2015

RELATIONAL COORDINATION: AN EXPLORATION OF NURSING UNITS, AN EMERGENCY DEPARTMENT AND IN-PATIENT TRANSFERS

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RELATIONAL COORDINATION: AN EXPLORATION OF

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A dissertation submitted in partial fulfillment of the requirements for the degree of Doctor of Philosophy at Virginia Commonwealth University

by

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August, 2015

ACKNOWLEDGEMENT

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Abstract

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Emergency department (ED) crowding is a patient safety concern that has been
increasing for more than a decade. Increased visits have resulted in ED crowding, longer wait
times, ambulance diversions, and boarding of admitted patients (Hing & Bhuiya, 2012).
Numerous factors affect ED crowding. Once various extraneous issues are resolved and a bed is
available for a patient, it becomes the responsibility of nurses across unit boundaries to
coordinate the patient transfer. This study applies Relational Coordination Theory (RCT) as a
framework to provide nurses insight into the relational aspects of their work in the transfer of ED
patients to inpatient beds. Relational coordination is a mutually reinforcing process of interaction
between communication and relationships that is carried out for the purpose of task interaction.
It is useful for coordinating work that is highly interdependent, uncertain, and time constrained
(Gittell, 2002). Nurses work during ED transfers requires task interaction as they coordinate

their efforts. This study, guided by RCT, will examine relational and communication dynamics among nurses within their own units and across unit boundaries as they interact during ED transfers. A cross-sectional, descriptive design will explore the seven dimensions of Relational Coordination (RC) during ED admissions and explain nurses relational and communication dimensions that may influence ED boarding times. The results of this study provide new information and a sound theoretical model on which to base future research.

CHAPTER 1. STATEMENT OF THE PROBLEM

The American health-care system is at a crossroads. The need for innovation and change in the current health-care system has been universally identified as essential to improving the nation's health. The largest workforce component of the health-care system is nurses. Innovation and change cannot be achieved without nursing engagement. In fact, restructuring of current delivery systems will fail if nurses do not actively engage in the redesign and reform of care systems. Nurses serve as the constant sentinels in the coordination and delivery of care to patients. When *The Future of Nursing: Leading Change, Advancing Health* report was released by the Institute of Medicine (IOM) in 2011, nurses were given an invitation to step from a marginal role in health care to take the lead at the head of the reform table. The IOM, with a 40-year foundation of providing quality reports, recognized for the first time high quality, safe, effective, evidenced-based and patient-centered care is based on the critical role of the registered nurse (RN). The report declared that achieving a successful health-care system in the future rests on the future of nursing. The report concluded that nurses, in concert with other health professionals, need to become system innovators and called for greater interprofessional collaboration. Specifically, the report recommended as a research priority the need to identify and test new or existing models of care teams that have the potential to add value to the health care-system if widely implemented (IOM, 2010).

Nurses have been a quiet enabling force for change in health care in many dimensions over the last 20 years (Aiken, Clarke, Sloane, Lake, & Chaney, 2009). During that time

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significant relationships have emerged between individual nurse characteristics, work practice environments, and patient outcomes. Throughout the 1980s, nursing's work environment was explored in an attempt to understand nursing's work force retention and recruitment concerns. Evidence indicated that nurse retention was directly related to a nurse's perceived ability to provide quality patient care (Aiken, 1989). Improvements in specific aspects of the nurse work environment, such collaborative practice between nurses and physicians, nursing participation in hospital governance, and adequate resources; have continued to align with better work environments and to provide better nurse and patient outcomes. A growing body of international literature supports these quality links between nurse work environments and better patient and nurse job outcomes (Kutney-Lee, 2015). Providing safe patient transfers has been identified as a challenge for nurses as they attempt to provide quality patient care. Unsafe patient transfers plague current practice processes.

Transfer of care refers to the process of physically moving accountability of nursing care previously provided by one nurse to another within a unit, or from one setting (the emergency department) to another setting (an in-patient bed) and to a different set of nurses. The transfer of care from one nurse to the next involves a transfer of information, responsibility, and authority for patient care. Transfers are often considered error prone, affecting the continuity, quality, and timeliness of the patient care delivery process. Problems associated with the transfer of information have grown from accounting for 65% of sentinel events tracked by the Joint Commission Center for Transforming Healthcare in 2007 to 80% in 2012. A sentinel event is an unexpected occurrence that results in the risk of, or death, or injury of a patient (The Joint Commission [TJC], 2015). The Joint Commission specifically cited communication as the most frequent root cause of sentinel events during failed patient hand-offs. It is estimated that poor

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communication during patient hand-offs plays a role in 80% of serious preventable adverse events (Siefferman, Lin, & Fine, 2012). In August 2009, the Joint Commission and 10 collaborating hospitals and health systems focused on hand-off communications. These organizations, together with the Center, examined their hand-off communications problems and identified specific causes. A hand-off or transfer of care requires a caregiver (the "sender") to transmit patient information and release the care of the patient to another caregiver ("the receiver"). The receiving caregiver accepts the patient's information and then assumes responsibility and accountability for providing care. On average, more than 37% of the time hand-offs were defective and did not allow the receiver to safely care for the patient. In addition, 21% of the time senders were dissatisfied with the quality of the hand-off. They identified the hand-off deficiencies to be caused by a culture that demonstrated a lack of teamwork and respect, ineffective communication in which methods provided inaccurate or incomplete information, as well as competing priorities distracting the receiver's focus from the transferring patient (Joint Commission Center for Transforming Healthcare, 2013). While the transfer process is plagued with quality challenges, the often unspoken consequence of this disconnect between the sender and receiver produces poor quality care as a patient waits to be transferred.

Emergency departments (EDs) are challenged with crowding and inadequate acute bed capacity. The IOM has established ED crowding as a public health crisis (IOM, 2007). The crisis is universally evident in long wait times to be seen, high "left-without-being-seen" rates, extended ED lengths of stay, and long waiting times for inpatient bed placements (Schneider et al., 2010). ED crowding has been associated with delays in medication administration, higher clinical complication rates after ED evaluation, and increased mortality (Liu et al., 2011).

An extended wait for a bed placement is referred to as ED boarding time and will be the focus of this inquiry. ED boarding occurs when admitted patients are unable to be transferred to an inpatient bed. The reasons for the wait are multiple and varied. The end result of the wait, however, is that when patients board in an ED they do not get the same level of care that they would receive in an acute care bed (Schrader et al., 2008). ED boarding has been associated with adverse events such as higher rates of ventilator-associated pneumonia (Carr, Hollander, Baxt, Datner, & Pines, 2010), higher mortality rates, longer hospital stays (Singer, Thode, Viccellio, & Pines, 2011), and higher rates of medication errors (Kulstad, Sikka, Sweis, Kelley, & Rzechula, 2010).

To address these issues, the Centers for Medicare and Medicaid Services (CMS) have introduced ED crowding measures in their pay-for-reporting matrix. Specifically, CMS will now consider ED boarding quality measures along with clinical processes by including throughput measures (arrival to departure for admitted and discharged patients, decision to admit, door-to-diagnostic evaluation, and left-before-being-seen) as they evaluate an organization's performance. Health-care organizations can no longer view patient admissions and ED boarding time in isolation of the greater organizational process. A hospital's throughput issues and ED boarding times can no longer be considered an isolated ED issue. Organizations' sustainability will depend on improving current practices (Agency for Healthcare Research and Quality, 2011).

Coordination of timely admissions from the ED requires nurses to effectively collaborate and communicate during the interdependent transfer. Relationships and communication patterns in nursing practice have not been examined in relation to ED boarding times. The complexity of coordinating the transfer of care is dependent on many variables that range from securing a bed assignment, contacting and communicating the plan of care to the receiving nurse, and arranging

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safe transport. The complexity of the environment and the challenges managed by nurses as they face competing priorities in the provision of care for several patients can result in interrupted efforts, missed information, and delayed interventions. Transfers add another layer of complexity in a nurses work environment and often stress individuals as they interact, communicate, and transfer patients. Little attention has been paid to the complex dynamics of the relational and communication dynamics that occur during the interdependent task of transferring care. Nurses are the primary coordinators of patient transfers. As nurses combat the adverse outcomes associated with ED boarding times across the continuum of care, they must examine their role in facilitating the transfers of admitted patients out of the ED. Thus, the question that must be answered is when nurses interact with each other during the interdependent task of transferring admitted ED boarders: What relational and communication dimensions are present that may influence a timely patient admission?

To provide direction for nurses, health-care providers, organizations, and policy makers, factors associated with timely ED boarder admission time is necessary. While nursing is a subgroup of the many health-care disciplines, it remains the largest work force component and the discipline charged with the coordination of care. In 2003, the IOM singled out coordination of care as indispensable to improving the safety and quality of health care in the United States (IOM, 2003). Thus, following the IOM recommendations, this study examined the work of a nursing team's task integration in the coordination of ED boarder transfers. Examining relationships and communication among nurses across unit boundaries can provide insight into nurses' coordination of care. Innovative research is needed to explore nursing relationships with each other as they coordinate the care for their patients. Many theories explore the dynamics of complex environments and relational interaction. For the purpose of this study, I chose Gittell's

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emerging relational coordination theory (RCT) as the most comprehensive and complementary theory to explore relationships and communication among and across nursing teams as they coordinate the care and the transfer of care for patients boarding in an ED. This chapter presents background and information on trends in theory development and research on RCT. It also presents the statement of purpose for this study, definition of terms, and the hypothesized relationships and effects among the concepts of the proposed model.

Background and Significance

Enormous effort has been expended over the last decade in attempts to identify variables related to safe patient outcomes. Much has been written about a "safety culture." Yet, defining and measuring this type of culture remains difficult and elusive to design, implement, and maintain (Blouin, 2010). Patients, providers, organizations, and regulatory agencies all engaged in an earnest pursuit to prevent errors and stop creating harm within the health-care systems have made little headway. Emergency department crowding is a patient safety concern that has been increasing for more than a decade. From 1999 through 2009, ED visits increased 32%. Increased visits have resulted in ED crowding, longer wait times, ambulance diversions, and boarding of admitted patients (Hing & Bhuiya, 2012). In the past 10 years, despite the challenges inherent in studying the effects of crowding, researchers have provided robust studies linking ED crowding to quality and to outcomes. Crowding has inconstant effects on different types of patients. Some have been found to experience significant delays without adverse effects while others have received less effective care that lead to greater complications and mortality. Emergency department crowding continues to be a worldwide public health problem and an important patient safety issue (Pines & Griffey, 2015).

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The IOM (2007) identified ED overcrowding as one of the most serious safety issues facing hospitals nationwide. Initial position statements on this issue from TJC and the General Accounting Office suggested overcrowding was the result of inappropriate use of emergency services for non-urgent conditions and offered no specific policy response. More recently, these organizations have revisited the issue and adjusted their response. Reengaged in ED crowding issues, both organizations have evolved to an awareness that the misuse of the ED for non-urgent care does not significantly contribute to overcrowding and boarding issues (Olshaker & Rathlev, 2006). Both organizations conclude that the inability to transfer emergency patients to inpatient beds is the single most important factor contributing to ED overcrowding (Olshaker, 2009).

The common misperception that ED overcrowding is caused by non-urgent patients has been dispelled by current research. Specifically, low-complexity patients do not significantly increase ED boarding time (Schull, Kiss, & Szalai, 2007), and poor ED performance has been shown to be significantly related to poor inpatient flow (Fatovich, Nagree, & Sprivulis, 2005). Asplin et al. (2003), using a consensus of experts, concluded that the most often cited reason for ED overcrowding is the inability to move admitted patients from the ED to inpatient beds. ED workflow outcome measures that carry the highest influence on ED overcrowding are ED boarding time, boarding burden, and hospital occupancy rate. ED throughput time increases as hospital occupancy increases (Schull et al., 2007), and there is a strong association between increased hospital occupancy and longer ED throughput time for admitted patients (Forster, Stiell, & Wells, 2003).

Newer studies are beginning to assess the quality of care delivered to ED boarding patients. Safety concerns exist that as ED staff face overcrowding many competing demands may result in boarders not receiving the same level of care as their admitted counterparts.

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Studies have found that ED boarding patients demonstrate higher rates of ventilator pneumonia (Carr et al., 2007), higher mortality rates for ICU admitted patients (Chaflin, Trzeciak, Likourezos, Baumann, & Dellinger, 2007), higher rates of medication errors (Kulstad et al., 2010), delays in pain relief (Pines & Hollander, 2008), and longer lengths of hospitalizations (Richardson, 2006). Liu et al. (2011) indicated that quality of care differs for boarded patients and worsens in clinical areas where the ED environment is not equipped to manage routine care such as the delivery of home medications and nonacute functions. ED overcrowding is associated with health-care providers reporting decreased satisfaction (U.S. Government Accountability Office, 2003), and poor communication related to a plan of care for their patients (Apker, Propp, & Ford, 2007). Hospitals suffer lost revenue (Falvo, Grove, Stachura, Vega, & Stike, 2007) associated with the increased rates of patients leaving without being seen and ambulance diversion (Forster et al., 2003).

Numerous factors affect ED crowding and many variables affect the assignment and availability of an inpatient bed. However, once various extraneous issues are resolved and a bed waits for a patient, it becomes the responsibility of nurses across unit boundaries to coordinate the transfer. The complexity of the systems and demands placed on an ED nurse to provide care in an overcrowded environment begs the question: What can nursing do to reduce ED overcrowding, and improve patient input and throughput? This study introduces RCT as a framework to provide nurses insight into the relational aspects of their work. Providing quality nursing care in today's health-care organizations is complex. Nurses interact in many ways across and within environmental boundaries. Transfers of patients require interdependent interaction. Currently, ED overcrowding in most organizations is considered an ED problem rather than a complex, hospital-wide systems problem (Emergency Nurses Association, n/d).

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Relational coordination will introduce a hospital-wide evaluation of relational work and its association with ED boarding time. Thus, the question that must be answered is: Is RC significantly different within and between the ED and the nursing units where the most ED in-patient transfers occur?

Statement of Purpose

The purpose of this inquiry is to examine the relational and communication dimensions in work processes as RNs coordinate ED admissions and describe potential associations with ED boarding times. RCT introduced by Gittell (2009) identifies the mutually reinforcing process of interaction between communication and relationships that is carried out for the purpose of task interaction. This research provides valuable information about the relational processes that occur in the transfer of patients to inpatient beds. RCT proposes that goals are achieved by coordinating work through relationships of shared goals, shared knowledge, and mutual respect. Shared knowledge and a mutual understanding of a goal (the need to reduce an overcrowded ED) is essential; however, this dimension alone is insufficient in the integration of efforts to complete the task of transferring the patients out of the ED. Nurses must also engage in a relationship of sharing a foundational knowledge of each other's role in the task and demonstrate mutual respect as they navigate the complex integration of their efforts. These three relational dimensions (shared goals, shared knowledge, and mutual respect) establish a foundation for coordinated team action (Gittell, 2009).

Transfer of care refers to the process of physically moving accountability of nursing care previously provided by one nurse to another within a unit, or from one setting (e.g., ED) to another setting (e.g., ICU) and to a different set of nurses. The transfer of care from one clinician to the next involves a transfer of information, responsibility, and authority for patient

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care. Problems associated with the transfer of information are a major contributing factor to adverse events in hospitals and have grown from accounting for 65% of sentinel events tracked by the Joint Commission in 2007 to 80% in 2012 (Joint Commission Center for Transforming Healthcare, 2013). Coordination of patient care is enhanced when providers perceive that coordination of patient care is enhanced and "that they have sufficient knowledge and the confidence that their inputs will be recognized and pursued by other providers" (Haggerty et al., 2003, p. 1221). Practice environments face complex communication behaviors as a result of transient patient conditions, availability (or nonavailability) of clinical evidence, and distributed nature of clinical information and decision making (Alvarez & Coeira, 2006). Units with higher uncertainty have higher transfer duration times per patient. Higher uncertainty units discuss fewer topics, fewer treatment options, care, and organization of work less frequently. Sharing emotions is less often mentioned in higher uncertainty units (Mayer, Bangerter, & Aribot, 2012). Transfers are often considered error prone, affecting the continuity, quality, and timeliness of the patient care process. Researchers often focus on understanding transfers as a discrete communication activity independent of other surrounding activities in the clinical workflow (Abraham, Kannampallil, & Patel, 2012). While transferring care is an isolated care-related task, it needs to be evaluated within the overall context of a nurse's relational coordination and the practice environment.

Definition of Terms

In the current investigation, the variables are as follows:

Emergency department crowding is when there are inadequate resources to meet the patient care demands and leads to a reduction in the quality of care (Hing & Bhuiya, 2012).

Emergency department boarding is defined as the period of time from when a nurse receives an in-patient bed assignment to the time the patient arrives to that inpatient bed.

Patient transfer is defined as to the process of physically moving accountability of nursing care previously provided by one nurse to another within a unit, or from one setting (e.g., ED) to another setting (e.g., ICU) and to a different set of nurses (Haggerty et al., 2003).

Relational coordination is a mutually reinforcing process of human interactions between communication and relationships that are carried out for the purpose of task integration. Team-work is coordinated through relationships of shared goals, shared knowledge, and mutual respect; and supported by frequent, timely, accurate, problem-solving communication. Communication and relational dynamics provide the basis for coordinated team action under conditions of task interdependence, uncertainty, and time constraints (Gittell, 2003). Figure 1 depicts the conceptual model of relational coordination's association with ED boarding times.

Summary

This study will focus on nurses' relational coordination and the seven dimensions of communicating and sharing common goals, knowledge and mutual respect while managing ED admissions. Specifically it will answer the question: What are the relational and communication dimensions in work processes as RNs coordinate ED admissions and describe potential associations with ED boarding times. It will introduce the principles of RCT as the conceptual framework for nursing practice as nurses address the complexity of their work and tackle overcrowding in their emergency departments. Complexity theories (Stacey, 2001) present convincing evidence that nurses must move beyond assumptions of linear work processes and serve as an underlying thread in RCT. RCT extends this view by moving individuals away from the historical siloes and hierarchical roles towards a focus on task integration within complex

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environments (Gittell, 2003). Clinical units are social objects where the team is nothing more or less than the iterated ongoing processes in which nurses are together particularizing the generalizations in terms of which they perceive their unit and organization (Stacey, 2001). Relationships and interactions within and across units can expose the importance of understanding how each makes sense of what is going on as they interact and influence each other. These interactions within the nursing units are nonlinear social interactions. The social construction of meaning and its definition of reality are often created in isolation of the larger organizational goal. Nurses functioning in a complex ED environment interact and respond to the pressures they face (Patton, 2011). RCT provides a framework for these individuals to examine their complex work and establishes a springboard for innovation in processes that may, through the use of human capital, sustain a reduction in ED boarding times. Instilling accountability among nurses at the frontline of patient transfers, or more specifically, strengthening individual nurse investment in the organizational goal of reducing ED boarding times is crucial to organizational success. Beyond a commitment to exceptional care for individual patient assignments and unit specific initiatives, nurses engaged in an institutional safety goal of decreasing ED boarding and overcrowding can influence change. Organizations that have established greater accountability among frontline nursing staff report strong quality, safety, and patient experience outcomes (Berkow et al., 2012). Rapidly transferring admitted patients from the ED to a hospital bed has the single greatest impact on alleviating ED crowding and brings the greatest subjective sense of relief (Schneider et al., 2010). Nurses can drive this initiative using relational coordination theory as they integrate the task of transferring patients out of the ED.
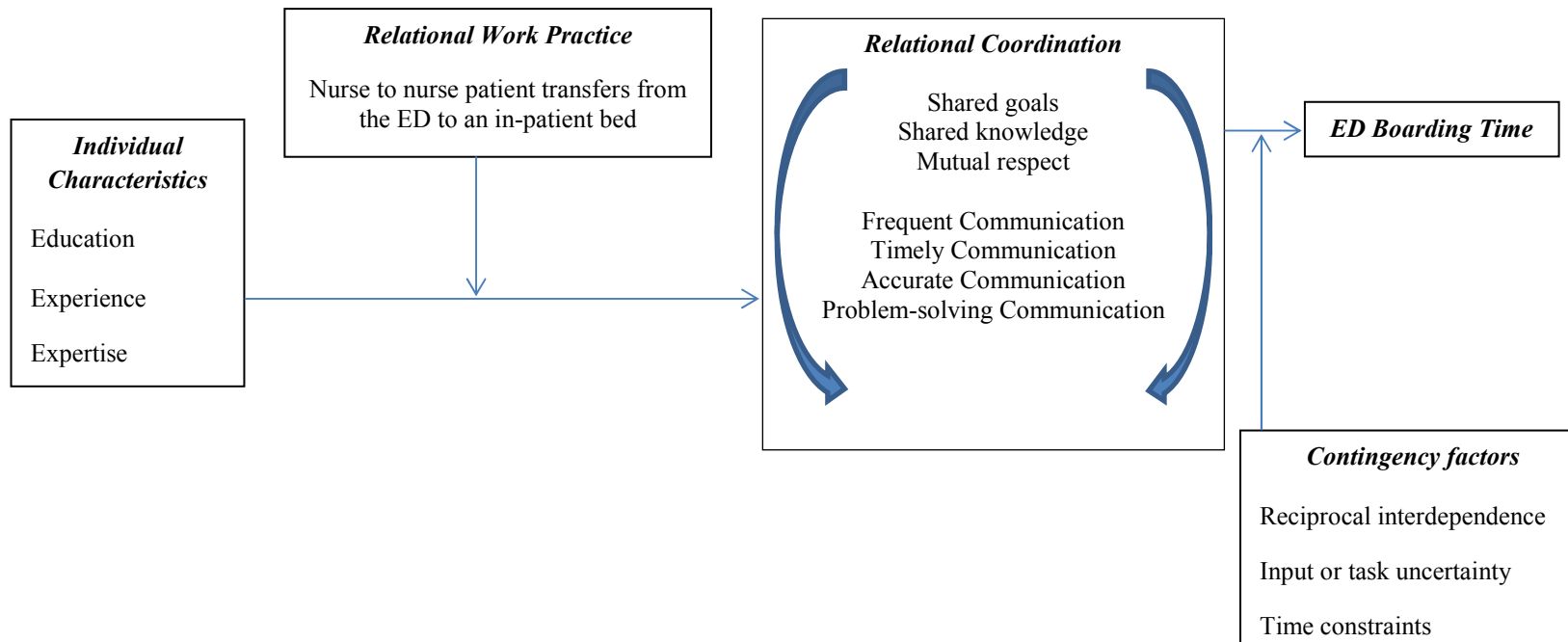
Figure 1. Empirical model of relational coordination's association with ED boarding times.
Source: Gittell, J.H. & Douglas, A. (2012). Relational bureaucracy: Structuring reciprocal relationships into roles. Academy of Management Review, 37(4), 709 – 733.

CHAPTER 2. CONCEPTUAL FRAMEWORK

The purpose of this study was to examine the relational and communication dimensions in work processes as RNs coordinate ED admissions, and describe potential associations with ED boarding times. The purpose of this chapter is to provide a conceptual definition and understanding of each concept in the model (see Figure 1). A review of the literature examining research in each of the variables of interest will be presented. The conceptual-theoretical-empirical framework (see Figure 1) for this study is derived from Gittell's (2003) relational coordination theory (RCT). Relational coordination is a mutually reinforcing cycle of coordinating work through relationships and communication (Gittell, 2009).

Mary Parker Follett is the earliest scholar to introduce organizational theory as a relational coordination process. She counted four principles essential to the success of coordination:

1. Coordination as reciprocal relating among individuals engaged in the working networks within the process of the work.

2. Coordination by those most directly involved.

3. Coordination in the early stages of the work.

4. Coordination as a continuous process (Follett, 1949).

Follett emphasized the importance of the individual in society frequently emphasizing the importance of respecting and celebrating the differences among the specialized contributors to organizational performance (Follett, 1924). Follett's work introduced diversity of opinion as a

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positive factor for performance improvement. She believed that separating the self from the work process was impossible. Each human interacts with his or her own experiences, stories, and perspectives. The situation becomes task integration as well as an integration of the individuals involved (Follett, 1924). The key concepts of Follett's philosophy encompassed interrelatedness, process networks, and teams producing new and innovative work processes. She emphasized that natural leaders emerge within groups and new knowledge emerges from the collaborative efforts of individuals. Goal and/or situations drive the action of a team and directs their action and interaction. Managing people under Follett's philosophy is team focused. She felt that the most effective way to exercise authority is to emphasize the importance of the task rather than the rights of one person over another. The primary message underpinning all of her work is the message that relationships matter. There is a reciprocal nature in relationships in which individuals working together influence each other. Organizational ethics are moral and social. An organization's ethical behavior is the result of what the individual brings to work as well as his/her membership in the group. For this reason, Follett encouraged leaders to encourage empowered group networks with a common purpose. She taught that a team simultaneously focused on the individual, the group, and the environment can accomplish goals (Metcalf & Urwick, 1949). Coordination of work is considered a relational process in which the decisions of the individuals directly involved in the work within group networks improve outcomes. The purpose of a team's work can be found within the process of the work itself. Experiences are seen as the interplay of social forces as individuals relate to a new activity (Follett, 1924). Follett (1918) stressed the need to move away from one-way, cause and effect relations. She introduced that teams inter-relate within situations and within their environment. She emphasized the need to recognize this as unique to each situation and each team.

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Stacey's (2001) complexity theory is in communion with Follett's inter-collaborative, coordination, nonlinear relational approach to work processes in complexity science. In this interdisciplinary science multiple theoretical frameworks emerge from organizational theory, complexity sciences, psychology and sociology (Stacey, 2001). It examines systems made up of multiple and diverse interacting agents and seeks to uncover the principles and dynamics that affect how they evolve and maintain order. Stacey developed complex responsive process theory, a complexity influenced theory, which focused exclusively on people and human interaction as the primary focus in a system. Three system parameters exist in environments and influence a team's self-organization response: the rate of information flow throughout the system, the nature of connections among people, and the diversity of cognitive schema (Stacey, 1996). Strong parameters support individuals to create and recreate meaning of events, provide opportunities for higher-order learning that changes beliefs as opposed to simply knowing facts or rules, allows creativity, provides positive feedback (supporting system changes), and provides opportunities for reflection and evaluation of performance. Management practices influence an organization's system parameters. Management practices that increase the level of the system parameters promote improved outcomes. An authoritative, directive approach, with hierarchical (top-down) communication channels, and traditional bureaucratic approaches to management impose barriers to the freedom of interaction needed for effective self-organization (Stacey, 1996). These barriers do not stop self-organizing behavior; they do, however, compromise the richness of interactions required to develop useful behavior necessary to meet the demands of the work of the team (Weick, 1993). An authoritative manager is less likely to facilitate the quality of interactions needed for effectiveness. Self-organization will occur but the outcome is not as likely to focus on the ultimate environmental goal (Cilliers, 1998). Finding a balance between

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too much and too little structure where interaction, learning, and innovation are fostered is the key to effectively managing the professional knowledge workers in the health-care system. Like Follett, Stacey focuses on the need for workers to be empowered and actively participate in organizational initiatives in order for innovation to emerge (Stacey, 2001). Knowledge arises in complex responsive processes of relating between humans and is continuously reproduced and potentially transformed. Knowledge is an active process of relating. It cannot be stored and intellectual capital cannot be measured or managed. A relationship between people establishes the value of an individual and highlights the capacity human relating has to the pattern of work itself in the absence of external control (Stacey, 2001).

Gittell's (2003) RCT extends the work of Follett and Stacey to examine the humanistic process underlying the technical process of coordination. Gittell contends that coordination encompasses the management of interdependence between tasks as well as between the people who perform those tasks. Relationships and people matter. When individuals engage by interacting with shared goals, shared knowledge, and mutual respect organizational culture emerges with support for process improvement. Relationships of shared goals, shared knowledge, and mutual respect help nurses focus energies on what is best for the patient. Sharing the universal goal of decreasing ED boarding time helps nurses align their actions with each other. Shared knowledge helps them to understand how their tasks between units and across units fit together. Mutual respect creates an environment where nurses value and recognize the unique contributions and input of their RN colleagues. The process is reinforcing and as rewards are met, relationships grow (Gittell, 2003). Relational coordination contains three relational dimensions—shared goals, shared knowledge, and mutual respect—and four communication dimensions—frequent, timely, accurate, and problem solving that work together

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in effective coordination of work. When individuals share goals they coordinate specific functional goals that promote an environment in which participants engage in problem-solving issues, rather than blaming each other. Shared knowledge enables each participant to understand the role of others, including who needs to know what and why and when, thus enabling them to communicate timely and accurate information. Mutual respect promotes receptivity to communication among participants of different stations, empowering individuals to speak up and others to listen, further contributing to the development of shared knowledge and shared goals (Gittell, Beswick, Goldmann, & Wallack, 2015). Within the RCT of nurses' relationships support frequent, timely, accurate, problem-solving communication towards improved processes and outcomes.

Focusing on relationships between roles rather than between individuals, RCT suggests that personal relationships are not necessary for team effectiveness. The focus on roles supports a transformational approach to goal attainment as opposed to transactions between individuals. Individuals can come and go, but roles are securely established and defined. Nurses and units and sharing the same goal of reducing ED boarding across unit boundaries, with shared knowledge of the processes involved in the task integration of their transfers, while demonstrating mutual respect for each other should produce quicker admissions (Gittell, Seidner, & Wimbush, 2010). RCT identifies the relational work process that is inherent in the coordination of interdependence between tasks and between people. Individuals coordinating work through relationships of shared goals, shared knowledge, and mutual respect, supported by frequent, timely, accurate, problem-solving communication demonstrate empirical measures of relational coordination. Communication and relational dynamics provide the basis for coordinated teamwork where task interdependence, uncertainty, and time constraints are present.

RCT reveals the inter-subjectivity of the coordination process. It pays attention to the quality of communication and relationships among participants, as well as to the technical requirements of the work. Relational coordination can be measured and analyzed to determine the communication and relationships networks through which work is coordinated across functional and organizational boundaries. The ability to identify coordination among frontline workers (relational coordination), between frontline workers and clients (relational coproduction), and between frontline workers and their leaders (relational leadership) allows for the development of interventions that can improve the work of the teams (Gittell & Douglass, 2012). This study will focus on the relationship and coordination among frontline workers, nurses, and their relational coordination during ED patient transfers.

Relational coordination has been associated with improved outcomes in the postsurgical context and in the chronic care context. It has provided significant associations between care provider connections with patients and families and with health system leaders. The enhancement of relational coordination among healthcare professionals has been positively associated with integrated care delivery to older patients. Relational coordination's association with healthcare outcomes is extensive and includes increased patient satisfaction, improved postoperative pain & functioning, improved quality of life (long term care residents), as well as reductions in medication errors, hospital acquired infections, patient fall related injuries, length of hospital stay, total cost of hospital stay, and costs of chronic care. Increases have been found in patient trust and confidence in care team and professional satisfaction with care delivered by community health nurses (Gittell et al., 2015).

Review of the Literature

Research question: What relational and communication dimensions are present between inpatient RNs and ED RNs as they coordinate ED admissions? If nurses are working in an environment where communication and shared knowledge, goals and respect related to ED admissions are not optimal perhaps patients are experiencing longer ED boarding times. This study explores these relational dynamics.

Education and Experience

There are multiple bodies of literature that support clinician education and experience as important determinants of safe care. Benner (1984) referencing the Dreyfus skill acquisition model established that strong educational preparation is the necessary base for advanced skill acquisition. Formal education provides the basis for safe care and provides the clinician the background knowledge to evaluate the clinical picture (Benner, 1984). Aiken et al. (2009) demonstrated that improving nurse staffing, education, and the care environment contributes independently to better patient outcomes. Recognizing this, however, is not complete in the complex health-care environment. Nurses interact with multiple services and specialties in the coordination of care. While Aiken et al. (2011) have continued to explore staffing, work environments, and the education levels of nurses and how they all work to improve outcomes, at least for general surgical patients, the authors acknowledge that the question of whether one works better than the other is less significant than under what conditions they work at all. Better staffing has shown little effect on surgical mortality and failure-to-rescue in hospitals with poor work environments. Hospitals with better work environments demonstrate that staffing has a significant effect. They report that that staffing in the context of a good nurse work environment, and a more educated nurse workforce has the greatest opportunity to positively impact patient

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outcomes (Aiken et al., 2011). Studies have not explored education and experience across disciplines or beyond the silos within health care specialties as determinants of interdependent coordination of care and improved patient outcomes. Nursing work environments do not exist in isolation of the greater health care community. Exploring the relationships and coordination of interdependent tasks (transfers) across nursing work environments may provide additional insight into the relationship of education levels, unit types and patient outcomes (ED boarding times).

Experience

Little is known about the ways an individual's experience is accumulated into a structure of routine patient transfers. These transfer structures, however, establish processes in different situations that impact organizational consistency. Routines guide team behaviors and culture within an organization and comprise the process of inferences drawn from experience. They can be seen in policies, procedures, standards of practice, organizational stories, social and physical geography, and relationships within a team. Routines exist independent of individual and are sustained despite turnover (Levitt & March, 1988). Organizations that face complex uncertainties rely more heavily on informally shared understandings based on team experiences (Ouchi, 1980). Inconsistencies in inferences drawn from varied experiences may organize into a process that is maintained by subcultures, subgroups, and subunits (Martin, Sitkin, & Boehm, 1985). Organizational challenges occur as teams tackle tasks in inconsistent ways, often leading to unclear and arbitrary measures of success. Failure or success can occur without any real change in a team's performance (Hedberg & Johnsson, 1978). Higher level administrators in these confusing situations rely more on ambiguous information than lower level managers who rely more heavily on formal rules and real life experiences (Daft & Lengel, 1984).

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Input and Task Uncertainty

Organizational behavior theories have shifted away from the premise that there is one best way to organize. There are several contingencies that impact organizational coordination of work processes. Three critical contingencies are: the rate of technical change in the environment (Burns & Stalker, 1961), the uncertainty of the environment (Lawrence & Lorsch, 1967), and the manageability of the tasks that are performed (Mohr, 1971). The concept of uncertainty appears as the most crucial contingency for organizational effectiveness (Thompson, 1967). The sources of uncertainty in an organization are varied and tend to be studied as either a task or environmental. There are also many definitions of uncertainty in the literature. A common dimension found in most definitions is that there is a state of incomplete information. A lack of information makes it difficult to prepare for the future (Argote, 1981). The capacity of an organization to manage a complex, highly interdependent environment is determined by its ability to handle the communication necessary for coordination. Information is more reliable and available in repetitive and predictable work processes and this produces a greater tolerance for interdependence. As teams face higher levels of variability a greater burden to communicate and coordinate occurs. Specialization of subprograms creates greater interdependencies among subgroups in an organization (March & Simon, 1972).

Emergency departments are an environment that is bombarded with uncertainty in many aspects of work processes. Patients arrive with undiagnosed conditions and treatment plans evolve as information and opinions converge. "Input uncertainty" is evident in the overall numbers and conditions of the patient population at any point in time. Uncertainty is a function of choices and alternatives in a given situation (Attneave, 1959). Uncertainty is greatest when there are many alternatives that are equally likely to occur. Information provides an opportunity for one alternative to become more likely and reduces uncertainty. Input uncertainty is

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determined by the external environment and has an immediate impact on the tasks that the internal environment must perform. Recognizing uncertainty as a standard characteristic of the ED environment enables an acceptance as a condition of the organizations work (Argote, 1981). Argote's (1981) study of the expected relationships among input uncertainty, organizational coordination, and effectiveness in hospital emergency units suggests the use of nonprescriptive means of coordination is most appropriate in EDs experiencing high uncertainty. The study supported the importance of understanding the effect of uncertain inputs (Thompson, 1967; Weick, 1993) on the effectiveness of a hospital ED and understanding the coordination methods most appropriate for the type of inputs they receive (Argote, 1981).

Relational Work Process

Relational organizational form is also referred to as network organizational form and introduces the fundamental assumption that people are social beings, with an identity and worldviews formed through interactions with other people. Follet (1918) recognized that reciprocal interactions occur as teams engage in a work process. Their work is not a collection of separate pieces, but a functional whole of a united integration. She urged leaders to replace hierarchical bureaucracy with empowered group networks with a common purpose. Organizations formed by all individuals moving together, adjusting activities, interrelating, and working as a common unit towards a shared goal produce innovation. Through reciprocal relating, individuals performing different roles are able to see their contribution to the whole. A holistic understanding of their own responsibilities while engaged in interpersonal exchanges enables higher levels of organizational performance (Follett, 1924). Behavior is internally and externally influenced. The productivity of a team and ultimately an organization is a function of interweaving and a response to relating. Accepting that life and life's work is a process of an

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interlocking of individuals engaged in a relational process of integration creates an environment where each can create a new reality. This relational, circular response, frees the individual and the organization of the limitations of singular points of view. New modes of thinking, new ways of acting, and innovations emerge from the collective experience (Follet, 1918).

A critical view of relational organizational form argues that organizations built on personal relationships are vulnerable to favoritism, abuse of power, and transactional leadership styles that drive personal favor over organizational goals (Weber, 1924). Gittell (2003) disputes this view by focusing on roles within the relationships. The roles of the individuals are the focus, not the individual. Weick (1993) challenges organizations to view patterns of inter-subjectivity and sustain those patterns as people are replaced. Organizational sense making cannot survive if individuals drive the sharing of information rather than the roles driving the process of information sharing.

Many labels have been applied to organizational work that produces best outcomes. Various labels such as high-performance work systems, high-involvement work systems, and high-performance human resource management, all recognize the value of capitalizing on the employee. Despite an agreement that human capital plays a significant role in performance, causal mechanisms within system work remains elusive. Gittell (2003) introduces a view that extends beyond human capital skill, motivation, and commitment as predictors of organizational quality. She incorporates employee-to-employee relationships as another causal mechanism that influences organizational performance. This view focuses on relationships among employees as the primary causal mechanism that creates a positive association between work systems and performance outcomes. The theory of relational coordination presents the position that organizational work contributes to quality outcomes through a mutually reinforcing web of

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communication and relationships carried out for the purpose of task integration (Gittell et al., 2000).

      Integration of individual and organizational goals. Follett (1949) writes of authority that goes with a particular job rather than that associated within a hierarchy. She sees authority as a function of a task. The amount of authority is based on the worker's function or task. She emphasizes that it is not to whom someone is responsible, but for what they are responsible. She sums up her position on authority by stating that true authority comes from an intermingling of forces and is a self-generating process. McGregor (1960) built off of Follett's work and is recognized for revolutionizing human resources thinking by positing two ways managers could view employees: Theory X assumed workers were inherently lazy, Theory Y assumed they were self-motivated. McGregor introduced the idea that management's role is to create a workplace where conditions allow people to do well and want to do well. Theory Y provided a modest beginning for new theory in the management of human capital and has evolved from the unionization of workers and antagonism toward authority seen in the 1930s. Theory Y has six generalizations of research that have contributed to human resource knowledge. The generalizations that establish its foundation and hold true in human resource science today state that the average human finds work to be a source of satisfaction. A worker will exercise self-direction and self-control towards an objective to which he is committed. Commitment is a function of the rewards associated with attaining a goal. The average person learns to accept and seek responsibility. The ability and capacity to exercise imagination, ingenuity, and creativity in problem solving is widely distributed. In modern industrial life, an individual's intellectual potential is only partially utilized. The limits on human collaboration are the result of

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management's inability to capitalize on individual potentials. Follett and McGregor introduced human capital into management concepts and set the stage for relational work.

Reciprocal Interdependence

Kelly and Thibaut's (1978) interdependence model of trust stresses a reciprocating cycle in which members of a partnership reduce uncertainty by demonstrating dependable behavior. Reciprocal interdependence with dependable and competent interactions supports rewarding relationships. Attribution of dependability is earned by demonstrating interdependence, sharing common interests, and demonstrating a willingness to act out of concern for each other. Individuals showing an intention to trust and an ability to meet their own role obligations develop trust in a gradual reciprocation of risk taking between individuals. Every time the process occurs in a dependable and capable exchange, fear is reduced and trust grows.

Relational coordination. Relational coordination argues that quality performance outcomes are created by work process networks that integrate individual and organizational goals as workers engage in reciprocal interdependent practices. More specifically, it argues that six high-performance work practices contribute to organizational performance by supporting the development of relational coordination, a mutually reinforcing web of communication and relationships carried out for the purpose of task integration (Gittell, 2003). Work practices such as cross-functional selection, cross-functional conflict resolution, cross-functional performance measurement, flexible job design, and cross-functional boundary spanner roles can nurture the development of relational coordination. Their impact on relational coordination is reflected in the frequency, timeliness, accuracy, and problem-solving nature of communication among employees and the degree to which their relationships are characterized by shared goals, shared knowledge, and mutual respect (Gittell & Douglass, 2012). Relational coordination studies have

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emerged in the last 10 years from Gittell's initial conceptual development from her observations within the airline industry to today's significant contribution to safer and efficient health care. Relational coordination is dynamic and daily studies are published that confirm that relationships in work processes matter and human interactions can improve team performance.

In review of current studies, relational coordination has shown that registered nurses in surgical, medical, intensive care, and emergency units demonstrating high levels of relational coordination with colleagues in other departments and disciplines are associated with less frequent family complaints, less frequent medication errors, fewer hospital-acquired infections, and fewer patient fall-related injuries (Havens, Vasey, Gittell, & Lin, 2010). Relational coordination among surgeons, nurses, physical therapists, and social workers has predicted increased patient quality of care, reduced postoperative pain, and increased postoperative functional status (Gittell et al., 2000). Relational coordination among nursing aides, nurses, housekeeping, and dietary staff predicted greater job satisfaction for nursing aides (Gittell, 2008). In a cross-industry study of individual managers, shared goals, shared knowledge, and mutual respect predicted high levels of psychological safety and predicted the ability to learn from failures (Carmeli & Gittell, 2009). Acute care nurse managers' work engagement was enhanced by their relational coordination with each other, with their administrators, and with their physician colleagues. In addition, nurse managers' proactive work behaviors were enhanced by their relational coordination with each other, with their administrators, and with their physician colleagues (Warshawsky, Havens, & Knafl, 2012). Registered nurses in surgical, medical, intensive care, and emergency units, relational coordination with colleagues in other departments and disciplines was associated with higher job satisfaction, career satisfaction, and professional efficacy as well as reduced burnout (Havens et al., 2010). In a study of 335 acute

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medical care patients with 893 provider responses, relational coordination predicted lower risk-adjusted length of hospital stay as well as lower total costs of care (Gittell, 2008).

Relational coordination has evolved into a relational model of how high-performance work systems work by focusing on the employee skills; employee commitment; and the coordinated, synergistic behaviors that are necessary to achieve quality performance in interdependent work settings. Cross-functional efforts have emerged as the relational map for effective and efficient relational networking. Cross-functional teamwork has been found to affect coordination across functional boundaries and strengthen the mutual respect dimension of relational coordination. Cross-functional conflict resolution supports teamwork by presenting multiple points of view from individuals' thus adding value and building a shared understanding to the work process. Resolving conflicts across functional teams strengthens the shared knowledge and mutual respect dimensions of relational coordination (Gittell et al., 2000). Cross-functional accountability moves away from traditional performance measurement practice that places accountability on individuals within a hierarchical system. Cross-functional accountability moves away from traditional performance measurement practice. Historically, accountability of outcomes was placed on individuals within a hierarchical system. This traditional view ignored the interdependent nature of work processes and supported assignment of blame when team efforts did not produce desired outcomes. Cross-functional accountability encourages a wider perspective and focuses on problem solving rather than finger-pointing (Edmondson, 2004). Cross-functional rewards strengthen the shared goals of relational coordination. Cross-functional meetings strengthen the accuracy of communication, shared goals, and shared knowledge dimensions of relational coordination. Boundary spanners are staff members whose primary responsibility is to integrate the work of the team around the

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interdependent task. They strengthen the frequency and timeliness of communication and the shared knowledge dimensions of relational coordination (Gittell & Douglass, 2012).

Relational coordination not only depends on the adoption of the six high-performance work practices, but also on the strength of their adoption and the degree that they reach across all involved employee functions. To test RCT in a hospital practice setting, a study of patient care was conducted using a convenience sample of nine major urban hospitals and their nine orthopedic units that performed a large number of joint replacements. Physicians, nurses, physical therapists, case managers, and social workers who were involved in the care of joint replacement patients were included in a 6-month study. The results of the study reported that the six high-performance work practices were positively associated with relational coordination. Physicians were significantly less engaged in relational coordination than nurses. The rest did not differ significantly from nurses. High-performance work practices positively predicted relational coordination. The study also indicated that high-performance work practices were associated with higher quality of care by strengthening relational coordination among employees in different functions. Findings also indicated that the work practices were associated with shorter lengths of stay. The study provided evidence that formal practices can be designed to encourage relationships between workers in different functions, producing significant quality outcomes for organizations. The study also introduced a relational pathway through which work practices contribute to performance measures (Gittell & Douglass, 2012).

Summary

In the last decade, work environments, as opposed to organizational initiatives, have emerged as a focus of inquiry related to quality patient outcomes. Health-care organizations today are faced with the challenge of new media, advanced technology, staff diversity and

inclusion, and workforce engagement (Gittell & Douglass, 2012). Organizations that embrace and participate in quality initiatives traditionally focused on macro initiatives are unable to sustain successful results. An interaction among members, the relationship between the organization and its environment, and the significant social mission to deliver safe care requires a partnership of efforts that must start with nurses examining their own contribution to practice environments. Examining work environments and nurses relational coordination rather than variability in individual nurse responses can provide organizational insight into structures and relationships in the work processes involved in patient transfers (Verran, Gerber, & Milton, 1995). Perceptions of work stressors may differ within a given single unit and influence quality beyond physical boundaries (McVicar, 2003). Interdepartmental teams with established strategic direction are influencing the timing and pace of organizational change. Teams of individuals working towards a common goal are influencing culture changes and organizations are seeing long-lasting improvements in quality (Hughes 1996). Nurses, responsible for the coordination of care, influence quality within their work environments. Developing an understanding of their role-based relationship to quality can change practice and lead organizations to sustain positive patient outcomes. Nursing practice spans a broad scope of responsibility from health promotion and disease prevention to the coordination of care for both healing and comforting during palliative care. Historically, however, professional tensions within and external to nursing have undermined the nursing profession's ability to provide and improve both general and advanced care. Nurses are at an increased risk for work-related stress, particularly in specialty areas, such as the ICU, and emergency rooms, where organizational expectations include saving lives while demonstrating stoicism and perfection from the individual nurse (Meador & Jones, 2013). The interdependent nature of nursing practice contributes to the context and environment in which

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nurses work. Given that safe patient care is directly and positively related to the quality of staff nurses' work environments, reducing nurse tensions that adversely affect communication and collaboration should improve care (Kramer, Maguire, & Brewer, 2009). Relational coordination enables nurses to more effectively coordinate their work with each other, thus raising the bar on higher-quality outcomes using resources more efficiently. Relational coordination and the high-performance work practices that support nurses' interdependent work are relevant in health care. Relationships found in relational coordination are based on roles rather than personal ties. The work practices of nurses across unit boundaries are expected to enhance relationships of shared goals, shared knowledge, and mutual respect with or without personal ties. This allows for individual interchangeability and scheduling flexibility without negatively impacting quality measures. Relational coordination has provided health-care organizations a sustainable source of associations in quality, efficiency, patient/family engagement and worker outcomes (Gittell, 2015).

Variables identified by Gittell include relational coordination, reciprocal interdependence, task uncertainty, and time constraints. The final variables in the research model will include nursing education, experience, and expertise. The relational coordination variable will provide the dimension of measure for the relational work of nurses as they coordinate patient transfers from ED nurses to inpatient nurses. Chapter 3 will review the identified methodology for this study and the instruments that will be used to measure each of the variables.

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CHAPTER 3. RESEARCH METHODS

The purpose of this study was to examine the relational and communication dimensions in work processes as RNs coordinate ED transfers. This chapter reviews the research methods for the study including the design, setting and sample, measurement of study variables, the data collection procedures, and the data analysis plan.

Methods

This study used a cross-sectional, descriptive design to answer the research question. It is cross-sectional because variables were measured at one point in time. Since no variables were manipulated, the design is nonexperimental. A theoretical model was used to guide the development of an empirical model (see Figure 1).

Design, Setting, Sample Data Sources, and Data Collection Methods

Sample

The participants for this descriptive comparative were recruited from the Virginia Commonwealth University Health System (VCUHS) using a sample of RNs. The sample was created from a sequentially numbered alphabetical list of all RNs who met the inclusion criteria on the four study units and was obtained from the nurse data analyst employed in the Division of Nursing Services at VCUHS.

Inclusion and exclusion criteria. Inclusion criteria required that the RN be employed as a direct care nurse on one of the identified study units. The identified adult clinical units were limited to: one medical unit, one surgical unit, one step down unit, and one adult ED. Nondirect

care nurses on the identified units, as well as supplementary staff that work on various units were excluded from this study.

Setting

The Virginia Commonwealth University Health System (VCUHS), a licensed 865-bed urban, academic medical center located in the southeastern United States, is a Level I trauma center and designated as an American Nurses Association Credentialing Center Magnet facility. The VCUHS Emergency Department has 98,000 patient visits per year; 18,000 are seen in the pediatric ED and the remaining 80,000 are seen in the adult ED. The ED serves as the safety net hospital for approximately 22 counties in the state of Virginia. Emergency Medical Service transportation is provided by 15 different agencies to the facility and four different aeromedical agencies fly patients to VCUHS on a regular basis. There is a 42-bed adult ED, including a 4-bed trauma bay; 15-bed adult fast track area for adults with minor illnesses or injuries; 10-bed clinical decision unit for continued patient diagnostic evaluation, therapeutic intervention, and observation. This study focused specifically on the 42-bed adult trauma medical emergency department. In total, 27 separate inpatient units receive admissions from the ED. From the adult ED, 28% of the 80,000 patients seen are admitted for inpatient stays. This equates to approximately 50 to 60 patients daily that transfer from the adult ED to an inpatient bed. These patients account for 45% to 50% of the health system's daily admissions. On average 30 to 40 of these patients are admitted to medicine or cardiology. The remainder of admissions is divided among other service lines. Hospital outcome measures report that the coronary intensive care unit (ICU) has the best ED to floor admission times for 2012 with 69% of their patients transferring from the adult ED in under 60 minutes.

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Data Sources and Data Collection Procedures

Once permission to conduct this study was obtained from the Institutional Review Board for VCU and from the Nursing Research Council for the VCUHS, data were obtained from an electronic survey questionnaire. A survey was appropriate for this study because it provided the ability to gather a large amount of information about the sample in a small period of time.

Prior to distributing the survey, information was posted on the three in-patient units and the ED informing all staff that this study was being conducted. This posting informed nurses that the study was intended to examine patient throughput and requested that they participate and share their observations related to transfers of patients from the ED to inpatient beds. All RNs that met the inclusion criteria on the four units was contacted via a confidential electronic mail (e-mail). If the nurse agreed to participate, the e-mail notification provided the nurse with a link to the Relational Coordination Research Collaborative (RCRC) based at Brandeis University's Heller School for Social Policy and Management. The RCRC (founded in 2011) collaborated in this study to develop the customized study link. The study link provided each nurse with a confidential entry to the survey and the researcher had no ability to identify any of the nurses; however, participants were able to contact the researcher or RCRC, if desired. Auto-reminders were distributed in Week 1, Week 2, and Week 3 after the survey was posted for nonrespondents. Accommodation of the web-based deployment, self-registration, and weekly status updates was managed in partnership with a RCRC staff member. The study link remained open for a period of 3 weeks.

Measurement of Variables

In order to understand the influence of an individual nurse's interactions with other nurses on quality practice outcomes, it is necessary to study models that provide a theoretical

basis for explaining nurse relationships and the coordination of care where interdependent tasks occur. Gittell's (2003) model of relational coordination asserts that coordinating work through relationships of shared goals, shared knowledge, and mutual respect achieves and sustains high performance work systems. The model stresses that relational coordination creates a mutually reinforcing web of communication and relationships among individuals as they engage in an integration of tasks and together produce quality organizational outcomes. RCT proposes that an individual's work processes can be generalized into team performance. Individuals mutually reinforce the interaction of relationships and coordination within their teams and across team boundaries. Relational coordination measures provide a descriptive foundation for individuals and teams to evaluate their coordinated collective action when working together under conditions of task interdependence, uncertainty, and time constraints (Gittell, 2003).

Sample Characteristics

Unit/setting characteristics. Data of interest to the relational coordination dimensions among nurses were obtained from the VCUHS Nursing Service's data analyst and the VCUHS decision support database. Aggregated RN characteristics by units were RNs budgeted and actually employed full time (32 hours/week), percentage RN staff, average RN years of employment, percentage RNs certified, percentage RNs certified in current clinical practice area, percentage RNs full-time educated at the BSN level or higher, percentage of RNs currently enrolled in an educational program at the BSN level or higher, percentage of RNs on the clinical ladder and the percentage RN on each level. Unit and/or hospital characteristics included were clinical specialty, number of beds, number of ED transfers during study period, number of ED transfers during the 3-week period prior to study period, and RN hours per patient day. Historically, VCUHS's significant reports are archived in the Redwood Reporting System. The

reports are available on the Redwood website in a public folder. Current daily statistics are available and updated with fresh data every hour.

Experience and expertise. A Professional Advancement Program (PAP), established by VCUHS nurses in the late 1980s, provides common meaning and a shared language in nursing's culture while defining experience, expertise, and professional culture. The program is based on Patricia Benner's (1984) study that applied the Dreyfus model (1980) of skill acquisition to nursing. Benner's (1984) work and the PAP serve as the foundation of VCUHS's Clinical Ladder and are represented by five levels of practice as a Registered Nurse Clinician I to RN Clinician V (Novice (I), Advanced Beginner (II), Competent (III), Proficient (IV), and Expert (V). All levels have the same set of practice values within competency clusters referred to as "domains." Nurses, through experiential learning, develop their understanding of practice in real clinical situations. Mastery develops over time as they plan care, ask and test questions in the provision of care to many patients. Exposure to deviations in expectations occurs as new experiences challenge understanding. Past knowledge does not provide the foundation to understand new outcomes. As a clinician reflects on past experiences, and examines deviations from expectations, new knowledge forms and experience grows. New knowledge prepares a nurse to assess and plan patient care with a greater understanding of the whole patient experience. The pieces come together within a relationship with each patient that is no longer grounded in rules and guidelines. Experience is not the passage of time; rather, it is the emergence of new understandings as real situations in clinical situations bring the nurse closer to "being all he/she can be" in the provision of patient care. A nurse's clinical experience advances from a Novice to Expert as he/she challenges and disputes his/her theoretical knowledge by advancing personal theoretical understanding (Benner, 1984).

The Novice Nurse, or Registered Nurse Clinician I (RNCI) focuses on objective attributes such as a patient's weight, intake and output, temperature, blood pressure, pulse and other measurable parameters. These measures provide the context in which the nurse evaluates a patient's condition. They are comfortable with rules and rely on policies and procedures as the most relevant tasks within a set of rules. The Advanced Beginner, Registered Clinician II (RNCII) has experienced enough real situations to have noticed (or been informed) of relevant components of the measures within a patient's condition. Experience with previous patients with similar characteristics establishes a foundation for the nurse to recognize aspects of care needed. The RCII provides experiential context to their observations with less dependence on objective attributes (Benner, 1984).

A Competent Nurse, Registered Nurse Clinician III (RNCIII) typically has been practicing in the same or similar clinical setting for 2 to 3 years. Of note, at VCUHS a nurse must present a professional portfolio to a peer review process to advance to a RNCIII, IV or V. Additional educational and certification requirements are applied at these levels. An RNCII may practice at a RNCIII level or higher as a result of experiential learning and experience but may opt out of formal ladder advancement. An RNCIII has begun to gain an awareness of what is most important and what can be ignored. He/she is able to plan care that is based on considerable conscious, abstract, analytic contemplation of the problem. Conscious and deliberate planning is a characteristic of this level and it helps develop efficiency and organization (Benner, 1984)

The Proficient Nurse, Registered Nurse IV (RNCIV) perceives situations as a whole. He/she knows from experience what typical events to expect in a given situation and is able to adjust plans as needed. The RNCIV is able to quickly access a situation and establish the most

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accurate response to a problem. Decision making is less labored. The Proficient Nurse brings a "perspective" to a clinical situation that "presents itself" based on past experiences. Nuances in practice appear that are not understood by the more inexperienced nurse. An "intuitive grasp" is demonstrated as the nurse assesses a situation and appears to bypass synthesis of aspects and contexts. The nurse has a perceptual capacity to draw from that has been compiled over time from past experiences. Intuitive grasp and perceptual capacity emerge after many experiences have occurred with similar and dissimilar situations and a nurse's theoretical understanding is applied in practice.

The Expert Nurse, Registered Nurse Clinician V (RNCV), does not need to rely on rules or guidelines to connect his/her understanding of a situation in most situations. They tend to quickly assess a situation, weigh options and do "what feels right." The Expert Nurse has an intuitive grasp of each situation and is able to quickly focus on an accurate resolution to a problem. They operate from a deep understanding developed from an enormous background of experience. They apply evidence to their practice in a formal manner and practice with an advanced degree in nursing.

Relational coordination. The Relational Coordination Survey (Gittell, 2003) is a Likert format scale measuring the seven dimensions of communicating and relating between RNs as they interact in the transfer of patients from the ED to in-patient beds. The seven dimensions are: frequency, timeliness, accuracy of communication; problem-solving communication, shared goals, shared knowledge, and mutual respect. The Relational Coordination Survey first emerged from a study of the flight departure process ($N = 354$) at Continental, United, and Southwest Airlines in the 1990s. This initial study identified that communication and relating among employees at Southwest Airlines was dramatically different and specifically characterized by

high levels of shared goals, shared knowledge, and mutual respect regarding the coordination of flight departures. The communicating and relating among all staff involved in the coordination of flight departures supported frequent, timely, problem-solving dialogue among employees and resulted in high-quality service and efficient use of resources (Gittell, 2003). Initial reliability and validity of the survey was established in Gittell's (2003) initial flight departure study and subsequent patient care coordination study (2007). Cronbach's alpha was .80 for the flight departure and .86 for the patient care coordination (N=338). A single factor construct was established with acceptable factor analyses. For this study Cronbach's alpha was .89 for the sample of 78 nurses.

Additional studies have provided evidence that the relational coordination construct is generalizable to work processes (consisting of multiple providers, engaged in highly interdependent tasks, under uncertain circumstances, with time constraints) in surgical care (Gittell et al., 2000, Gittell, 2003, 2009), medical care (Gittell, Weinberg, Bennett & Miller, 2008), continuum of care (Weinberg, Lusenhop, Gittell, & Kautz, 2007), and the criminal justice system (Bond & Gittell, 2010). These studies have confirmed that the survey meets psychometric validation standards of internal consistency, content validity, structural validity (Gittell, 2003), and inter-rater reliability (Gittell et al., 2010).

The measure is a 5-point scale (1 = *never*; 5 = *constantly/always*), and the data identify networks of connections in an integrated work process. On the Relational Coordination Survey, higher relational coordination scores reflect better relational coordination in interdependent work processes. Specifically, *within* work group scores less than 4 are weak and greater than 4.5 are strong; *between* work groups' scores less than 3.5 are weak and greater than 4 are strong. This study asked nurses to respond to questions measuring the seven concepts in Gittell's (2003)

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model of relational coordination (see Figure 1). Each RN was asked to assess the quality of their communication and relationships specific to transferring ED patients to inpatient units. To lessen the threat of socially desirable responses (Kluger, Reilly, & Russell, 1991) each RN will be asked to report the behaviors of others rather than his/her own behaviors, thus aggregating the data to the group/unit level. Individuals are more likely to overestimate their own timely communication and less likely to do the same when receiving information from others. The survey will ask for the nurses' perception of typical transfer patterns rather than their perspective of any specific patient's transfer. This approach will reduce the risk of retrospective response error, as the nurses will be asked to provide answers specific to current working conditions, rather than to unique patient experiences (Gittelll, 2009).

The coordination of transferring a patient from the an adult ED to an inpatient bed requires that nurses meet a patient's need either directly by her own activity or indirectly by calling in the help of others (Orlando, 1961). An individual ED nurse coordinating an efficient and timely transfer to an inpatient unit cannot be evaluated in isolation of the larger organization, or independent of interactions with other nurses, systems and processes. Increasingly, nurses are working in interdisciplinary environments where resources must be deployed quickly in the provision of safe and efficient care (Lake, 2007). Previous studies have provided evidence that coordination between care providers is positively related to organizational quality and efficiency (Gittell et al., 2010). However, the coordination of nurses' work processes in the transfers from an ED to an inpatient unit has not been explored. Specifically, this study focused on a work process that is well understood and readily measured in health-care safety literature—patient transfers.

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Emergency boarding time. Emergency boarding time is defined as the time elapsed between when an RN is informed that a bed is ready to the time the patient is physically admitted to an inpatient bed. These data were reported from VCUHS patient tracking software. These data reflected the ED boarding times (in minutes) for patients admitted to each of the clinical units during the 3-week period prior to the study as well as during the 3-week study period.

Analytic Method

Data was uploaded into SPSS® (version 21) and data cleaning was initiated. Cronbach's alpha was computed on the relational coordination scale on ED RNs and inpatient RNs. (.89). Descriptive statistics on the sample, setting, and model variables was also computed. Continuous variables (age, years of experience as an RN, and years on clinical unit) were summarized using mean and standard deviation and categorical variables (education, expertise, ladder level, and certification) and then characterized using frequencies and percentage. Each clinical unit was described using descriptive statistics. Categorical variables included in this characterization were RN age, gender, RN hours per patient day, clinical specialty, number of beds, and the number of ED transfers during the study period. Continuous variables reflecting unit characteristics included percentage RN staff, average RN years of employment, percentage RNs on clinical ladder, percentage RNs on each level of the ladder, percentage RNs certified, and percentage RN full-time educated at the BSN level or higher. Emergency boarding time for each of the units included in the study was retrieved (in minutes) and the mean, standard deviation, and range computed.

An analysis of variance (ANOVA) was used to examine the ED nurses perspective of the differences in relational coordination among the various units. The Dunnett's post hoc test provided additional information as to significant differences between the workgroups. The

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Dunnett's was used as it allows for "very tight Type I error control" (Field, 2009, p. 374). ANOVA and Dunnett's results were reported as, degrees of freedom, F values and P values. Pearson chi-square test was then used to compare age, gender, years of experience, education, advancing education, clinical ladder level, certification and years at an advanced level by unit. Results were reported by χ^2 and p value.

Summary

This chapter reviewed the methods employed to answer the research question and includes the research design, sample and setting, the data collection procedures, instrumentation and measurement of variables, and the analytic process. Study results are presented in Chapter 4.

CHAPTER 4. FINDINGS

The purpose of this inquiry was to examine the relational and communication dimensions in work processes as RNs coordinate ED admissions. This chapter presents the findings. Characteristics of the sample are described and descriptive statistics of the variables are addressed. Significant differences in relational coordination between and among groups are discussed.

The Sample

A total of 294 registered nurses (RNs) who met the inclusion criteria were invited to participate in this study via electronic email notification. A confidential link to an electronic survey was provided so that participants agreeing to complete the questionnaire could access it. The sample was selected from the Adult ED and the four clinical units that receive the most admissions from the ED. A total of 80 participants responded (response rate = 27%). Demographic characteristics for the sample are included in Table 1.

Individual attributes of participants (total sample and by workgroup) are presented in Table 2. The sample consisted primarily of females (93%) between the ages of 25 and 34 (43%). A Pearson's chi-square test indicated there was no significant difference in age by workgroup (χ^2 [16] = 24.41, p = .08). The majority of the respondents (43%) were between the ages of 25 and 34. The second largest age group was 35 to 44 (28%) resulting in 71% (n = 56) of the respondents being between 25 and 44 years of age. The Medical Step Down Unit (MSDU) had

Table 1

Response Rate by Unit and Total Sample

Work Unit	Completed	Invited	%
Emergency Department (ED)	31	105	30
Medical Intensive Care (MICU)	12	76	16
Medicine Unit (MU)	9	28	32
Medicine Step-down (MSU)	16	48	33
Surgery Step-down (SSU)	12	37	32
Total	80	294	27

Table 2

Individual Attributes of Participants (Total Sample and by Workgroup)

	Age (in years)			Gender		
Unit	≤ 24 (%)	25-44 (%)	45-64 (%)	Male (%)	Female (%)	Total (%)
ED	**0** (0)	18 (22)	13 (16)	3 (4)	28 (35)	31 (39)
MSU	3 (4)	12 (15)	1 (4)	2 (1)	14 (18)	16 (20)
MICU	0 (0)	11 (14)	1 (1)	1 (1)	11 (14)	12 (15)
MU	1 (1)	5 (6)	2 (2)	0 (0)	9 (11)	8 (10)
SSU	2 (3)	10 (12)	0 (0)	0 (0)	12 (15)	12 (15)
Total	6 (8)	56 (69)	17 (23)	6 (8)	74 (93)	80 (100)

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the youngest nurses with 4% being $\leq$ 24 years old. The ED had the most nurses who were $\geq$ than 55 years old (8%). A Pearson's chi-square analysis indicated there was no significant difference by gender and unit workgroup (χ^2 [4] = 2.50, *p* = .64). The majority of the respondents across all workgroups were female (93%). Overall, more males worked in the ED (4%) than on the other units.

Pearson's chi-square indicated there is a significant difference in years of clinical experience by unit workgroup (χ^2 [52] = 78.95, *p* = .009). This difference is most reflected in the respondents who indicated that they had more than 20 years of clinical experience (*n* = 10, 12.5%); the ED unit comprised 26% of those with more than 20 years of experience (*n* = 8). The second largest group for years of experience was that of 12-15 years (10%); within all units, the ED (16%) and MICU (17%) unit comprised the largest representation of all workgroups. The majority of the nurses in this study who had practiced for less than 5 years (41%) are practicing at an Advanced Beginner, RNCII level (61, 77%). The majority had a BSN (68%), and they are not currently engaged in a program to advance their nursing education (64%). Of those enrolled in an educational program, the majority are in a Master's degree program in nursing (20%). Fourteen are Competent Nurses, RNCIII (18%) and four (5%) are Proficient, RNCIV. Of the nurses formally advanced up the practice levels, 80% (*n* = 19) have done so in the last 5 years. Thirteen percent, however, have been practicing above the Advanced Beginner level, RNCII for more than 16 years. The majority of the respondents (59%) do not hold a specialty certification. The certified nurses (40%) are practicing in the area of their clinical specialty (see Tables 3 and 4). The BSN (68%) prepared nurses were primarily working in the ED accounting for 24% of the overall total.

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Table 3

Demographic Characteristics of the Sample (n = 80)

Variable		Frequency	%
Work Unit	Adult Emergency Department	31	30
	MICU	12	16
	MU	9	32
	MSU	16	33
	SSU	12	32
Years of Practice as an RN	≤ 5 years	33	41
	6 – 10 years	23	29
	11 – 15 years	8	10
	16 - 20	6	8
	> 20 years	10	13
Education	Diploma	2	3
	Associate's Degree	16	20
	BS/N	54	68
	MS/N	8	10
Pursuing Degree	No	47	64
	BS/N	9	11
	MS/N	16	20
	DNP	0	0
	PhD	1	1
Level of Expertise	II	61	77
	III	14	18
	IV	4	5
Years at Advanced Ladder Level	< 1 year	4	17
	1-5 years	15	63
	6-10 years	1	4
	11-15 years	1	4
	16-20 years	3	13
Specialty Certification	Yes	32	40
	No	47	59
Certified in current practice area	Yes	32	40
	No	46	58

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Table 4

Years of Clinical Experience and Unit Workgroup

		Experience as a clinical nurse					
				Units			
Experience		ED	MSU	MICU	MU	SSU	Total
1 – 5 years	Count	5	6	5	6	5	5
	% within units	12.9	43.8	50.0	0.0	58.4	34.0
	% of total	12.6	7.5	6.3	14.0	6.3	34.0
6 – 10 years	Count	11	4	2	3	3	23
	% within units	35.6	25.1	16.7	33.3	25	28.9
	% of total	11.4	5.1	2.5	3.8	3.8	28.9
11-15 years							
	Count	5	0	2	0	1	8
	% within units	16.1	0.0	16.7	0.0	8.3	10.0
	% of total	6.3	0.0	2.5	0.0	1.3	10.0
16-20 years							
	Count	3	0	1	1	1	6
	% within units	9.7	0.0	8.3	11.1	8.3	7.5
	% of total	3.8	0.0	1.3	1.3	1.3	7.5
More than 20 years	Count	8	0	0	2	0	10
	% within units	25.8	0.0	0.0	22.2	0.0	12.5
Total	% of total	10.0	0.0	0.0	2.5	0.0	12.5
	Count	31	16	12	9	12	80
	% within units	100.0	100.0	100.0	100.0	100.0	100.0
	% of total	38.8	20.0	15.0	11.3	15.0	100.0

The ED also had the largest number of nurses educated below a BSN level with Associates (9%) and Diploma (3%) degrees. The majority of the respondents were not advancing their nursing degree (68%). Of those that were advancing their degrees, Medical Unit (MU) (2%) and Medical Intensive Care Unit (MICU) (2%) indicated the fewest. Overall, the majority of nurses in school were advancing their education at the master's level (20%). The ED represented the

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largest contribution to the overall percentage of those enrolled in school with 6% seeking a BSN and 8% seeking an MS. The majority of the respondents were not advanced on the Clinical Ladder (77%). Those who had advanced beyond a RN Clinician II did so at the RN Clinician III level (18%). MSU comprised the largest contribution to the overall RN Clinician III advancements (6%). The ED (5%) provides the next greatest contribution to the RN Clinician III respondents. The MICU did not have any respondents practicing above an RN Clinician II level. N5 (3%) and the ED (3%) shared the largest contribution at a RN Clinician IV level within all units. The majority of the respondents practiced at a RN Clinician II level (72%). Of the respondents who had advanced, the majority had done so in the last 2 years (9%). Four percent of the respondents had practiced at an advanced level for 16 to 20 years. The ED comprised 14% of the overall 4% while MU contributed 13%. MSU and Surgery Step Down Unit (SSU) did not have any nurses who had practiced beyond a RN Clinician II level. The MICU did not have any nurses beyond a RN Clinician II. The majority of the respondents were not certified (60%). SSU comprised the greatest deficit in certification with 83% indicating that they were not certified. Of the nurses that responded that they were certified, the majority (8%) had been for 2 years. The MICU comprised the majority of the 8% certified in the last 2 years (33%). The ED nurses comprised the largest overall contribution to the total with 22%. Of all the respondents that held certification the majority attained it in the last 1 to 5 years (34%). Specialty certification by unit, demographic characteristics of the sample by unit, and Pearson's chi-square by demographic are displayed in Tables 5-7.

Table 5

Specialty Certification by Unit

	Units					
	ED	MSU	MICU	MU	SSU	Total
Certified	17	11	6	3	10	47
% within unit	55	69	50	38	83	60
% of total	22	14	8	4	13	60

Table 6

Demographic Characteristics of the Sample by Unit (n = 80)

	Units					
	ED(%)	MSU(%)	MICU(%)	MU(%)	SSU(%)	Total(%)
Education:						
Diploma	2 (3)	0 (0)	0 (0)	0 (0)	0 (0)	2 (3)
Associate	0 (0)	3 (4)	13 (16)	0 (0)	16 (20)	16 (20)
Bachelor	0 (0)	2 (3)	8 (10)	2 (3)	12 (15)	54 (68)
Master	0 (0)	2 (3)	5 (6)	2 (3)	9 (11)	8 (10)
Enrolled:						
Not	20 (25)	9 (11)	9 (11)	7 (9)	9 (11)	54 (68)
BSN	5 (6)	1 (1)	1 (1)	1 (1)	1 (1)	9 (11)
MSN	6 (8)	6 (8)	1 (1)	1 (1)	2 (3)	16 (20)
PhD	0 (0)	0 (0)	1 (1)	0 (0)	0 (0)	1 (1)
Ladder level:						
II	25 (32)	11 (14)	12 (15)	4 (5)	9 (11)	61 (77)
III	4 (5)	5 (6)	0 (0)	2 (3)	3 (4)	14 (18)
IV	2 (3)	0 (0)	0 (0)	2 (3)	0 (0)	4 (5)
Years > 2						
Not > 2	20 (27)	11 (15)	10 (13)	4 (5)	9 (12)	54 (72)
< 1 year	1 (1)	2 (3)	0 (0)	1 (1)	0 (0)	4 (5)
1 year	0 (0)	0 (0)	0 (0)	1 (1)	0 (0)	1 (1)
2 years	2 (3)	2 (3)	0 (0)	1 (1)	2 (3)	7 (9)
4 years	1 (1)	1 (1)	1 (1)	0 (0)	1 (1)	4 (5)
7 years	1 (1)	0 (0)	0 (0)	0 (0)	0 (0)	1 (1)
11-15 years	1 (1)	0 (0)	0 (0)	0 (0)	0 (0)	1 (1)
16-20 years	2 (3)	0 (0)	0 (0)	1 (0)	0 (0)	3 (4)

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Table 7

Pearson's Chi-square for Demographics by Unit

Demographic	χ^2	*df*	*p*
Nursing education[a]	7.801	12	.800
Advancing degree[b]	11.255	12	.507
Ladder level[c]	14.760	8	.064
> Clinician II[d]	23.206	28	.723

[a] 14 cells (70%) have expected count less than 5.
[b] 14 cells (70%) have expected count less than 5.
[c] 9 cells (60%) have expected count less than 5.
[d] 35 cells (87.5%) have expected count less than 5.

Descriptive Statistics

Relational Coordination

Nurses rating their own units. The nurses were asked to rate the relational coordination dimensions on their own home unit (see Table 8). The first dimension was frequent communication. A mean score of 3 would be most desirable, indicating that the nurses within their own units participated in frequent communication with each other at *just the right amount*. All the units, including the ED, rated themselves as communicating *too often* or closer to *much too often*. The ED (mean = 4.77; SD =.65) and the MICU (mean = 4.83; SD = .58) nurses rated themselves the closest to communicating *much too much*. The MU nurses rated themselves closest to *too often* (mean=4.22, SD=1.20). None of the nurses rated their own units frequent communication dimension with ED transfers at *just the right amount*.

The second question asked about the timeliness of communication with each other about ED transfers. A mean score of 5 would be most desirable, indicating that the nurses rated their own unit as always participating in timely communication about ED transfers. The inpatient

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Table 8

Units' Rating Themselves on the Seven Dimensions of Relational Coordination

Frequent communication

Unit	Not nearly enough	Not enough	Just the right amount	Too often	Much too often	Mean	SD
ED	0	1	1	3	30	4.77	.65
MSU	0	0	2	1	13	4.69	.70
MICU	0	0	1	0	11	4.83	.58
MU	0	1	2	0	6	4.22	1.20
SSU	0	1	0	0	11	4.75	.87

Timely communication

Unit	Never	Rarely	Sometimes	Often	Always	Mean	SD
ED	0	1	5	14	12	4.16	81
MSU	0	0	0	13	3	4.19	.40
MICU	0	0	3	7	2	3.92	.67
MU	0	0	4	5	0	3.56	.53
SSU	0	0	4	7	1	3.75	.62

Accurate communication

Unit	Never	Rarely	Sometimes	Often	Always	Mean	SD
ED	0	0	5	18	9	4.13	.67
MSU	0	0	0	12	4	4.25	.45
MICU	0	0	1	8	3	4.17	.58
MU	0	0	3	4	2	3.89	.78
SSU	0	0	4	7	1	3.75	.62

Problem-solving communication

Unit	Always blame	Mostly blame	Neither blame nor solve	Mostly solve	Always solve	Mean	SD
ED	1	2	6	14	9	3.88	1.01
MSU	0	2	1	11	2	3.81	.83
MICU	0	1	0	9	2	4.00	.74
MU	0	0	1	7	0	4.00	.50
SSU	0	0	4	5	3	3.92	.79

Shared goals

Unit	Not at all	A little	Somewhat	A lot	Completely	Mean	SD
ED	2	1	4	12	13	4.03	1.21
MSU	0	0	4	8	4	4.00	.73
MICU	0	0	1	7	4	4.25	.62
MU	0	0	4	5	0	3.56	.53
SSU	0	0	2	8	2	4.00	.60

Table 8 - continued

| **Shared knowledge** | | | | | | | |
Unit	Nothing	A little	Some	A lot	Everything	Mean	SD
ED	0	1	4	11	15	4.29	.82
MSU	0	0	4	8	4	4.00	.73
MICU	0	1	2	6	3	3.92	.90
MU	0	0	3	3	3	4.00	.87
SSU	0	2	1	5	4	3.92	1.08
Mutual respect							
Unit	Not at all	A little	Somewhat	A lot	Completely	Mean	SD
ED	0	1	5	10	15	4.26	.86
MSU	0	0	5	7	4	3.94	.77
MICU	0	1	1	8	2	3.92	.79
MU	0	0	3	4	2	3.89	.78
SSU	0	0	2	7	3	4.08	.67

nurses each felt that they did a better job within their units than with the ED. The SSU nurses rated themselves highest (mean=4.75; SD=), indicating that they *always* participate in timely communication among themselves. The ED (mean = 4.16, SD=.81)) and MSU (mean=4.19, SD=.40) rated themselves as more than *often* but not *always*. The MICU (mean=3.92, SD =.67) and MU (mean=3.56, SD =.53) nurses rated themselves as more than *sometimes* but less than *often*.

The third survey item asked about *accurate communication* during the transfer process. A mean score of 5 would, again, be most desirable, indicating that the units felt they always participate in accurate communication with each other. If the mean score is closer to 1, the nurses felt they never provide accurate communication and if closer to 5, they always provide accurate communication. A rating of 4 indicated that they felt they often provide accurate communication with each other. The ED (mean = 4.13; SD = .67), MSU (mean = 4.25; SD = .45) and MICU (mean = 4.17; SD = .58) rated themselves as often to always participating in accurate communication within their own work groups. SSU (mean = 3.75; SD = .62) and MU

(mean = 3.89; SD = .78) rated themselves as sometimes too often. SSU (mean = 3.75; SD = .62) rated their accurate communication within their unit as lower than the other units but still *often*.

The fourth dimension is *problem-solving communication* when difficulties arise during a transfer. For this survey item, a mean score of 5, again, would be most desirable, indicating that when there is a problem with an ED transfer, the nurses on their own units work together to solve the problem rather than blaming each other. A score of 5 would indicate that the nurses feel they always work together to solve the transfer problem. If the mean score is closer to 1, the nurses always blame others for the problem rather than seeking resolution. All the units rated themselves as working together to mostly solve the problem rather than assigning blame.

The fifth dimension is *shared goals*. For this survey item, a mean score of 5 would be most desirable, indicating that when nurses are engaged in an ED transfer within their own unit they completely share the same goal. If the mean score is closer to 1, the units feel that they do not share the same goal with their co-workers; in fact, not at all. All the units rated themselves as sharing the same goal a lot. The MICU rated themselves the highest (mean = 4.25; SD = .62) indicating that they share the same goal closer to completely.

The sixth dimension is *shared knowledge*. For this survey item, a mean score of 5, again, would be most desirable, indicating that when ED patients are transferred nurses working on the same unit know everything about the work that is required of their co-workers to complete the task. A score of 5 would indicate that the nurses know everything about the work that is required and share the same knowledge. If the mean score is closer to 1, the co-workers know nothing about the work that is required and do not share the same knowledge. All the nurses within the same units rated themselves as knowing a lot about the work required. The ED (mean = 4.29; SD=.82) nurses rated themselves the highest and a little higher than a lot.

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The final RC dimension is *mutual respect*. For this survey item, a mean score of 5 would be most desirable; indicating that when nurses receive an ED transfer they feel their co-workers respect the work they do during the transfer. A score of 5 would indicate that the nurses feel completely respected within their unit. If the mean score is closer to 1, the nurses feel that their colleagues do not respect their work. A mean score of 3 would indicate that their co-workers somewhat respect their work. The ED (mean = 4.26; SD = .86) and SSU (mean = 4.08; SD = .67) indicated the highest rating for respect within their units. MU (mean = 3.89; SD = .78) was the lowest, however, they still felt respected.

Tests of Significance

Emergency Department Nurses Rating All Other Nurses

The first dimension of RC aims to determine how the ED workgroup rated the other four units (MICU, MU, MSU, and SSU) regarding the frequency in which nurses in each of these groups communicate with the ED about patient transfers. Results of the ANOVA were found to be significant (F [4, 81] = 5.577, p = .001). Due to this finding, the Dunnett's post hoc test was run to determine which individual workgroup pairings produced significant differences in mean ratings (Table 9). Significant differences were found in the ED unit ratings for the MU (p = .005) and the MSU (p = .001). This finding indicates that the two units received lower ratings from the ED unit as to frequency of communication, enough so to be significantly lower than the other two units. The ED unit staff felt that the MU and MSU should communicate more frequently.

The ED Unit was then asked to rate the other units timely communication during patient transfers. Results of the ANOVA was significant (F [4, 78] = 3.916, p = .006). Dunnett's post hoc analysis found the MU to be rated significantly lower than the other three units for timely

Table 9

Results of Dunnett's Post Hoc Tests for ED Unit Rating Units

RC Dimension	Workgroup#	Workgroup#	Mean Difference	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Frequent Communication	MICU	ED	-.18627	.28603	.937	-.9113	.5387
	MU	ED	-1.07516*	.31932	.005	-1.8846	-.2658
	MSU	ED	-.97794*	.25825	.001	-1.6325	-.3233
	SSU	ED	-.67112	.29548	.095	-1.4201	.0778
Timely Communication	MICU	ED	-.46237	.29503	.379	-1.2103	.2856
	MU	ED	-1.12903*	.32858	.004	-1.9620	-.2961
	MSU	ED	-.56653	.26713	.133	-1.2437	.1106
	SSU	ED	.05279	.30455	1.000	-.7193	.8248
Accurate Communication	MICU	ED	-.62903	.26768	.079	-1.3076	.0495
	MU	ED	-1.46237*	.29811	.000	-2.2181	-.7066
	MSU	ED	-1.25403*	.24236	.000	-1.8684	-.6396
	SSU	ED	-.94721*	.27631	.004	-1.6477	-.2467
Problem-Solving Communication	MICU	ED	-.37097	.33497	.690	-1.2201	.4782
	MU	ED	-1.53763*	.37305	.000	-2.4833	-.5919
	MSU	ED	-1.05847*	.30328	.003	-1.8273	-.2896
	SSU	ED	-.96188*	.34577	.026	-1.8384	-.0853
Shared Goals	MICU	ED	-.56452	.34352	.334	-1.4354	.3063
	MU	ED	-1.84229*	.38258	.000	-2.8121	-.8724
	MSU	ED	-1.12702*	.31103	.002	-1.9155	-.3385
	SSU	ED	-1.33724*	.35460	.001	-2.2362	-.4383
Shared Knowledge	MICU	ED	-1.13333*	.28690	.001	-1.8607	-.4060
	MU	ED	-2.07778*	.31924	.000	-2.8871	-1.2685
	MSU	ED	-1.61250*	.26003	.000	-2.2717	-.9533
	SSU	ED	-1.66364*	.29607	.000	-2.4142	-.9131
Mutual Respect	MICU	ED	-.43333	.31544	.503	-1.2330	.3663
	MU	ED	-2.26667*	.35099	.000	-3.1565	-1.3769
	MSU	ED	-1.26667*	.28589	.000	-1.9914	-.5419
	SSU	ED	-1.81212*	.32552	.000	-2.6374	-.9869

*. The mean difference is significant at the 0.05 level.

a. Dunnett t-tests treat one group as a control, and compare all other groups against it.

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communication (*p* = .004). The ED Unit indicated that timely communication with the MU

occurred *rarely* or *sometimes*; whereas the other units received mean ratings ranging from

sometimes to *often* or *always*.

Accurate communication regarding patient transfers between the ED Unit and the

inpatient units was examined as the third dimension. AVOVA findings were significant (*F* [4,

78] = 10.426, *p* = .000). Post hoc Dunnett's found significantly lower ratings for accuracy of

communication for MU (*p* = .000), MSU (*p* = .000), and the SSU (*p* = .004). These units

received mean ratings in the lower categories of *sometimes* to *often*, while the MICU had mean

ratings in the area of *often* to *always*.

When asked, When there is a problem with patient transfers between the ED and other

units, do nurses on these units blame others or work with you [the ED Unit] to solve the

problem? the ED provided mean ratings that were significantly different (*F*[4, 78] = 6.303, *p* =

.000). Results of the Dunnett's found significantly lower mean ratings (*mostly blaming* or

neither blaming or solving) for the MU (*p* = .000), MSU (*p* = .003), and the SSU (*p* = .026).

Therefore, the analysis provides support that the ED Unit rates the MICU as the only unit

engaged in behaviors intended to solve patient transfer problems rather than blaming each other.

When asked if their inpatient colleagues share their goals during patient transfers

ANOVA findings were significant (*F* [4, 78] = 8.456, *p* = .000). Significant findings from the

Dunnett's found three units to be rated lower than the MICU for shared goals. The MU (*p* =

.000), the MSU (*p* = .002), and the SSU (*p* = .001) had mean ratings in the range of *a little* to

somewhat for how the ED nurses felt they shared goals concerning patient transfers. However,

the MICU had the highest mean ratings, ranging from *somewhat* to *a lot*.

Another survey item asked ED nurses to indicate how strongly they felt their inpatient colleagues knew everything about the work that is required of them during the task of patient admission (shared knowledge). Findings of the ANOVA indicated low ratings for all four workgroups (F [4, 77] = 18.242, p = .000). The four workgroups all were consistently rated low by the ED Unit, as found in the post hoc results (MICU, p = .001; MU, p = .000; MSU, p = .000; SSU, p = .000). The majority of mean rankings for all four workgroups was in the categories of *a little* to *some* for shared knowledge.

The final RC dimension asked whether the ED nurses felt that colleagues in the other units respected the work they do with patient transfers. ANOVA results were significantly different, and demonstrated lower mean ratings for three of the workgroups (F [4, 77] = 16.057, p = .000). The MICU was the only group with nonsignificant rating, where mean ratings were reported in the areas of *somewhat* to *a lot*, indicating that the ED Unit recognized the MICU had an understanding of, and respect for, the work they do. However, lower mean ratings of *a little* to *somewhat* were indicated for the MU (p = .000), the MSU (p = .000) and the SSU (p = .000). The ED nurses feel that the majority of their inpatient colleagues do not respect their work, *not at all*.

Inpatient Nurses Rating Emergency Department Nurses

Nurses on the inpatient units were asked to rate the ED nurses on the seven RC dimensions (Table 10). For the initial dimension, frequent communication, the MU indicated that frequent communication was *just the right amount* of communication with the ED (mean = 3.78; SD = .97). The MICU nurses indicated that communication was actually too often (mean = 4.67; SD = .78). The ED was rated highest by SSU as providing timely communication more than often but less than always (mean = 4.25; SD = 1.14). Overall, the units reported that the

Table 10

Units' Ratings of the ED

Frequent communication

Unit	Not nearly enough	Not enough	Just the right amount	Too often	Much too often	Mean	SD
MSU	1	0	6	2	7	3.88	1.20
MICU	0	0	2	0	10	4.67	.78
MU	0	0	5	1	3	3.78	.97
SSU	0	1	3	0	8	4.25	1.14

Timely communication

Unit	Never	Rarely	Sometimes	Often	Always	Mean	SD
MSU	0	2	4	9	1	3.56	.81
MICU	0	1	3	7	1	3.67	.78
MU	0	3	3	3	0	3.00	.87
SSU	0	1	3	0	8	4.25	1.14

Accurate communication

Unit	Never	Rarely	Sometimes	Often	Always	Mean	SD
MSU	0	5	8	3	0	2.88	.72
MICU	0	3	1	7	1	3.50	1.00
MU	0	4	4	1	0	2.67	.71
SSU	0	3	4	4	1	3.25	.97

Problem-solving communication

Unit	Always blame	Mostly blame	Neither blame or solve	Mostly solve	Always solve	Mean	SD
MSU	0	7	5	4	0	2.81	.83
MICU	0	3	2	5	2	3.50	1.09
MU	1	5	2	1	0	2.33	.87
SSU	0	5	4	2	1	2.92	1.00

Shared goals

Unit	Not at all	A little	Somewhat	A lot	Completely	Mean	SD
MSU	1	5	4	6	0	2.91	1.00
MICU	0	1	4	7	0	3.50	.67
MU	3	1	5	0	0	2.22	.97
SSU	1	4	4	3	0	2.75	.97

Shared knowledge

Unit	Nothing	A little	Some	A lot	Everything	Mean	SD
MSU	1	4	10	1	0	2.69	.70
MICU	0	2	6	4	0	3.17	.72
MU	2	3	4	0	0	2.22	.83
SSU	1	5	4	1	1	2.67	1.07

Mutual respect

Unit	Not at all	A little	Somewhat	A lot	Completely	Mean	SD
MSU	0	4	8	4	0	3.00	.73
MICU	0	1	2	7	2	3.83	.84
MU	5	0	3	1	0	2.00	1.23
SSU	3	2	5	2	0	2.50	1.09

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often communicated with them in a timely manner. MU, however, rated the ED as only sometimes providing timely communication (mean = 3.0; SD = .97). The MICU (mean = 3.50; SD = 1.00) rated the ED higher than the other units indicating that they felt that accurate communication occurred sometimes and often. MU (mean = 2.67; SD = .71) rated accurate communication from the ED the lowest indicating that it occurred rarely and sometimes.

When there is a problem with a transfer the unit nurses were asked if the ED nurses try to solve the problem rather than blaming others. MU (mean = 2.33; SD = .87) rated the ED the lowest on this item indicating that they feel the ED is more likely to mostly blame others when a problem occurs. MICU (mean = 3.50; SD = 1.09) rated the ED the highest indicating that they share similar views as the ED on this dimension and feel that ED nurses are likely to work with them to solve issues. None of the units, however, rated the ED as always working with them to solve the problem.

When nurses are engaged in a transfer from the ED they were asked if their colleagues completely share their same transfer goal. The MICU (mean = 3.50; SD = .67) rated the ED closest to sharing their same goal somewhat to a lot. MU (mean = 2.22; SD = .97) rated ED the lowest indicating that they share the same goal only a little. MSU (mean = 2.91; SD = 1.00) and SSU (mean = 2.75; SD = .97) were somewhat closer to feeling that the ED nurses share their same goal during transfers.

The unit nurses were asked if their ED colleagues know everything about the work that is required of them as they try to receive ED patients (shared knowledge). The MICU (mean = 3.17; SD = .72) feels that the ED knows some about the work that is required for the MICU to receive a patient. MU (mean = 2.22; SD = .83) rated shared knowledge the lowest indicating that they feel that ED nurses only know *a little* about what is required for them to receive a patient.

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MSU (mean = 2.69; SD = .70) and SSU (mean = 2.67; SD = 1.07) rated the ED a little higher in understanding the work required of their inpatient colleagues.

The unit nurses' final assessment of the ED nurses is on *mutual respect*. MU's (mean = 2.00; SD = 1.23) rating of mutual respect with the ED was the lowest indicating that they do not feel that the ED respects their work during transfers beyond a little. MSU (mean = 3.00; SD = .73) and SSU (mean = 2.50; SD = 1.09) indicated that the ED respected them somewhat. The MICU (mean = 3.83; SD = .73) indicated the highest level of respect from the ED at *a lot*

Emergency Department Boarding Time

ED boarding time is reported as the time elapsed between when a physician enters a request to admit a patient and when the patient arrives on a designated unit. Data collection occurred over a 3-week period of time and during that time 676 patients were transferred from the ED to the selected units. The mean boarding time for all patients was 311.5 minutes. The standard deviation for each unit's ED boarding time was not available by each transfer and the total standard deviation was calculated to be 107.9. The majority of the ED transfers were admitted to the MSU unit (30%) and experienced the longest boarding time (minutes = 410 minutes). The MU (25%) had the second highest volume of admissions and these patients experienced the second longest ED boarding time (minutes = 375). The MICU (15%) had the lowest boarding time (minutes = 167). The SSD (22%) provided the shortest boarding time among all the non-ICU units (minutes = 294). Table 11 displays ED patient admissions to selected hospital units and the mean ED boarding time (in minutes) for each.

<div align="center">

Conclusions and Summary

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The results of this investigation were presented in this chapter. The participants were similar in age, education, ladder level, enrollment in school, and current level of certification.

Table 11

ED Patient Admissions to Selected Hospital Units
9/9 through 11/3/2014 (n = 728)

Nursing Unit	Patients admitted	Mean ED Boarding Time (min.)
Medicine	181	375
Medicine ICU	111	167
Medicine Step-down	221	410
Surgery Step-down	163	294
Overall-summary	$n = 676$	Mean =311.5 SD = 107.9

The only significant demographic difference was found in the nurses' level of experience. ED nurses were significantly more experienced than the nurses on the inpatient units (χ^2 (52) = 78.95, p = .009).

The results indicate significant RC concerns across ED and inpatient boundaries. While nurses feel that their own units are doing well and rated RC dimensions highest on their own units the ED nurses rated several of their inpatient colleagues significantly low in several RC dimensions. The inpatient nurses rated the ED low in several RC dimensions but none are significant. Specifically, the ED feels that the MU is significantly low in all seven RC dimensions. They rated the MSU significantly low in all but timely communication. A ll four of the inpatient units were significantly low in understanding the work that the ED nurses must do as they transfer patients (shared knowledge). The MICU was only significantly low in the shared knowledge category, suggesting a reciprocal relationship that positively influences their interactions in the other six dimensions. The two medicine units (MU and MSU) tend to share the same perspective when asked about the ED nurses, however, the study did not indicate

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significance. The MU and MSU feel that the ED nurses do not understand or respect their work either.

When units rate themselves their RC dimensions scores are much more positive. The ED nurses and the SSU nurses rated their own units as having the overall highest RC dimensions. The MSU and MU rated themselves as the overall lowest. All the inpatient units feel that communication is frequent and timely with the ED. They feel they are weakest with problem-solving communication and sharing transfer goals. While the units and ED share similar poor perspectives on their RC dimensions, the ED views their inpatient colleagues as significantly lower. Chapter 5 will present a discussion of these findings and addresses the limitations; implications for practice, theory and research, and recommendations for future research.

CHAPTER 5. DISCUSSION OF FINDINGS

The purpose of this research was to determine if relational coordination dimensions are significantly different between ED nurses and inpatient nurses as they transfer ED boarding patients. Health-care organizations continue to face adverse quality outcomes associated with ED crowding. Quality metrics identified as predictors of crowding, diversion, wait times, and boarding continue to increase despite managerial imperatives to reduce each (Liu et al., 2011). ED nursing care is under surveillance and increasingly monitored, measured, reported, and scrutinized with a focus on these quality and efficiency metrics (Borbasi & Jackson, 2005). An inability to transfer a patient to an inpatient bed remains the single most important contributing factor to ED crowding (Olshaker, 2009). This study examined the relational and communication dimensions present in nursing practice as ED nurses collaborate with floor nurses to transfer patients. Their knowledge, expertise, intentions, and interpretations of the task were examined within the context of experiential learning (Benner, 1984). Gittell's (2009) relational coordination philosophy provided the theoretical foundation by examining the coordination of transfers through nursing's relationships of shared goals, shared knowledge, and mutual respect. This chapter presents a synthesis of the main empirical findings summarized in Chapter 4. It describes the nursing workforce and their relational coordination during ED transfers. Strengths and potential limitations of the current study will be discussed as well as recommendations for future research presented.

Descriptive Statistics

The only significant demographic difference in this study was found in the nurses' level of experience. ED nurses were significantly more experienced than the nurses on the inpatient units. The significant difference in years of clinical experience by the ED nurses as well as having the overall highest percentage practicing beyond an RN Clinician II level (8%) by Benner's (1984) concept would indicate that the ED nurses in the study are most likely practicing at an expert level. They would no longer require analytical principles such as a rules or guidelines to direct their practice. Benner (1999) defines four key aspects of expert nursing practice: (a) an ability to read a situation and respond quickly, (b) an embodied know-how, (c) seeing the big picture with an anticipated trajectory and not just the immediate clinical situation, and (d) working with and acting through positive relationships with others. These aspects in their practice would guide the ED nurses' behavior when coordinating ED transfers. They would demonstrate an ability to quickly focus on the accurate region of the ED crowding issue and seek resolution specific to diversion, wait time, or boarding without wasting time or considering other less helpful possibilities (Benner, 1984). Transferring a patient to an inpatient unit may be only one route considered when addressing ED crowding; however, once the expert nurse considers all options, she may settle on this as the best. One less patient may increase resources to address all crowding issues, but is reflected only in the measure of boarding time. Reducing diversion and wait times may only be secondary gains not easily captured in ED quality metrics. While the expert ED nurse organizes her behaviors by anticipating the bigger clinical issues faced with ED crowding, the floor nurse may coordinate the transfer in isolation of the bigger picture.

The study indicated that the majority of the nurses with less than 5 years' experience (41%) worked on the inpatient units. The MU and MSU nurses comprised the most respondents

with fewer than 5 years of practice (75%). A nurse at this level would be considered a novice or advanced beginner (Benner, 1984). They generally would require help setting priorities and tend to operate on prescribed guidelines. Sorting out what is most important in their work would require direction. Typically, a novice nurses have limited or no experience in managing highly complex situations, with multiple interruptions and demands exceeding their capability to respond, and a need to constantly reorder priorities while staying focused on the task to coordinate a transfer (Benner, Hughes, & Sutphen, 2008). While engaging with the ED nurse (the expert nurse), they may face an interaction in which their colleague would see beyond guidelines and may rush or short cut their novice processing. The ED nurse may actually expedite problem solving and prioritize the transfer by providing verbal direction. This directive may be perceived as a status differential rather than evidence of expert knowledge and ultimately challenge communication and divide efforts (Gittell, 2009).

Inpatient novice and advance beginner nurses would be expected to be beginning to demonstrate an ability to synthesize previous experiences and to see recurrent and meaningful patterns in their practice; however, visualizing the whole picture is developmentally beyond their reach. The complexity inherent in the coordination of an ED transfer requires an ability to manage many contingencies with speed and flexibility. A reliance on general guidelines to navigate a transfer may fall off an inpatient nurse's priority list as she navigates caring for her current patients in the form of conflicting goals, obstacles, unpredictability, poorly designed work flow, rapid changes, missing data, the engagement with other patients and practitioners. Complexity forces the nurse to depart from her preferred formal and ideal response into an uncharted cognitive reality (Ebright, Urden, Patterson, & Chalko, 2004).

Though the majority of the nurses had limited experience, they did report having a bachelor's degree (68%), which is higher than the overall nursing workforce at the VCU (66.4%) and the country (45%) (Health Resources and Services Administration, 2013). Nursing education ensures that a nurse's advancement from novice to expert will be efficiently navigated from a foundation of theory and principles to experiential learning. This sample of primarily BSN nurses, young by industry standards, would be expected to have the foundational knowledge through their formal BSN preparation, to ask the right questions and look for the correct problems as they advance their knowledge through experience (Benner, 1984). Their BSN preparation, however, will not influence their practice in isolation of experience or work environment. Nurses with many years of experience compared to those with fewer years may be relatively desensitized to complex work environments and consequently have higher coping thresholds (Manski-Nankervis, Furler, Young, Patterson, & Blackberry, 2015). Higher education and healthy work environments together have the greatest opportunity to positively impact patient outcomes (Aiken et al., 2011). The majority of the sample was female (93%) and younger (25 to 34 years) than the overall population of nurses at VCU (48 years) and in the United States (45 years). Most (68%) were not pursuing additional nursing education beyond their current level. They also were not specially certified in their practice area (60%). The majority (72%) were not practicing beyond Benner's advanced beginner level (RN Clinician II) on the formal clinical ladder. A well-functioning nursing team requires foundational education, effective communication for experiential learning to occur as well as a social climate that supports shared clinical judgment and strong relational skills (Benner, 1999).

Relational Coordination

Relational coordination is a mutually reinforcing process of human interactions between communication and relationships as task integration occurs. As nurses coordinate an ED transfer, the mutually reinforcing webs of communication and relationship impact the process (Gittell et al., 2000). Relationships among nurses matter in the transfer of ED boarding patients. Specifically, accurate, problem solving, frequent, timely communication, supported by relationships of shared goals, shared knowledge, and mutual respect provide the basis for coordinated ED transfers.

None of the RC rankings in this study, within inpatient unit boundaries were significantly different. Several RC rankings of inpatient RC dimensions as perceived by the ED were significantly different. All inpatient units were rated significantly below having some knowledge related to the ED nurses work during transfers. The two medicine units were rated by the ED as significantly less than a positive interaction in six to seven dimensions. At best, the inpatient nurses rated the ED's RC dimensions as only moderate and weak in all seven dimensions except frequent communication. Inpatient unit's indicated that frequent communication's rating indicated a strong RC score, however, as it relates to ED transfers nurses felt it occurred too often and much too often. They did not view the strength in this communication dimension as a positive influence during ED transfers. RC scores were reported as only slightly higher when nurses rated their own units. The MU and MSU rated their overall RC score as weak and lower than the other units self-rated.

All the units felt that the ED nurses provided frequent and timely communication (moderate to strong) and rated these as higher than the other 5 RC dimensions. These ratings indicate that the floor nurses feel that there is too often or much too often communication from

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the ED related to ED transfers. Perhaps organizational pressure aimed at ED crowding and throughput initiatives along with associated monitoring of the individual and unit performance has amplified the ED nurses need to over communicate during transfers (Van Eyk, Baum, & Houghton, 2001).

The CMS announced the inclusion of median time from admit decision time to time of ED departure for admitted patients as a quality measure under the Hospital Inpatient Quality Reporting Program initiative. Hospitals will be required to report their measures to CMS in order to receive the full Medicare payment update. The metric was also endorsed by the National Quality Forum in 2008 and 2011 and is currently one of several reviewed by researchers and administrators to assess changes in ED crowding and patient throughput. Eventually, it will be reported publicly (Medicare Program Federal Register, 2012). While administrators and clinicians recognize the Institute of Medicine's (IOM's) six dimensions of quality (safety, effectiveness, patient-centeredness, efficiency, timeliness, and equity) may all be compromised when patients are boarded in the ED, solutions appear to be focused on frequent communication that is not perceived as helpful to ED or inpatient nurses.

Excessive managerial pressure to move patients may actually be impeding the exchange of information, diminishing the synergy from interaction and creating anxiety and tension between the ED and floor nurses (McKeon, Oswaks, & Cunningham, 2006). Managing knowledge workers, whose expertise must develop in the care of particular patients, using a static command-and-control approach, blunts direct learning and limits the development and sharing of innovation and initiative in practice. The fact that nurses do not always actualize their intent should not result in a top down approach designed to drive outcomes. Micromanagement tactics do not drive expert nurses to overlook the nuances in a patient's condition in order to

meet the time commitment established by external directives. They view these directives as guidelines and open for discussion. The novice nurses, however, may recognize the directives as priorities and encounter stress as they struggle to provide safe care to their current patient population while navigating numerous interruptions during the transfer process. Over communicating during ED transfers by considering it a task divisible by measurable units may actually be reducing the efficiency and effectiveness of the process (Benner et al., 2008). Finding a balance between too much and too little communication where interaction, learning, and innovation are fostered is the key to effectively managing the professional nursing knowledge workers. Knowledge arises in an experiential process of relating between nurses and is continuously reproduced and potentially transformed. Knowledge is an active process of relating. It cannot be stored and intellectual capital cannot be measured or managed. A relationship between the nurses establishes the value of each and highlights the capacity human relating has to the task of transferring the patients in the absence of external control (Stacey, 2001). Designing nurses' work during ED transfers so that they have the continuity and context for developing trusting relationships with each other and an opportunity to demonstrate astute clinical judgments based on knowing their patients provides the safest and most cost-effective care (Benner et al., 2008).

Overall the floor nurses rated the ED lowest on shared knowledge and mutual respect and the ED agreed by rating all the units lowest on the same. The ED especially does not feel that the two medicine units (MU and MSU) know what is required of them to transfer a patient do not respect the work that the ED nurses do, do not provide accurate information, tend to blame rather than problem solve and do not share the same goals. The two general medicine units feel the same towards the ED nurses. They feel that the ED nurses do not understand or respect their

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work either. The ED feels that the SSU may provide frequent and timely communication, but they, like their general medicine colleagues do not provide accurate information, tend to blame, do not share goals, or respect. These poor RC dimensions and lack of interrelatedness among the nurses within the transfer process prevents new and innovative solutions to the ED boarding issues. The lack of understanding and respect across unit boundaries prevents collaboration. Organizational throughput initiatives cannot engage bedside nurses as leaders with their colleagues and crowding will remain an independent ED issue (Stacey, 2001).

The nurses on the medicine units (MU and MSU) felt that the ED provided accurate communication a little less than often. Incomplete information exchange increases uncertainty in the work environment (Lawrence & Lorsch, 1967). Environmental uncertainty is inherent in emergency departments at any point in time. ED patients may be transferred with undiagnosed conditions and incomplete treatment plans. Coordinating the work of the unit from incomplete information and undefined patient conditions limits the floor nurses' ability to deploy appropriate resources to provide care for the transferred patient (Argote, 1981). Novice nurses may struggle with adjusting their priorities as they face urgency without clear protocols (Benner, 1984). The capacity of both areas to manage their complex, highly interdependent environments is determined by their ability to handle the communication necessary for coordination. Reliable information produces a greater tolerance for interdependence. As the ED and floor nurses face higher levels of variability a greater burden to communicate and coordinate occurs. Specialization in these units creates greater interdependencies between them to accomplish the transfer (March & Simon, 1972). Accurate information is at best, only sometimes or often accurate during ED transfers. The floor nurses' inability to view the big picture produces mistrust and increases uncertainty during ED transfers. They may consider ED nurses' behavior

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as undependable as unexpected situations create modifications and alter transfer plans. A lack of interdependent trust between the units does not support rewarding relationships and attribution of dependability is not earned. ED nurses are frequently navigating complexities that reduce their ability to demonstrate interdependence, share common interests, and demonstrate a willingness to act out of concern for the less experienced floor nurses. Nurses on the floor may not show an intention to trust and an ability to meet their own role obligations as they fail to develop trust in a gradual reciprocation of risk taking during transfers. Every time the process occurs in an undependable exchange, fear increases and trust fades (Kelly & Thibaut, 1978). The conditions of task interdependence, uncertainty and time constraints inherent in ED transfers are not conducive to predictable or dependable exchanges. Acceptance of this emphasizes the importance of understanding the effect of uncertain inputs (Thompson, 1967; Weick, 1993) on ED transfers and the coordination methods most appropriate for the novice/advanced beginner nurse to assimilate into practice (Argote, 1981). The use of critical pathways and protocols may be helpful to the advanced beginner and competent-level clinicians but must be viewed as guidelines, not mandates for the proficient-expert nurse. The expert nurse must be encouraged to consult and question mandates as she assimilates new alternatives into his/her practice. The expert views pathways and protocols as prompts for memory and dialogue. The nuanced responses to the changes in a specific patient are the mark of expert nurse practice that typically goes beyond formal rules and guidelines (Benner et al., 2008)

The weakest RC dimensions consistently reported by the ED nurses (at a significant level) among their inpatient co-workers were a lack of accurate information sharing, an inability to problem-solve without blaming, not sharing transfer goals and not respecting or understanding the work requires of the ED nurses. The MU and the MSU rated themselves as having the

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weakest RC with them. A level of passive engagement is apparent as the nurses on the two medicine floors (MU and MSU) rated themselves as weak on problem-solving communication and shared goals during ED transfers. Low problem-solving communication and ambiguous expectations on the units impacts each nurse's individual prioritization of the task. The reciprocal nature of the work on the unit and their RC scores indicate that the nurses talk a lot about transfers but they do not influence each other to accomplish the task. The ED crowding issue does not drive the action of a nurse on these units. The relational process during the coordination of the transfer is driven by the decisions of the nurse directly involved in the transfer. His/her coworkers do not encourage or discourage the coordination of the transfer. Experiences gained during ED transfers are unique to each interaction and occur in the interplay of social forces between an ED nurse and a floor nurse during the task (Follett, 1924). The lack of a shared goal associated with ED transfers ensures that nurses on MU and MSU are not moving together, adjusting activities, interrelating, and working as a common unit to transfer patients. While the nurses on the unit may each perform different roles during the coordination of an ED transfer they are unable see their personal contribution to the whole (Follett, 1924).

In all seven RC dimensions the MICU rated the ED nurses higher than the other units rated the ED, and the ED rated the MICU higher than it rated the other units. Though the ratings MICU were not significantly different and are considered weak, the reciprocal RC dimensions are apparent. The highest ratings occur in all but shared knowledge. This may be, in part, a result of a different quality matrix assigned for ICU transfers. Once a decision is made to admit a patient, an inpatient transfer should occur within 4 hours. An ICU admission is expected to be quicker and completed within 2 hours. The acuity of an ICU patient would also be expected to deploy more resources to expedite a transfer and reduce ED boarding time.

Emergency Department Transfers

None of the inpatient units successfully met the quality metrics related to ED transfer times during this study period. The general floors have an admission threshold of 4 hours and the ICU patient is expected to be in a bed within 2 hours once the decision to admit has been made. The MICU was the closet to meeting their goal in 2.78 hours. The second closest was the SSU in 4.9 hours. The MU (6.25 hours) and the MSU (6.83 hours) had the longest time intervals. The MSU (221) and the MU (181) transferred more patients from the ED than did the other units. The MICU and ED had higher RC dimensions compared to the ED and others. The MICU and SSU nurses reported higher internal RC dimensions than the other units. Overall, the MICU and SSU had better RC ratings by the ED nurses and lower ED boarding times than the other units.

Implications for Nursing Research

The model did establish statistically different RC scores between the ED and the inpatient nursing units that receive the most ED admissions. It also provided some descriptive findings that warrant further investigation. The next step in theory development should include the examination of causal relationships between nursing experience and all seven RC dimensions during interdependent work with other nurses. Establishing focus groups to explore the lived experience of nurses within units and across boundaries could provide greater insight into the seven relational coordination dimensions examined in this study. Continuing to explore and clarify relational dynamics between nurses during ED transfers may continue to validate the utility of the relational coordination theory in nursing's work processes.

Nursing teams face high levels of task interdependence, uncertainty and time constraints. As nurses experientially learn and advance their practice, their ability to understand their role, interpret the intentions of others, and measure their value and power within the bigger picture evolves (Benner, 1984). This study examined ED transfers; however, given the relational nature of coordinating care, future research should examine nursing experience and RC dimensions on various performance outcomes (Gittell, 2012).

The ED nurses poor perspective of their inpatient colleagues RC dimensions warrant a follow up qualitative study to explore themes that may emerge. The RC dimensions across ED and inpatient units that require further investigation are accurate communication, problem solving communication, shared goals, shared knowledge, and mutual respect. The ED and floor nurses do not feel that they communicate with each other accurately about the status of ED transfers. They do not feel that they know what work is required of each other and do not understand or respect the nurses or the work done by the nurses' on the other units.

Within unit RC dimensions that require further investigation are shared goals and problem-solving communication. Nurses within their own teams do not feel that they share the same goals related to transferring ED patients and they do not share responsibility to resolve issues as they occur during transfers.

Future theory development should examine the causal relationships between these RC dimensions, nursing experience, and situational awareness during ED transfers. Others have begun to take steps in this direction. Riley, Davis, Miller, and McCullough (2010) examined team responses and described situational awareness as the ability to actively assess and discern changes in the environment. Environmental issues are perceived and managed differently by nurses based on their developmental level (Benner, 1984). Examining causal relationships

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between experience, situational awareness and RC dimensions during ED transfers is another next step in advancing our understanding of nursing's relational work.

Weak problem-solving communication indicates that future theory development should explore the causal relationships between nursing experience and directives during ED transfers. Others have begun to take steps in this direction. Daft (2007) identifies the value of decentralized structures in which authority is shifted to the level of service and leadership is characterized by shared decision making, mutual goal setting, and employee empowerment. Benner (1984) would propose that this leadership style would create stress and insecurity for the rule-governed and inflexible, inexperienced nurse who is seeking rules and guidelines. Both realities must be explored within an organization. Nurses are governed by managerial rules and norms. Nursing work is increasingly driven by managerial imperatives that can lead to intergroup conflict as the ED is accountable for ED quality metrics (Smith, Pearson, & Ross, 2002). Individual nurses, both expert and less experienced, along with their teams struggle to define their role, contribution, and behavior within the context of the larger organizational directives.

Recognizing the RC is expected to improve the quality and efficiency performance of nurses' work as they transfer patients; theory can be developed by measuring RC as the independent variable and ED transfer time as the dependent variable. Careful attention would need to identify and control for the multiple confounders associated with ED transfers. ED transfers would require more accurate time measures beyond this study's RFA to bed interval. Jody Gittell (2012) is actively engaged in studies that are producing evidence that RC is a predictor of quality and efficiency performance. Because transferring ED boarders out of crowded EDs is a critical component of ED efficiencies and patient care, resolving barriers that

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decrease the success of this exchange is essential. Therefore, future studies are needed to examine associations that incorporate longitudinal data and datasets that include objective measures capturing, nursing experience, complex work environments and relational coordination dimensions. Because ED crowding is associated with poor patient outcomes nurses need to continually ensure that each individual's contribution and every work environment is conducive to effective relational coordination in all seven dimensions as ED boarding patients are transferred.

Implications for Practice and Management

The findings in this study suggest that, if RC is to have a beneficial influence on ED performance, nurses on all of the studied units must become more aware of RC and the various dimensions that exist and currently influence the task of transferring an ED patient to an inpatient bed. Awareness, however, is not enough. Nurses must also target appropriate interventions and assess the impact of interventions on their ability to improve the transfer process.

Jody Gittell (2015) argues that efforts to build teamwork will benefit from both teamwork measures that diagnose issues (RC) in the current state as well as teamwork interventions that address and respond to the opportunities. She has proposed that partnering the validated RC teamwork dimensions survey with the interventions of the Team Strategies and Tools to Enhance Performance and Patient Safety (TeamSTEPPS) program may provide both diagnostic measures and targeted interventions to improve team performance. The training may produce positive changes in RC and associated outcomes. She offers that the training's impact on RC and associated outcomes may be greater and more sustainable when the diagnostic RC measures are used to target and inform content and interventions. She suggests that the training on RC and

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associated outcomes will be greater and more sustainable when it moves beyond changes in interpersonal relationships to create longer-lasting changes in role relationships.

This study has provided the diagnostic insight into the current state of the ED and floor nurses RC dimensions during ED transfers. TeamSTEPPS, a validated evidence-based patient safety program developed by the Department of Defense, the Agency for Healthcare Research and Quality, and researchers focused on improved teamwork and communication in health care was released in 2006. This program may provide nursing leaders the specific tools for training, and recommended strategies to target ED transfer opportunities. The four skills taught in the program are communication, leadership, situation monitoring, and mutual support. Nurses supporting the philosophy that every nurse, regardless of unit or experience, is as important as any other nurse would be an improvement to the current state. All nurses taking responsibility in the provision of timely feedback to each other (within and across boundaries) as well as resolving conflicts related to transfers would improve the current blaming environment. Communication that is open, offered freely with each nurse sharing an obligation to speak up regardless of unit or experience may improve the shared knowledge and mutual respect dimensions. Sharing situation monitoring as nurses remain fully engaged and aware of everything that is occurring during the transfer process may result in each knowing; the status of the patient, who is available to address the situation, the urgency of the situation, what equipment is necessary and available, and what facility or environmental issues may need to be addressed. Leadership, communication, and situation monitoring among all nurses should lead to an environment of mutual support in the transfer process. Nurses may start to help each other complete the transfer. Professional barriers may break down permitting everyone to contribute, within the limits of their ability and knowledge, in the process of safe and effective patient

transfers out of the ED. Evidence supports that the knowledge, skills, and attitudes, that comprise the core of TeamSTEPPS program, can improve safety and outcomes. Successful implementation should assist the transition of ED nurses from functioning as individual experts in the ED to performing as members of expert teams within the organization (Epps & Levin, 2015). Health-care leaders will need to promote and influence the adoption and implementation as a system wide culture change to influence relational dynamics across unit boundaries.

Study Limitations

Despite its contributions and strengths, this study is limited in several ways. First, this study is limited by the use of survey alone. The rich voice and perspective of the nurses surveyed are not present. The relational dynamics inherent in the communication and coordination of patient transfers are available only by the interpretation of a Likert scale. Adding a qualitative component to the study would have provided more insight into the complex dynamics of the nurses' integrated work.

The anticipated sample size was not met on each unit. The study identified the minimum sample size for each of the four units and the adult ED to be 15-30 registered nurses. This number was required to detect a medium effect size based on Cohen's (1992) guidelines for calculating the number of participants necessary for achieving sufficient power. The ED is the only unit that achieved the desired sample size. This study should be repeated with a larger sample.

The study was limited to one research setting. VCUHS is a large, urban, academic hospital. It is one of 256 acute care hospitals in the country designated as part of the Council of Teaching hospitals (American Hospital Association, 2011). The nursing workforce has achieved their Magnet status from the American Nurses Credentialing Center and several units have been

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recognized as Beacon Units. Along with this recognition comes a high degree of measured and reported nursing sensitive indicators. Expectations are well defined and practice is monitored and scrutinized. These environmental factors influence the nursing work environment. The findings of the study may not be generalizable to all nursing environments.

Another limitation of the study was that the nursing workforce faced a unique stressor while the survey was deployed. VCU was designated as one of two of the state's Ebola hospitals should a case be identified in the state and the patient could not be transferred to one of the four nationally recognized biocontainment facilities. The organization had an emergency preparedness process in place but the acute Ebola crisis called upon nursing teams that were predominantly in medicine and in the emergency department. Seventy people were trained in the ED and 20 in the MICU/ICUs. The rest of the nursing staff were expected to engage in three learning modules related to care of the Ebola patient. This acute deployment of resources and demand on the nursing staff left little time for attention to this study.

The final limitation in the study is that it does not determine if RC is associated with ED boarding quality metrics. It has not established any causal links between variables. It has provided observations related to the RC dimensions present in nursing practice as ED boarding patients are transferred. It has proposed relationships between RC and ED transfers. It did not examine extraneous factors or rule out the many confounding variables associated with transferring a patient from the ED to an inpatient bed.

Summary and Conclusion

In conclusion, the major findings in this study is that nurses within their own units perceive their relational coordination dimensions to be positive while across boundaries this perception is not confirmed by their colleagues on other units. Nurses within their own units feel that they all share the same goals, knowledge a lot as well as respect each other a lot. They

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perceive that their communication about ED transfers is often and mostly tends to problem solve rather than blame when faced with problems. The ED nurses do not share this healthy perspective of the relationships and communication once their inpatient colleagues engage in transfers across unit boundaries. The ED nurses perceive that the floor nurses (MU, MSU and SSU) communicate infrequently, are rarely timely, only sometimes accurate and they mostly blame others during problem solving issues. ED nurses feel that their inpatient colleagues know little about the ED's nurses' work during transfers and do not share their goal of transferring the patient to the floor nor respect the role of the ED nurse in the process. Inpatient nurses rate the ED nurses lower than themselves in the RC dimensions but not as low as they are rated by the ED. Floor nurses feel that the ED nurses communicate too frequently about transfers. They are only a little to somewhat timely in their communication, sometimes accurate, neither solve or blame problems. The same goal of transferring a patient is shared a lot by the MICU nurses but only a little by the MU nurses. They feel that the ED nurses know only a little about the work required of the MU nurses and somewhat about everybody else. The inpatient nurses on the MU feel that the ED nurses respect them a little while the MICU nurses feel respected a lot. This suggests that the relational work during ED transfers has identified weak RC dimensions that may be influencing ED crowding. Nurses and nursing units can no longer function in silos within the larger organization. If nurses are to serve as system innovators barriers to communication and weak relationships must be improved across health-care systems. Emergency department crowing, boarding and transfers may all improve if nurses on these units seven relational coordination dimensions can be influenced to match in a positive perception of each other's relational coordination dimensions during ED transfers.

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The study also suggests experience plays a role in the variability of a nurse and a nursing unit's engagement during an ED transfer. The study suggests that floor nurses, functioning with less experience suffer particular vulnerabilities during ED transfers. It also suggests that the ED nurses perceive the transfer issues as less of a priority for their inpatient colleagues. Expert nurses, able to guide their level of attentiveness and apply interventions as required, face unique stressors when coordinating transfers with their less experienced colleagues. Additional quality metrics applied to the ED environment may be increasing stress for this population of nurses. The study highlights the possibility that work environments and managerial attention may limit the rich possibilities that expert nurses could offer as innovative leaders contributing solutions to ED crowding issues. Nurses, units, work environments, hospital culture, resources, demands, and constraints establish a foundation for nursing to either remain weak within their RC ties or improve these dimensions and potentially improve ED transfers.

The RC scores between the ED and floor nurses suggest that there is much room for improving the relational and communication dynamics across unit boundaries. An interaction among nurses, the relationship between the units, and an engagement with the larger organization's ethical mission to deliver safe care requires a partnership of efforts that must start with nurses examining their own contribution to ED crowding. Teams of individuals working towards a common goal can influence culture (Hughes 1996). The interdependent nature of nursing practice contributes to the context and environment in which nurses work. Given that safe patient care is directly and positively related to the quality of staff nurses' work environments, reducing nurse tensions that adversely affect communication and collaboration should improve care (Kramer et al., 2009).

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Nurses are knowledge workers who must attend to skill as well as efficiency. Relationships found in RC are based on roles rather than personal ties. The work practices of nurses across unit boundaries are expected to enhance relationships of shared goals, shared knowledge, and mutual respect with or without personal ties. Relational coordination enables nurses to more effectively coordinate their work with each other, thus raising the bar on higher-quality outcomes using resources more efficiently. The margins for error in nursing practice are small. Transferring care between individuals across unit boundaries is riddled with challenges. Interlocking of ED and floor nurses' relational process of integration at the point of an ED transfer may produce an environment where each can create a new reality. This relational, circular response, frees the individual and the organization of the limitations of singular points of view. New modes of thinking, new ways of acting, and innovations may emerge from the collective experience (Follet, 1918).

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