal setting can be a joint effort by several physicians, especially if the patient is being transferred to another unit.

### Coordination

Coordination efforts between team members varied greatest between the code team and the other two contexts. Rehabilitation team members primarily worked with the patient individually but would potentially co-treat in certain situations. Similarly, the acute care team tended to work individually but most of the work was coordinated through the physicians. In contrast, the code team involved concurrent work from all team members.

**Rehabilitation Team:** Most of the work of the rehabilitation team was sequential work; individuals are interacting with the patient at distinct times rather than all at once. At times, individuals co-treat patients, depending on the goals and activity. The physical therapist explains how work is primarily executed:

**PT:** 'I would say probably more individually. I do co-treat, usually if it's as a group, it's two disciplines versus a big group of us, like OT and I have co-treated with patient R to help with verbalization while doing a function mobility task and patient R actually responded really well to that.'

**Acute Care Team:** The acute care team also described their work to be more sequential rather than concurrent. Members who were interviewed indicated that the physicians would participate in pre-rounds and rounds, but rounding did not always include other professions on the healthcare team. Most of the work done around patient A was done uni-professionally – physicians made diagnoses and ordered tests, the nurse administered physician orders and performed assessments, and the pharmacist chose to intervene with recommendations when necessary. When the nurse was asked how work was done, she replied:

**Nurse:** 'I guess it was separate since I didn't see the others.'

**Code Team:** Work conducted by the code team was concurrent with the physician directing the work of other team members who provided information and administered care to the patient. The physician described how care was provided to the patient:

**Fellow:** 'I think the entire team was caring for patient C… I don't think everyone necessarily was assigned a specific role, but again, it may have been just the fact that it was so brief that there was not enough time to get everything set up.'

### Interpersonal relationships

While analyzing the transcripts, the interpersonal relationship between the lead physician and other team members emerged as a theme from only the rehabilitation team interviews. The theme of interpersonal relationships, because not emphasized during the interviews by the participants, was not discussed in the other contexts.

**Rehabilitation Team:** The rehabilitation team members often referenced behaviors consistent with mutual trust and respect and the development of a shared mental model between the physicians and other team members on the team. Non-physician team members described that the physician valued their expertise as critical to the holistic care of the patient. The autonomy of therapists to develop profession specific goals is one example of how such a process diffuses responsibility across team members. The physician who was interviewed described the respect of the diverse set of expertise provided by all team members, '…you respect that other people are experts in their area.'

## Discussion

Although research has highlighted the importance of teamwork and collaboration within healthcare, studies have generally focused on a single context and not examined how team

processes differ across contexts. Reeves and colleagues (2011) highlighted the importance of context on different team structures and contrasted interprofessional collaborative practice with other multidisciplinary contexts. This qualitative study, which investigated the extent to which the setting of care shapes work processes, further delineated the differences in work processes across contexts in interprofessional practice. Specifically, it extends the model presented by Retchin (2008) and it applies team theory (i.e., the Recurring Phase Model; Marks, et al., 2001) to better define work processes. Our work answers the call by other authors (e.g. Reeves et al., 2010; Reeves, 2016) to use theoretical perspectives to generate a more informed understanding interprofessional education and practice activities.

Information exchange between team members was described differently across contexts (i.e., rehabilitation vs. acute care vs. code team). Information exchange varied from bidirectional in rehabilitation to physician-centric in other settings. The manner and quantity of information exchanged between team members has implications on how teams function and how teams can improve their performance. For example, information exchange between healthcare providers has been linked to improved quality of care and more efficient outcomes (Sacks, et al., 2015; Weaver, Dy, & Rosen, 2014). Understanding how teams communicate can help design initiatives and disseminate best practices linked to improved clinical outcomes. An important factor not considered in this study is how information technology shapes information exchange, healthcare delivery and interprofessional practice as part of the sociotechnical work system (Singh & Sittig, 2016). It is important to consider how IT influences how information exchange occurs and its implications on coordination. There is literature that has focused on how IT may support individual rather than team based work (Dorr, Jones, & Wilcox, 2007) and how awareness (i.e., understanding the activities of others as it pertains to your own activities) is influenced by IT (Eikey, et al., 2015; Kuziemsky & Varpio, 2011; Ray, Parameswaran, Chan, & Yu, 2008). This is an area that merits further study.

Decision-making also varied by context. It was more shared in rehabilitation but relied on physicians to make decisions based on information collected from other team members in the other contexts. Since rehabilitation utilized interdisciplinary team meetings as a method of communication, decision-making and information exchange were perceived as being shared and bidirectional, suggesting that information exchange and perceived decision-making could be linked. As noted in other work settings, more open information exchange may decrease the authority gradient (Carson, Tesuk, & Marrone, 2007). Potentially, the level of structured authority could be related to the openness of communication and be inversely correlated with optimal patient safety practices like escalating concerns. While in the acute care and code team settings a traditional authority structure was described between physicians and non-physicians. Such that power distance, the extent to which unequal distributions in state and power are legitimized by organizations (Hofstede, 2001; Schaubroeck, Lam, & Cha, 2007), was prevalent. These relationships should be further investigated by future research.

In the acute care and code team contexts, interprofessional practice had other differences. While coordination in the planning phase occurred centrally in all three contexts, action phase activities occurred sequentially in acute care and rehabilitation but concurrently for

the code team. As such, monitoring the performance of other team members and assisting those in need is more straightforward on the code team than in acute care and rehabilitation. Practitioners in contexts such as acute care and rehabilitation need to realize the importance of engaging in monitoring and supportive behaviors to improve interprofessional collaboration. Training initiatives should emphasize these specific team processes.

Across all three settings, goal setting varied and appeared to be shaped by patterns of decision-making and patient acuity. Whether goal setting was optimal for patient needs was not studied and should also be further evaluated as a target for intervention of training or process redesign that can improve patient outcomes.

A barrier to improving interprofessional collaboration is not understanding how context influences team level processes such as information exchange, decision-making and coordination. Our study draws attention to the social nature of teams in healthcare to provide a team-centric picture of the interprofessional healthcare team. The notion that decision-making processes differ across contexts may help to shed light on other team level processes or outcomes that may influence patient outcomes and quality care. Defining these differences in work process by setting serves to extend the Retchin (2008) model while also raising important questions about the reason care is structured in this fashion. Initiatives that target specific elements of the work domains are a potential path forward to improve interprofessional practice. For example, acute care, as the intermediary setting in this study, may benefit from developing work processes that were enacted in the other settings such as increasing bidirectional information exchange (as done in rehabilitation) or concurrent work (as done with code teams). Because the relationship of the physician to the rest of the care team emerged as a consistently important concept—information flow between physicians and non-physicians and how physicians integrated others on the team in the decisions around patient care--reshaping how physicians are positioned relative to other practitioners may improve interprofessional practice and enhance patient outcomes. Effective interprofessional practice requires the social exchange of relationships (Safran et al., 2006). Trust and respect, psychological states that emerge from interactions between team members, are the foundation of stronger relationships. Moreover, focusing on the development of interpersonal relationships between team members may be a good place to begin.

However, these interventions must be practical and carefully evaluated for unexpected effects. For instance, the rehabilitation team members noted working together for longer periods of time and, in their weekly team meetings, having opportunities to align multiple goals and develop states of trust and respect based on their frequent interactions. This frequency of interactions likely affords the team members to develop a shared mental model, which allows them to communicate implicitly and demonstrate varied levels of coordination among the team (Clark & Brennan, 1991; Klein, Feltovich, & Woods, 2005). The development of a shared mental model allows members of a team to communicate more effectively (e.g., use abbreviated communication) and develop mutual knowledge, beliefs, and assumptions that support their interdependent actions (Klein, Feltovich, & Woods, 2005). Interventions that seek to increase the consistency of team composition (e.g. unit-based medical teams in acute care) may lead to the development of better team function but may not be feasible in the more dynamic setting of acute care. Our findings should be seen

as advancing a framework from which a number of testable hypotheses can derive for further study.

Although this study provides valuable insights into how interprofessional healthcare teams function across contexts (Hurley, 1999), it has its limitations. The qualitative data collected were based on perceptions of teamwork processes. While understanding individuals' perceptions of how they work is informative of how they function as team members, a more accurate depiction of team-based behaviors would be to collect objective collaboration data. Future research may consider mixed method studies in which observation-based data may supplement additional qualitative or survey based data. The use of qualitative methodology, which can lead to new research questions and perspectives (e.g. Hurley, 1999), does limit the generalizability of the findings of our study because of the small sample size. While the number of participants was appropriate for our exploratory methodology, it limits the generalizability of our findings. Future studies should expand on our findings by employing rigorous designs to test implications of interventions on work processes. Such research could inform policy, operational efforts, and educational programs with regards to increasing and improving interprofessional practice.

Interprofessional practice varies by setting as delineated by Retchin (2008). Results from our study begin to distill the variation into distinct work processes. These work processes represent targets for interventions that could improve interprofessional practice and enhance patient outcomes. Research has shown that educational and structural interventions have influenced culture and patient satisfaction (Campbell, Ramsay, & Green, 2001; Joosten, et al., 2008) as well as decreased clinical errors (Morey, et al., 2002; Gilfoyle, et al., 2017). It is our intent to provide researchers and the healthcare community with a platform for designing future studies by employing rigorous designs to the development of work processes that can improve patient outcomes.

## Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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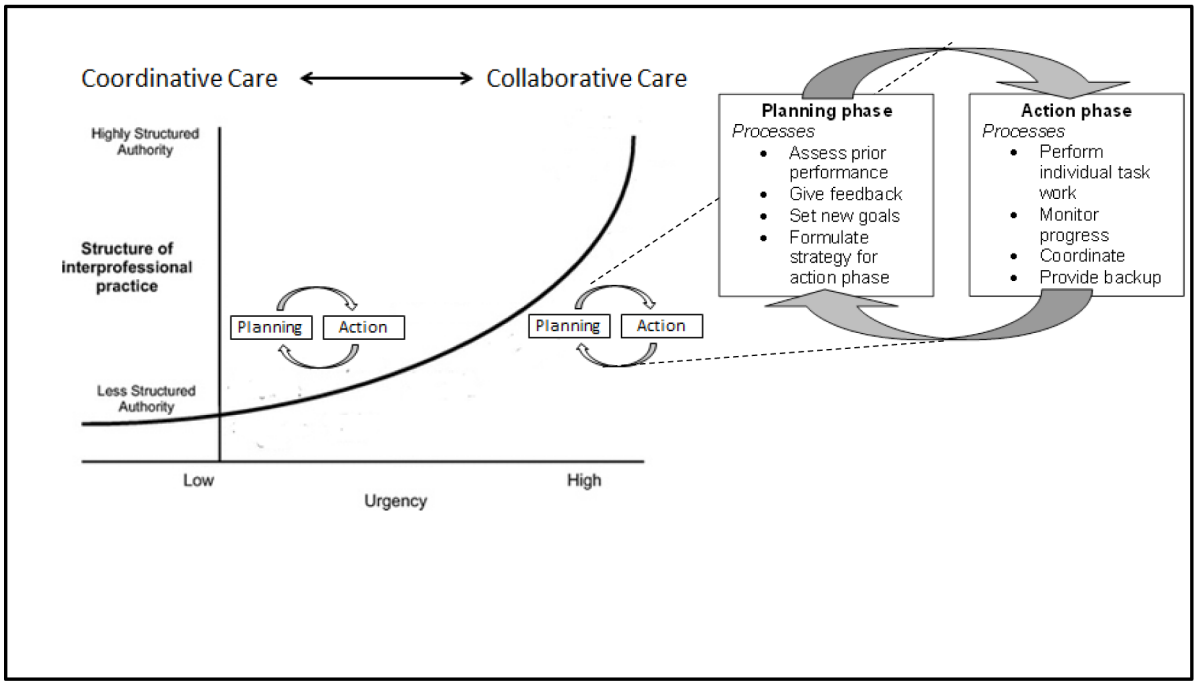


**Figure 1:**
The Team Process Model (Marks, et. al 2001) overlain on the Model for Collaborative Care (Retchin, 2008)

**Table 1:**

Summary of Findings by Team Process Domain

| | Rehabilitation Team | Acute Care Team | Code Team |
|---|---|---|---|
| Information Exchange | Bidirectional | Physician-centric | Physician-centric |
| Decision making | More shared | More physician dominant | More physician dominant |
| Goal setting | Individual with sharing | Physician with sharing | Condition defined |
| Coordination | Sequential work | Sequential work | Concurrent work |
| Interpersonal relationships | Emphasized | Not emphasized | Not emphasized |