

THE ECOLOGY OF THE HOSPITALIST-LED ROUND: THE EFFECT OF DUAL
VS. INDIVIDUAL ROUNDING TYPE ON PATIENT OUTCOMES AND
COMMUNICATION PROCESSES

A Thesis

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ABSTRACT

While considerable research has been done on Multi-Disciplinary Rounds, this research has not focused on Dual Rounds conducted by the Hospitalist *and* RN, specifically. This study explored the effects of Dual Rounding versus Hospitalist-led Individual Rounding on patient outcomes and communication processes between healthcare team members. An organizational ecological approach was used to further understand the relationships and interdependencies between rounding type, patient outcome and communication processes; as well as the physical layout, available information and technologies, and organizational culture.

Four data collection methods were used: patient outcome measures for overall length and cost of stay, complications in care, and patient satisfaction scores; observation of communication patterns for interaction type, duration, location, and person with whom they are interacting; and informal interviews to supplement and illustrate key themes found during the observation period.

Patient outcome data was not adequately reliable for analysis. Observation data showed that Dual Rounds were associated with slight, but meaningful differences in communication patterns when compared to Hospitalist-led Individual Rounds. Additionally, discussions surrounding Dual Rounding activities served as a means for explicit and implicit relationship building between healthcare team members. During daily activities, Hospitalists and RNs spent the most time interacting with no one, pursuing charting, documentation, and computer-based activities. Of all interactions with other healthcare team members; Hospitalists spent the most time interacting with other Hospitalists and MDs, and RNS with other RNs. This finding suggests that the physical design of the unit should promote informal, opportunistic communication via visual accessibility and neutral zones for computer-based work.

BIOGRAPHICAL SKETCH

Gretta M. Vandell received her Bachelor's of Interior Architecture degree from the University of Oregon in 2007. During her time at the U of O, she fostered her interest in healthcare design while working on a healthcare-focused comprehensive studio project during her last year of undergraduate study. Gretta was fascinated with evidence based design strategies for making informed design decisions that had measurable outcome. After spending a few years working as a Project Designer at a architectural firm, she returned to school in 2009 to attend Cornell University to pursue a Master of Science in Applied Research in Human Environment Relations within the department of Design and Environmental Analysis. After graduation, she plans on integrating her design background with her newly acquired skills in quantitative and qualitative research. Ultimately, Gretta would like to work in a higher educational setting, inspiring student designers to make a difference by design.

Dedicated to my parents, Dan and Carol Vandell

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1. LITERATURE REVIEW

1.1 The Changing Healthcare Landscape

In 2011, national health expenditures are estimated to reach \$2.8 trillion. By 2015, it is expected that the healthcare industry will account for approximately 20% of the national GDP in the United States (Borger, Smith, Truffer, Keehan, Sisko, Poisal, & Clemens, 2006). Within the next five years, healthcare construction expenditures are projected to be upwards of \$200 billion (Nelson, West, & Goodman, 2005). With such significant projections, the healthcare industry has been acknowledged as one of the fastest growing sectors of construction when compared to other large commercial industries (Taylor, 2006).

Drivers that have contributed to this construction boom include: the aging physical infrastructure of hospitals, increasing consumer demands, undermined patient safety and quality of service due to operational inefficiencies, the high prevalence of medical errors, and updated models for healthcare delivery (Cama, 2009; IOM, 2000). These drivers have prompted a quality and safety revolution that has been sweeping the country at an astonishing rate (IOM, 2000 & 2001). As a result, healthcare organizations are facing mounting pressures to provide superior patient care in an increasingly competitive marketplace.

In response to these surmounting issues, leaders within healthcare organizations have taken action by shifting their focus towards improvements in patient quality of care. One way of improving patient quality of care has been credited to reconsidering the design of healthcare facilities. The surge in construction expenditure paired with an increased awareness of patient quality of

care presents an extraordinary opportunity for change within the built environment. Evidence based design (EBD) seeks to embrace this vision.

1.2 Evidence Based Design

According to The Center for Health Design (2008), EBD is “the process of basing decisions about the built environment on credible research to achieve the best possible outcomes” (website). EBD can also be viewed as “a means of delivering design solutions that improve patient-centered care, including improved health outcomes” (Becker, 2009, p.25). There is a growing body of EBD research that shows that a well-designed physical environment can play an important role in improving patient safety, patient outcome, and staff outcome (IOM, 2001; Joseph, & Rashid, 2007; Marberry, 2006; Sadler, DuBose, Malone, & Zimring, 2008; Ulrich, Zimring, Zhu, DuBose, Seo, Choi, Quan, & Joseph; 2008).

According to a survey conducted in 2009 by The Center for Health Design, more than 80% of respondents stated that they ‘sometimes’ or ‘regularly’ use design research to make decisions. The survey also revealed that a high percentage of respondents indicated a greater awareness of the term EBD than when compared with years past. Survey respondents included architects, interior designers, researchers, hospital-facility-related staff, consultants, medical planners, hospital administrators, and other categories such as product sales representatives (Taylor, 2009). With the recent growth and the increasing awareness of EBD as it relates to both patients and staff, healthcare leaders from all fields are better able to understand the relationship between the physical design of the healthcare facility and the delivery of care.

1.3 A Model for Change

It has become increasingly clear that poorly designed healthcare environments can negatively affect both patients and staff alike. This is important to consider in light of the competitive healthcare marketplace. Many hospital environments have not been reconsidered as the healthcare industry has transformed over time. In moving forward, it will continue to be important to investigate the role of the built environment as a possible barrier to or enabler of undesirable and desirable behaviors and outcomes.

Currently, an unfortunate disconnect exists between the physical design of healthcare facilities and the development of outcomes at the operational, clinical, and service levels (Marberry, 2006). When behaviors do not support the design intent of a facility, it can weaken the facility's impact. According to Marberry (2006),

“even well-meaning individuals can implement initiatives intended to shift an organization's culture, but all too often those initiatives are met with independent and unconnected activities” (p.151).

As a result, Becker (2006) has argued that the most powerful way to implement transformational change is through an integrated process in which work processes, organizational culture, workforce demographics, information technologies, and the physical design are simultaneously addressed. Becker has called this approach to understanding integrated processes towards transformational change the study of ‘organizational ecology’. According to Becker (2006), organizational ecology recognizes that the workplace is made up of a series of systems in which “physical design factors both shape and are shaped by work processes, the organization's

culture, workforce demographics, and information technologies” (p.6). This suggests that when trying to understand an event, or a series of events from a systems approach, one cannot simply examine one part of a whole. Rather, it is more useful to examine not the *individual parts*, but the *interdependencies among them*.

As the healthcare environment continues to become increasingly complex due to the changing nature of the work environment, technology, and job tasks, it will be ever more important to consider EBD practices for the future of healthcare design. According to Hamilton, Orr, and Raboin (2008), “planning for changes in culture is complex and requires a deeper understanding of the organization’s shared assumptions, values, and beliefs” (p. 3). In conjunction with redesigning the workplace, it will become increasingly important for changes to be augmented by additional initiatives to fully support a culture of safety in the workplace. Beyond the dramatic shift in rethinking hospital design as it relates to patient safety, patient outcomes and staff outcomes, increased awareness regarding quality of care issues has also prompted a significant change in healthcare delivery models (Cama, 2009). In order to fully understand the ecology behind the healthcare organization, one must consider the evolving context of care.

We can summarize the literature reviewed up to this point with the following broad statements:

- The healthcare landscape is changing due to increased competition in the marketplace and significant spending in construction.

- Healthcare organizations are focusing on initiatives aimed at improving patient safety/quality of care, while reconsidering the design of healthcare facilities using EBD strategies.
- EBD has the potential to not only improve patient safety and outcome, but to improve staff effectiveness and efficiency, which could positively influence collaboration and communication among healthcare team members and, ultimately, patient safety and quality of care.
- In order to understand the entire context in which this change is taking place, one must take a systems approach using an organizational ecological agenda. This includes the examining the evolving context of care, which will be discussed in the remainder of the literature review.

1.4 Introducing a New Model: The Hospitalist Model of Care

In response to heightened pressures to increase efficiency while improving patient care, a new model of care has been introduced into the healthcare sector. As a method for improving organizational performance and survivability in a competitive marketplace, healthcare professionals who can be readily available to respond quickly to patients and have expertise in using resources prudently are becoming increasingly prevalent in many healthcare organizations (Wachter & Goldman, 1996). This specific type of healthcare professional is currently referred to as a ‘hospitalist’, or a hospital-based physician whose primary professional

focus is on the general medical care of hospitalized patients (Society of Hospital Medicine, 2009).

Because hospitals are adaptable entities, implementation of a hospitalist model of care (HMC) has become one of the fastest growing specialties in medicine (Society of Hospital Medicine, 2009). Wachter and Goldman (2002) state that “the hospitalist model has achieved its minimum goals of improving efficiency without causing adverse effects on quality, teaching, or patient satisfaction” (p. 493). As a result, the dominant questions no longer relate to whether the hospitalist model is here to stay. Rather, the questions relate to the variety of issues that arise when a major change is introduced into the organizational structure of hospital care and the healthcare team. As the locus of care has shifted, it is crucial to consider implications of the hospitalist model in relation to the interests of the patient and the healthcare team.

1.4.1 Implications of the Hospitalist Model of Care: The Patient

Current research has suggested that hospitalist care is associated with lower cost of care and shorter length of stay (Auerbach, Wachter, Katz, Showstack, Baron, & Goldman, 2002; Bellet & Whitaker, 2000; Davis, Kock, Harvey, Wilson, Englert, & Gerard, 2000), lower in-hospital mortality rate (Auerbach et al., 2002; Palmer, Armistead, Elnicki, Halperin, Ogershok, Manivannan, Hobbs, & Evans, 2001), lower readmission rates (Bellet & Whitaker, 2000; Diamond, Goldberg, & Janosky, 1998), increased satisfaction with some aspect of care (Landrigan, Srivastava, Muret- Wagstaff, Sourmerai, Ross-Degnan, Graef, Homer & Goldman., 2002), and better performance on

Hospital Quality Alliance (HQA) indicators for acute myocardial infarction, pneumonia, and the domains of overall disease treatment and diagnosis, as well as counseling and prevention (Lopez, Hicks, Cohen, McKean, & Weissman, 2009). These studies show that the hospitalist model of care can have a positive impact as it relates to the interests of the patient.

1.4.2 Implications of the Hospitalist Model of Care: The Healthcare Team

The use of the hospitalist model of care also has implications on fellow healthcare team members. Other research has examined the role of the hospitalist model of care as it relates to physician attitudes and perceptions (Auerbach, Nelson, Lindenauer, Pantilat, Katz & Wachter, 2000; Auerbach, Aronson, Davis, & Phillips, 2003), and how the model of care impacts continuity of care (Pantilat, Lindenauer, Katz, & Wachter, 2001; Wachter & Pantilat, 2001).

In examining physician attitudes and perceptions, research suggests that the hospitalist model of care could increase quality of care and efficiency (Auerbach et al., 2000; Auerbach et al., 2003). Auerbach and colleagues (2000) conducted a national survey in 2000, and concluded that physicians generally agreed that the hospitalist model of care could improve quality of care and efficiency; however, physicians were concerned that doctor-patient relationships and patient satisfaction could be compromised as a result (Auerbach et al., 2000). It is important to note that these conclusions were based upon overall physician attitudes and perceptions, where physicians had not necessarily utilized or been exposed to the hospitalist model of care in their past or current work environment.

To fill the gap between perception and reality, additional research by Auerbach and colleagues (2003) examined physician perceptions of the hospitalist model of care before *and* after implementation. Researchers concluded that following the experience with a hospitalist system, physician attitude, including concerns regarding career satisfaction and relationships with patients, improved. Although research suggests that perceptions about the doctor-patient relationship may positively change after adopting the model, the overarching concern for continuity of care still exists.

Literature has suggested that the hospitalist model of care creates an intentional discontinuity of care between the outpatient and inpatient setting (Wachter, 2004; Wachter & Pantilat, 2001). According to Wachter and Pantilat (2001), this discontinuity has raised two major concerns: a potential ‘voltage drop’ in information moving back and forth between office and hospital, and potential patient dissatisfaction with having different healthcare providers.

Research by Pantilat et al. (2001) explored primary care physician (PCP) attitudes regarding communication with hospitalists. They found that 56% of PCPs were satisfied with communication with hospitalists and that communication regarding discharge was often delayed. Additionally, researchers found that PCPs vary in terms of their desire for information and involvement in decision making when it comes to their patients. This lack of consistency places much emphasis on the need for open lines of communication between the PCP and the hospitalist to avoid the so-called ‘voltage drop’. As a result, researchers concluded that

physician-hospitalist communication could play a significant role in mitigating the problems associated with discontinuities in care.

To mitigate problems associated with communication, Wachter and Pantilat (2001) suggest incorporating a ‘continuity visit’, or a face-to face meeting that occurs at the hospital during a patient’s hospitalization between the PCP and hospitalist. Other suggestions aimed at improving communication between PCPs and hospitalist include hospitalist initiated phone calls at admission and discharge, and/or providing daily updates by facsimile, e-mail, or phone (Pantilat et al., 2001).

Although there is an abundance of literature suggesting a communication disconnect on behalf of the PCP, research examining communication from the hospitalist’s perspective has been acknowledged as lacking for the general medical inpatient setting (O’Leary & Williams, 2008). Future research should “better characterize communication patterns and define barriers to communication between hospitalists and other inpatient healthcare team members” (O’Leary & Williams, 2008, p.421). Although there is no one-size fits all approach to bridging the communication gap, O’Leary and Williams (2008) suggest that hospitalists may lead efforts to improve quality of care, especially in areas such as multi-disciplinary communication and smoothing patient’s transitions between inpatient and outpatient healthcare settings.

1.4.3 The Hospitalist Model of Care: Future Outlook

Overall, the hospitalist model of care has emerged as an important innovation in the delivery of inpatient care because it appears to reduce costs

without compromising quality of care (Coffman & Rundall, 2005). As the U.S. healthcare system continues to embrace this new model of care as a method for providing high-quality, efficient inpatient care, it will be important to consider both the advantages and liabilities of the model while putting aside the turf wars that inevitably result from the emergence of a new specialty. As the locus of care in the hospital shifts towards the hospitalist, the notion of collaboration and communication will become increasingly important as it relates to the healthcare team's intention of providing the utmost quality care.

Much of the literature examining collaboration and communication as it relates to the healthcare team, discussed below, focuses on physicians, registered nurses, and other allied healthcare team members, not the hospitalist per se. It underscores the critical relationship between communication processes and quality of care generally, and the need to understand it in the context of the hospitalist specifically. We can summarize the literature up to this point with the following broad statements: Alongside EBD strategies,

- The hospitalist model of care has been adopted as another means of improving healthcare efficiency and patient quality of care.
- The hospitalist model of care has a positive impact on patients.
- The hospitalist model of care provides ample opportunity to improve collaboration and communication among healthcare team members.

1.5 Nature and Benefits of Collaboration in Healthcare

For the sake of clarity, collaboration is considered a function of teamwork in this literature review. As a concept, collaboration encompasses the notion of

healthcare team members working together, sharing responsibility for solving problems, and making decisions to formulate and carry out plans for patient care (Baggs, Schmitt, Mushlin, Mitchell, Eldredge, Oakes, & Hutson, 1999).

Theoretically, collaboration allows for shared input from various health care professionals during patient rounding, patient care team meetings, and other daily activities. Ideally, the sharing of information produces better patient outcomes as a result of more timely and complete information, and better collaboration between team members as a result of shared responsibility and improved communication. Research has demonstrated a positive correlation between collaboration and favorable patient outcomes (Baggs et al., 1999, Baggs, Ryan, Phelps, Richeson, & Johnson, 1992; Kramer & Schmalenberg, 2003; McAlpine, 1997), and improved perceptions of collaboration among healthcare team members (Dodek & Raboud, 2003).

Additionally, a number of characteristics have been identified as influential in the degree of collaboration that can be achieved in a healthcare setting. These factors include but are not limited to: the emotional maturity of the team, varying levels of self-confidence, the ability to understand the perspective of others, the ability to negotiate respectfully, and the development of communication strategies among healthcare team members (Lindeke & Siekert, 2005). Although collaboration is affected by many factors and can occur in various forms, rounding activities are a critically important context for facilitating such collaborative encounters between healthcare team members.

1.6 Rounding Types

Rounding type has become of particular interest in light of total quality management and continuous quality improvement initiatives aimed at increasing collaboration and improving patient care. Rounding can be defined as the mechanisms through which healthcare individuals or team members meet with patients to communicate, coordinate patient care, and manage responsibility (Gurses & Xiao, 2006). There is a significant amount of literature addressing patient rounding; however, there is no consistent language defining rounding types. Generally speaking, there are three main types of patient rounds; individual rounds, dual rounds, and multi-disciplinary rounds *or* inter-disciplinary rounds.

For the sake of clarity, it is important to address and define each type of round. Individual rounds are performed on an individual basis when a physician *or* nurse performs rounding activities alone. Dual rounds include two care team members meeting with a patient at the same time, typically attended by a physician *and* nurse. Multi-disciplinary or inter-disciplinary rounds include both physician *and* nurse alongside *additional* care team members from different specialties meeting with the patient at the same time. We will refer to the aforementioned rounding type as multi-disciplinary rounding (MDR) for the remainder of this literature review.

Much of the literature surrounding the effects of rounding type involves the use of MDR strategies in the healthcare setting. In reviewing the literature, it is important to note that vague language is used when identifying who makes up the healthcare team during MDRs. In some cases, MDRs may include upwards of

four to eight healthcare team members. This can include roles such as physician, registered nurse, clergy, social worker, physical therapist, pharmacist, or allied health professional, etc. In other cases, MRDs may include two to three healthcare team members. This generally includes the physician, registered nurse, and an allied health care professional. A majority of the literature does not designate who makes up the healthcare team; therefore, as the literature review continues, it will be assumed that MDRs can include anywhere from two to eight healthcare team members. This does not negate our distinction between dual rounding and MDR, rather it shows disparity in the research and the inconsistent language used to describe different types of rounding activities.

1.6.1 MDR

Research has shown that MDR can affect the healthcare organization, the patient, and the healthcare staff. Employing MDRs in an inpatient setting has been shown to improve healthcare efficiency (Curley, McEachern, & Spearoff, 1998; Dobkin, 2003; Wild, Nawaz, Chan, & Katz, 2004), clinical outcomes for patients (Dutton, Cooper, Jones, Leone, Kramer & Scala, 2003; Halm, Gagner, Goering, Sabo, Smith & Zaccagnini, 2003), patient satisfaction and perception of care (Birthwistle, Houghton, & Rostill, 2000; Wagstaff & Solts, 2003), and healthcare staff satisfaction (Birtwistle et al., 2000; Dodek & Raboud, 2003; Montague, Lee, & Hussain., 2004; Newell, 1999).

1.6.1.1 MDR: Impact on the Healthcare Organization

From an organizational perspective, improvements in healthcare efficiency measures have been correlated with employing MDR. Research has attributed

increased patient volume (Dobkin, 2003), increased discharge rates (Wild et al., 2004), and improvements in cost savings (Curley et al., 1998) with employing MDR in an inpatient setting.

1.6.1.2 MDR: Impact on the Patient

From a patient's perspective, research has demonstrated that MDRs can achieve improved clinical outcomes by means of reducing patient mortality rates (Young et al., 1998), reducing patient length of stay (Dutton et al., 2003), reducing patient readmission rate (Halm et al., 2003), and improving the timing of the discharge process (Plantinga et al., 2004). Additional research suggests that MDRs can improve patient perceptions of medical care received (Lehmann et al., 1997), overall patient satisfaction with their care (Wagstaff & Solts, 2003), and perceptions of maintained confidentiality (Birtwistle et al., 2000).

1.6.1.3 MDR: Impact on Healthcare Staff

From a healthcare providers perspective, employing MDRs has been a means for improving overall satisfaction with the rounding process (Dodek & Raboud, 2003), awareness of job roles within the workplace (Newell, 1999), as well as perceptions of the round being a constructive use of time for the healthcare team (Birtwistle et al., 2000; Montague et al., 2004). Additional research by Newell (1999) suggests that employing MDRs also contributed to greater improvements in communication between healthcare staff. Effective communication between healthcare team members has been cited as one of the most important requirements for enhancing patient quality of care and improving the decision making processes among care team members (Manias & Street,

2001). Because the MDR serves as an oral forum for communication between healthcare team members, it provides ample opportunity for enhancing quality of care as well as improving decision making processes. As noted earlier, it is not clear in many studies exactly what care providers are included in the MDR rounding process.

Research specifically examining interactions between physicians and nurses during MDR activities suggests that nurses report dissatisfaction with decision making processes and participation in rounding activities, reporting feelings of marginalization during physician encounters (Manias & Street, 2001), and exhibiting passivity, reluctance, and/or lack of confidence about asserting themselves during discussion (Anderson, Maloney, Oliver, Brown, & Hardy, 1996; Atwal & Caldwell 2005; Busby & Gilchrist, 1992; Mallik, 1992). Other research shows that there are significant discrepancies between nurse and physician perceptions on effective communication (Cadogan, Franzi, Osterweil, & Hill, 1999; Larson, Hamilton, Mitchell, & Eisenberg, 1998). This research demonstrates that there is a complex and somewhat contradictory relationship between the physician and nurse that must be better understood in the context of collaboration and communication.

To summarize the literature review thus far, the following broad statements can be made:

- EBD, the hospitalist model of care, and MDR are organizational interventions intended to improve patient safety, patient outcomes, and staff outcomes

- Communication and collaboration has been shown to strongly affect quality of care and the care provide work experience. Understanding the physician-nurse relationship is of utmost importance within the overall context of interaction among health care providers, given the consistently reported problems with effective communication, and should be examined to understand the complexities associated with physician-nurse collaboration and communication.

1.7 The Physician-Nurse Relationship

The 1990's marked a significant shift in the nurse-physician relationship. Stein and colleagues (1967 & 1990) issued a report that examined nurse-physician relationships in the 1960's, and again in the 1990's. Stein, Watts, and Howell (1990) noted in the second report significant attitude shifts from the nurses' perspective citing that the physician-nurse relationship had changed in response to shifts in nurses interest in autonomy, changes in women's status, the realization that the nursing shortage is caused more by work conditions than by problems in supply, and nurses' increased confidence. Each respective healthcare profession possesses knowledge and skills that the other needs to practice successfully (Lindeke & Sieckert, 2005). Because patient quality of care is so closely linked with collaboration and communication, it is crucial for healthcare organizations to cultivate the relationship between the physician and the nurse because neither profession can stand alone.

Although the healthcare team is made up of many members, it can be assumed that the most critical members are the physician and the nurse, as many

argue that physician-nurse collaboration and communication is the foundation for making quality patient care decisions (Fagin, 1992; Knaus, Draper, Wagner, & Zimmerman, 1986; Kramer & Schmalenberg, 2003; Pike, 1991). As a result, improvements in patient safety and quality of care can be jeopardized by barriers to collaboration and communication between the physician and the registered nurse (Zwarenstein & Reeves, 2002). To secure the path towards improvements in patient quality of care, it is essential to understand the barriers to collaboration and communication between these two central professions.

1.7.1 Barriers to Collaboration

Poor collaboration between healthcare team members can result in medical errors and poor quality of care (Evanoff, Potter, Wolf, Grayson, Dunagan, & Boxerman, 2005). In the United States alone, more than one fifth of hospitalized patients have reported hospital system problems, including not knowing which physician is in charge of their care, and often receiving conflicting information (Cleary, 2003). Additionally, research by Prescott and Bowen (1985) suggests that much of the reoccurring problems often result from unresolved disputes and/or disagreements between the physician and nurse. This is very worrisome in light of efforts to improve patient quality of care and safety because collaboration between healthcare team members needs to be cooperative rather than competitive in order to benefit patient care (Fagin, 1992; Mechanic & Aiken, 1982; Prescott & Bowen, 1985).

Current research suggests that there are numerous barriers to collaborative work, especially between the physician and nurse. These barriers have been

attributed to pressures for cost containment (Feldman, 2000), fear of litigation (Barton, 2001), conflicting views of each other's roles (Snelgrove & Hughes, 2000), lack of training to develop the skills required for collaboration (Reeves & Freeth, 2000), few opportunities for synchronous interaction due to a variety of physical locations of work (Strauss, 1978), and poor and often inconsistent communication (Baggs & Schmitt, 1997; Evanoff et al., 2005; Van Ess Coeling & Cukr, 2000). In order for healthcare workers to collaborate successfully, it is imperative for physicians, registered nurses, and the healthcare team to overcome the necessary barriers to achieve efficient communication in the workplace to enhance patient quality of care.

1.7.2 Barriers to Communication

In the context of collaboration, the physician and nurse require a complex choreography of critical communications relating to patient care, where the sheer scale of these communicative interactions puts an enormous amount of pressure on the process (Coiera, 2006). Whether working on a team, together, or alone, clear, successful communication processes among healthcare providers is crucial in light of a collaborative approach to patient care. At its best, communication can foster collaboration and help prevent errors (The Joint Commission, 2005). As a result, literature suggests that effective communication is the cornerstone for successful initiatives aimed improving patient safety and quality of care (Coiera, Jayasuriya, Hardy, Bannan, & Thorpe, 2002; Firth-Cozens, 2001; Leape & Berwick, 2005; The Joint Commission, 2005). Although effective communication is imperative for collaboration, patient safety, and quality of care, communication

failures in the healthcare setting have been noted as one of the most significant contributors to sentinel events (The Joint Commission, 2006). Even though communication is recognized as a crucial component to collaboration, patient safety, and quality of care; there are many barriers to efficient communication in the healthcare setting.

In researching communication in the healthcare setting, Parker and Coiera (2000) identified two distinct types of communicative behavior; synchronous and asynchronous communication. Synchronous communication requires the interaction of two parties to communicate (i.e. face-to-face, telephone call), whereas asynchronous communication allows for the recipient to deal with communication at their convenience (i.e. writing a note, leaving a voicemail, answering email or making a telephone call). In this study, researchers found that healthcare workers preferred to use synchronous communication such as telephone calls or impromptu face-to-face meetings with colleagues.

To support the preference for synchronous communication, additional research by Safran, Sands and Rind (1999) examined information transactions between healthcare workers in a hospital setting. They found that approximately 50 percent of information transactions occurred face-to-face between colleagues. E-mail correspondence and voicemail accounted for another quarter of the total information transactions. Given the importance of communication between healthcare members, the preference for synchronous communicative behaviors and the difficulty of communicating largely through that channel, it is not

surprising that significant opportunity for medical error exists. Such difficulties could also be the culprit for additional conflict between the physician and nurse.

Other factors that contribute to difficulties in effective and efficient information exchange can be attributed to excessive interruptions in healthcare settings. Coiera and Tombs (1998) observed that individual communicative behaviors resulted in an interruptive and inefficient workplace, citing interruptions via telephone use and paging. Researchers presented possible causes for inefficient communicative behavior, including a staff bias for interruptive communication methods, a tendency to seek information via colleagues rather than refer to printed material, and lacking information for contacting specific individuals on the healthcare team. Parker and Coiera (2000) suggest that the interruption-driven healthcare environment may foster conditions that are likely to result in the impairment of memory among healthcare workers, which could ultimately contribute to increases in medical errors.

The research literature suggests, then, that barriers to communication result from a series of discontinuities – in patient information, in communication behaviors, and in the recall abilities of all healthcare workers. However, there is another underlying current that can negatively impact communication. According to The Joint Commission (2005), communication failures can also result from hierarchy in the workplace, status, conflicting roles, ambiguity in work roles and responsibility, and power struggles between healthcare professionals. This is particularly important to recognize when considering the need for communication and collaboration between the physician and nurse.

1.7.2.1 The Influence of Status on Communication

Generally, status refers to “one’s rank, worth, or prestige within the group as perceived by oneself and by others” (Christensen & Larson, 1993, p.344). It is important to note that most healthcare teams are made of many healthcare team members from a variety of different disciplines. Team members have differing expertise, time spent in the profession, and educational backgrounds. With that being said, the high status of the physician is generally supported by having advanced scientific training, significantly more clinical work experience, and additional certification or credentials from professional organizations (Bourdeiu, 1981; Friedsen, 1988).

In the context of group behavior, there is a significant amount of literature that supports the notion that high-status group members have significantly more influence on the group as a whole, and decision making power, when compared to low-status members (Davis, 1980; Kirchler & Davis, 1986; Maier & Hoffman, 1960; Penrod & Hastie, 1979 & 1980; Torrance, 1954). This was exemplified in the research by Maier and Hoffman (1960), who found that groups spent significantly more time addressing the ideas of high-status members than of low-status members. Conversely, low status group members often accept the opinions of high-status members more often than high-status members accept the opinions of low-status member (Costanzo, Reitan, & Shaw, 1968; Deutsch & Gerrard, 1955; Ross, Amabile, & Steinmetz, 1977; Rubin & Brown, 1975). Researchers have generally concluded that this acceptance on behalf of low-status individuals was frequently the result of fear of retribution, and diminished feelings of

confidence in their own abilities. Although this research did not necessarily take place in a healthcare setting, these general conclusions can be extrapolated as they relate to the dynamics between members of the healthcare team. They suggest the importance of considering hierarchy and status when examining the relationship between the physician and the nurse.

In the context of the healthcare setting, research by Christensen and Larson (1998) hypothesized that low-status healthcare team members communicate less information during group discussion than high-status members, resulting in their having less influence on the decision making process. This speculation is supported by the research of Manias & Street (2001). They found that nurses' contribution and communication during patient rounding was reactive as opposed to proactive, often only responding to issues that were introduced by another healthcare professional like the physician or specialist. They concluded that the nurse's inability to proactively contribute to discussions and decision making during rounding activities could have serious implications on patient care.

Several other investigations have documented specific communication patterns that evolve among healthcare team members who vary in status. Researchers concluded that the status of a group member is affected by the overall amount of communication he or she initiates, the overall amount of communication that he or she receives from others, and which particular group members he or she communicates with most frequently (Bradley, 1978; Fandt & Ferris, 1990; Shaw, 1981).

These types of communicative patterns can be partially attributed to factors that influence physician behaviors in the healthcare environment. Literature suggests that there are many barriers to engaging physicians in respectful collaboration and communication due to pre-existing notions of higher power/status on behalf of physicians, lacking professional socialization with nurses and other healthcare team members, designated decision-making responsibility, and claiming exclusive authority over particular knowledge (Whitehead, 2007). When it comes to making collaborative care decisions, preconceived notions regarding status can hinder a fruitful working relationship between the physician and nurse.

This is interesting insight in light of the physician-nurse relationship, assuming the traditional and mutually understood paradigm of physician dominance and nurse deference, where the physician's opinion always prevails (Keenan, Cooke, & Hillis, 1998). But, this traditional paradigm is changing. Consider the statement made by Kenneth Kizer in Luciano's (2000) book entitled, *A Government Health System Leads the Way: Reducing Medical Errors and Improving Patient Safety*, "Can you imagine a nurse yelling, 'Doctor, stop!' or even mentioning, 'Are you sure you want to do that?'" No, you can't, and that needs to change" (p. 2). Research by Stein and colleagues (1990) suggests that nurses are now beginning to offer direct advice, resist housekeeping tasks, and take on new roles as social and psychological caregivers. In light of this newly articulated and ever-changing role on the healthcare team, it will be increasingly

important for physicians and nurses to reconsider the ways in which they collaborate and communicate for the sake of improving patient care.

1.7.2.2 Overcoming the Notion of Physician Dominance and Nurse Deference

To overcome the notion of physician dominance and nurse deference, one might look to negotiated order. It has been suggested that negotiated order theory could provide a sociological framework from which to gauge physician-nurse communication, especially when conflict exists. Negotiated order theory proposes that although formal rules supposedly shape behavior within organizations and professions, ongoing informal negotiation between individuals means that formal rules are actually flexible (Strauss, 1978). According to Strauss, Ehrlich, Bucher and Sabshin (1963), the theory of negotiated order has a long history in healthcare, originating from observations of hospitals in the 1950's. Now, it is viewed as a tool used to understand how to bring physicians and nurses together around patient care issues.

Negotiated order has proven to be one means for collaboration and communication that is mutually beneficial to both the physician and the nurse. Research by Svensson (1996) found that physician-nurse negotiations established a shared agreement for the nurse to assume some of the physicians' tasks when the physician was not present on the unit. Although the result of this negotiation goes against formally understood professional responsibilities, it is mutually beneficial and keeps the patients' needs in mind. Zwarenstein and Reeves (2002) propose that physicians and nurses are more likely to expend efforts on improving communication and collaboration when the outcome is mutually beneficial, thus

negotiations should focus on revealing the value of having information related to comprehensive patient care.

Alongside negotiations, a number of other initiatives aimed at breaking down barriers to communication and collaboration exist. Research has suggested that a culture of open communication must be provided to give nurses the opportunity to speak and be heard. Some research suggests that in order for open communication to exist, it is necessary to practice egalitarian communicative behaviors, while promoting an open environment in which team members feel as though they can communicate openly without fear of retaliation (Reader, Flin, Mearns, & Cuthbertson, 2006; The Joint Commission, 2005). Additional research suggests the use of attentive communication styles as opposed to avoidance or contentious styles can improve communication between physicians and nurses (Van Ess Coeling & Cukr, 2000). The National Joint Practice Commission (1981) concludes that improvements in collegial relations between the physician and nurse can be achieved through negotiations, shared leadership and purpose, and promoting an open and respectful environment for communication.

1.8. The Built Environment: Communication, Space & Status

In order to examine how a culture of open communication can thrive among physicians and nurses within the healthcare environment, one may also look to the role of the built environment, as the built environment has been considered one factor that can act as a possible barrier or enabler of efficient communicative behavior (Marberry, 2006; Becker 2006). To date, very little research has examined *where* nurses and physicians communicate within the built

environment and for what reasons. Developing a better understanding of the location of interactions would give healthcare leaders, designers and researchers a better idea as to how the built environment can help or hinder communication between healthcare team members, specifically between the physician and nurse.

Previous research by Goffman (1963) suggests that spaces are socially defined by two stages: a front stage and a back stage; favoring different settings for different types of interactions. In light of Goffman's typology, it has been suggested that corridors are back stages, acting a connector for all other important spaces within a healthcare setting (Idema, Long, Carroll, Stenglin, & Braithwaite, 2005). The work of Idema and colleagues (2005) examined the role of the corridor in a hospital setting. Their ethnographic research suggests that corridors are sites where senior doctors engage in educational sessions with juniors, doctors negotiate with families, and clinical colleagues consult with one another. Researchers found that in many ways, the corridor acts as the conduit for a majority of hospital activities and interactions.

In the context of organizational ecology, Becker (2006) states that,

“interactions in spaces identified with a particular status level tend to engender behaviors associated with deference to the power and influence associated with status...the corridor is, in fact, a neutral zone – not ‘owned’ by any particular professional discipline” (p.15-16).

With regard to status and hierarchy as it relates to organizational ecology, the work of Idema and colleagues (2005) shed light on the role of the corridor as it relates to neutral space for clinical decision making among healthcare team members. They concluded that the corridor served as a means for bringing up

issues that could not be raised in the consultation room, and provided a spatial resource for the management of complexity between healthcare team members. It has been concluded that little is known about corridor communication although much research has posited it as playing a central role in clinical life (Idema et. al., 2005; Peleg, Peleg, Porath, & Horowitz, 1999).

Additional research by Joseph (2006) examined communication and collaboration as it related to nursing unit layout and concluded that specific attention should be paid to the design of decentralized nurse stations. Although decentralized nurse stations have been cited as means to reduce staff walking distances (Henrich & Chow, 2005; Joseph, 2006), they may also result in less collaboration and communication among staff (Joseph, 2006). This is particularly important to consider as it relates to information sharing between physicians and nurses and the design of the centralized nurse station as the primary “hub” of the unit. Joseph (2006) cites anecdotal evidence that suggests that staff members who move from a centralized unit to a decentralized unit often feel isolated and miss the solidarity of the centralized nursing station. Findings by Dutta (2008) supplement this notion, as he found that the frequency of interactions of medical staff decreased in the decentralized nursing station layout. Research by Stryker (2004) investigated the design of the workplace on face-to-face communication and found that team communication was positively related to informal spaces like the corridor and informal meeting spaces like the Dr. Pods, and non-team communication was associated with formal spaces like enclosed offices.

1.9 Research Questions & Hypotheses: A Conceptual Framework

While considerable research has been done on MDRs, this research has not focused on Dual Rounds conducted by the Hospitalist *and* RN, specifically. To date, little research has examined patient outcome as it relates to Dual Rounding and communication processes of the Hospitalist with other healthcare team members in the healthcare setting. This is in contrast to the abundance of research examining patient outcome and MDRs as well as communication processes between Hospitalists and PCPs as part of the patient discharge process. Given that improved and more efficient patient care *in the hospital* is a key benefit expected with the growth of the hospitalist movement, research examining patient and organization outcomes utilizing new approaches, such as Dual Rounding of the hospitalist and nurse, is needed to better understand how such an approach affects the communication patterns of hospitalists and nurses, and patient outcomes.

Because CMC had recently implemented a Dual Rounding strategy on the 4th floor unit, this research sought to examine the effects of Dual versus Hospitalist-led Individual Rounds on patient outcome and communication processes among Hospitalists and RNs. In this study, Dual Rounds were defined as rounds including both Hospitalist and RN, meeting at the same time with the patient in the patient room. Hospitalist-led Individual Rounds were defined as rounds in which the Hospitalist met alone with the patient in the patient room.

When considering communication processes and patient outcomes in light of Dual Rounding activities, one may look to Donabedian's (1966) structure-process-outcome model. In an effort to understand the different components of

the round, the Donabedian model provides a framework for evaluating the quality of medical care, and has been previously used in MDR research (Donabedian, 1966; Gurses & Xiao, 2006).

To further define the Donabedian structure-process-outcome model, we look to the modified definitions created by Gurses & Xiao (2006) when they examined and analyzed MDR literature (Table 1-1). In assessing rounding activities using this framework, Gurses and Xiao (2006) suggest that structure, process, and outcome are interrelated. They argue that one component of the round activity has the potential to negatively or positively influence all other components.

Table 1-1: Donabedian’s structure-process-outcome model

Model Component	Description
Structure	Information tools, (e.g. patient medical records – electronic and/or chart, notes, nurse schedules, etc.)
Process	<ul style="list-style-type: none"> • Pre Round: gathering and assembling information to prepare for the round, • During Round: communicating and exchanging information, making collaborative decisions • Post Round: coordinating and executing care plans based on decisions made during round.
Outcome	Quantitative information, (e.g. clinical outcomes, efficiency, and patient/provider satisfaction)

Specifically, this study sought to examine patient outcomes as they related to the administrative outcomes of overall cost of stay and patient satisfaction; and medical outcomes, including overall length of stay and complications in care. In understanding the larger ecological context of the unit, including the physical layout, available information technologies, and organization and unit culture, this

research also sought to examine the communication processes of Hospitalists and RNs to gain greater insight into *how* they interact, *with whom* they interact, and *where* they interact, especially as these related to Rounding Activities and Pre/Post Round Discussion, as previously defined by Donabedian (1966) and Gurses and Xiao (2006), as well as Morning Meetings and Daily Activities.

1.9.1 Research Question and Hypotheses: Patient Outcomes

- Are there significant differences in medical and administrative outcomes associated with Dual vs. Hospitalist-led Individual Rounding, while taking age, sex, and primary diagnosis into consideration?
 - Administrative outcomes: overall cost of stay, patient satisfaction
 - Medical outcomes: overall length of stay, complications in care

HYPOTHESIS X1: Dual rounding would be associated with lower overall cost of stay, lower overall length of stay, lower percentages of complications in care, and higher patient satisfaction scores.

1.9.2 Research Question and Hypotheses: Rounding Activities

- Is there a significant difference in the duration of Dual Rounds versus Hospitalist-led Individual Rounds?

HYPOTHESIS X2: Dual Rounding would be associated with longer duration when compared to Hospitalist-led Individual Rounding, and

- What is the overall nature of communication processes between the Hospitalist and RN during Dual Rounds versus just the Hospitalist in Hospitalist-led Individual Rounds?

HYPOTHESIS X3: Dual Rounding would be associated with significantly more time spent communicating between the Hospitalist and RN in terms of percentage of total time.

1.9.3 Research Question and Hypotheses: Pre & Post Round Discussion

- What is the frequency of Pre/Post Round discussion before/after Dual Rounds versus Hospitalist-led Individual Rounds?
- What is the overall nature of Pre/Post Round discussion before/after Dual Rounds versus Hospitalist-led Individual Rounds?

HYPOTHESIS X4: Dual Rounding would be associated with higher frequencies of Pre/Post Round discussion, especially discussions involving “Consultation” interactions.

- Where does Pre/Post Round discussion occur before/after Dual Rounds versus Hospitalist-led Individual Rounds?

HYPOTHESIS X5: Pre/Post Round Discussion would primarily take place in the Corridor in terms of percentage of total time.

1.9.4 Research Question and Hypotheses: Morning Meetings

- What is the overall nature of Morning Meetings, and are there significant individual differences in communication patterns among Hospitalists?

HYPOTHESIS X6: Morning Meetings would be associated with high levels of “Consultation” interactions in terms of percentage of total time, especially between Case Managers and Charge Nurses.

HYPOTHESIS X7: There would not be significant differences in communication patterns among Hospitalists during Morning Meetings.

1.9.5 Research Question and Hypotheses: Daily Activities

- LOCATION: Where are the most common locations for interactions in terms of percentage of total time for Hospitalist and RNs? What is the overall nature of interactions occurring at those locations among Hospitalist and RN?

HYPOTHESIS X8: Communication patterns will significantly differ in terms of location between Hospitalists and RNs. Due to physical layout of the unit work processes (i.e. – interactions and individual work activities like charting or documenting on the computer) would occur in close physical proximity at the Dr. Pods and Centralized Nurse Station than in the Corridor or Decentralized Nursing Stations.

- CPT: What are the most common communication process types in terms of percentage of total time – Hospitalists and RNs?

HYPOTHESIS X9: Communication patterns will significantly differ in terms of CPT between Hospitalists and RNs.

- ROLE PAIR: With whom do interactions occur most in terms of percentage of total time among Hospitalists and RN? What is the overall nature of interactions by role pair among Hospitalist and RN?

HYPOTHESIS X10: Communication patterns will significantly differ in terms of role pair between Hospitalists and RNs.

2. METHODS

2.1 Research Design

This was an exploratory study designed to examine the differences between Dual (Hospitalist and RN) versus Hospitalist-led Individual Rounds (Hospitalist only) on patient outcomes and communication processes. As a result, patient outcome measures were examined as they related to overall cost of stay, patient satisfaction, overall length of stay, and complications of care.

Communication processes were examined as they related to Rounding Activities, Pre/Post Round Discussion, Morning Meetings, and Daily Activities.

Additionally, this study sought to understand the role of rounding as it related to the larger ecological context of the unit, including the physical layout, available information and technologies, and organizational and unit culture.

2.1.1 Dual vs. Hospitalist –led Individual Rounding

A Dual Rounding strategy was adopted on the 4th floor medical/surgical unit in July of 2010. This study defined Dual and Hospitalist-led Individual Rounding as follows:

“Dual Rounding” was defined as a rounding condition in which both *Hospitalist AND Registered Nurse* were present to communicate with each other and the patient, manage responsibility, and coordinate patient care inside the patient room.

A “Dual Rounded Patient” was defined as any patient receiving dual rounding *at least one time or more* during a length of stay no greater than 7 days, including the day of admission.

“Hospitalist-led Individual Rounding” was defined as a rounding condition in which the *Hospitalist* was independently present to communicate with the patient, manage responsibility, and coordinate patient care inside the patient room.

An “Individually Rounded Patient” was defined as any patient receiving zero Dual Rounds at any point during a length of stay no greater than 7 days, including the day of admission.

a.) Protocol

In order to differentiate between patients who received a Dual versus Hospitalist-led Individual Round, the researcher and the Director of the Hospitalist program collaborated with the Information Systems Department at CMC. Together, they created a “rounding order” that was successfully created and embedded within the MediTech system in August, 2010.

MediTech serves as the primary information input and output system, where patient care orders (i.e.: lab tests, medications, tests, etc...) and information could be manually input into the system by healthcare providers via computer. This platform serves in managing and coordinating patient care, and keeping the patient record up to date.

To allow for adequate implementation, rounding data was collected from September 1st 2010 to January 31st, 2011, which overlapped with observation data collection period. Since the “rounding order” was embedded within the MediTech system and has no expiration, rounding data collection has continued at the discretion of 4N and 4S staff. The rounding data collected for this study represents data collected from October 1st, 2010 to January 31st, 2011.

Rounding data was interpreted as being “present”, or not. When Dual Rounding took place, the “rounding order” was to be indicated on the patient’s record via MediTech by the RN who attended the Dual Round. The marking of the rounding order indicated that Dual Rounding was present for patient “X”, on “X” day, during the day shift. When Hospitalist-led Individual Rounds took place, no marking of the rounding order was made.

Patients were not randomly selected for Dual Rounding. It was assumed that since the Dual Rounding initiative, Dual Rounds would take place when both Hospitalist and RN were available. However, Hospitalist-led Individual Rounds would often take place in circumstances such as when the Hospitalist forgot or disregarded the Dual-Rounding initiative, the Hospitalist forgot to contact the RN before the round, the Hospitalist was unable to contact the RN via paging, calling, or in person, or because the RN was unable attend the Dual Round due to prior engagements, forgetting, or getting sidetracked before actually making it to the Dual Round in time.

When Dual Rounds took place, the RN was responsible for inputting the rounding order. Because the RN was already in charge of inputting patient orders and were present during Dual Rounding, it was concluded that they were the most appropriate person to perform the task. This decision was made on behalf of the researcher, primary investigator, Hospitalist Director, and the 4th Floor Nursing Director. From October 1st, 2010 and onward, RNs were instructed to place the rounding order after every Dual Round. Prior to initiation, instructions were given by the 4th floor Nursing Director during their bi-monthly nursing meeting.

Subsequent verbal and written reminders were given to RNs and posted at the centralized and Decentralized Nurse Stations over the data collection period.

In early November 2010, a preliminary data set was accessed via the Information Systems department at CMC. The purpose of gathering preliminary data was to confirm that the rounding order was working properly, the RNs were remembering to input the rounding orders as planned, to gauge the number of patients receiving Dual Rounds, and to work out any issues before the officially compiling the rounding order patient data.

After the data collection period was over, the Information Systems department at Cayuga Medical Center (CMC), was in charge of accessing, compiling, and formatting patient outcome data from the MediTech data platform. The following patient outcome measures were accessed and analyzed for both Dually and Individually Rounded patients: round type, overall length of stay, overall cost of stay, complications of care, hospitalist in charge of care, age, gender, and primary diagnosis. It is important to note that patient DRG, age and gender data was compiled and coordinated by MediTech to accurately compare Dually and Individually Rounded patients with similar diagnoses. Patients who received Dual Rounding at least once during the duration of their stay were indicated by a “Y” in a column titled “Rounding”. The absence of the “Y” indicated that dual rounding was not present throughout the duration of the patient’s stay.

To ensure patient anonymity within the data set, patient outcome measures were correlated to an assigned patient identification number. No protected health

information was used or collected for this study. After the study was completed, all patient outcome measure data was shredded and destroyed. To ensure Hospitalist anonymity within the data set, Hospitalist names were converted to their assigned study ID by the primary researcher. The primary researcher was the only person who had access to the list of study identification numbers. During the study, the list was stored in a locked file cabinet in Professor Franklin Becker's office at Cornell University. After the study was completed, the list was destroyed.

2.2 Data Collection

In an effort to gain a greater, more in-depth understanding of the implications of rounding, a multi-modal approach was used for data collection. This technique allowed for different types of data to be collected using both qualitative and quantitative methods for the following measures: patient outcome and communication processes and interaction patterns. Information regarding participant's perceptions of factors that influence these measures were also collected. Overall, the following data collection methods were used:

- 1.) CMC's MediTech Patient Outcome data
- 2.) CMC's Press Ganey Patient Satisfaction scores
- 3.) Clinical Work Measurement Tool
- 4.) Open-ended interviews

Before data collection could begin, IRB requirements needed to be met, and IRB approval needed to be received on behalf of Cornell and CMC. Both IRB panels were independent from one another; therefore approval was needed

from both parties. For approval, the researcher prepared a brief written description of the study and formally prepared and submitted the required IRB paperwork with both institutions. In addition to the written portion of the IRB approval process, the researcher and primary investigator formally presented the study to CMC's IRB panel before approval.

In addition to satisfying all IRB requirements, the researcher sought to develop a deeper understanding of the unit before official data collection began. As a result, informal meetings and observation were held over a three week period before formal data collection began. The purpose of such informal meetings and observations were to acquaint the researcher with the daily operations of 4N and 4S, staff members and their respective roles, and to observe how staff members were using space on the unit. Aside from more informal meetings, two formal, in-depth meetings between the researcher and the Hospitalist Director also took place to decide how to best track patient outcome measures and rounding data.

2.2.1 Patient Outcome

2.2.1.1 Overall Cost of Stay

Overall cost of stay was examined in an effort to understand the financial implications of the Dual Rounding strategy. Overall cost of stay was considered and administrative outcome, as hospitals rely on payment to stay in business. Not all money is paid by the patient, so insurance and Medicare/Medicaid significantly impact how the hospital receives money. This study did not consider patient insurance, rather the focus was on the total, or overall cost of stay for receiving care at CMC. This included the cost of procedures, tests, medications, occupying

a bed, oxygen, and any other costs accrued by the patient throughout the duration of their stay at CMC.

a.) Protocol

Overall cost of stay was recorded via CMC's billing procedure and was included in the data set provided by the Information Systems department at CMC. Typically, when patient charts were updated, or when new orders or procedures were created, etc...each patient care activity was coded by the billing department and subsequently billed to the patient's account number. The billing procedures at CMC were not the focus of this study, rather we were interested in knowing what the patient's overall cost that resulted from the care they received by CMC during the total time of their hospital stay.

2.2.1.2 Overall Length of Stay

Overall length of stay was examined in an effort to understand the relationship between length of stay and the Dual Rounding strategy. Overall length of stay was considered a medical outcome. Overall length of stay was important to consider because hospitals have implemented many initiatives focused on lowering length of stay for serving greater patient populations, and improving the bottom line.

a.) Protocol

Overall length of stay was automatically recorded via CMC's MediTech patient data platform. This data is standard for hospital record keeping systems, and was documented in MediTech by time and day of admission to time and day of discharge. As a result, overall length of stay was calculated in total hours of

stay by CMC's Information Systems Department. To account for this study's limitations for patients having a length of stay no greater than 7 days including day of admission; the Information Systems Department at CMC omitted any patients from the data set having been at the hospital for over 168 hours, which was equivalent to twenty-four hours a day for seven consecutive days.

2.2.1.3 Complications in Care

Complications in care was examined to see if there was a relationship between Dual Rounding and lower complications in care. Complications in care can result from a variety of other issues and patient conditions that occur in a hospital setting (i.e.- aspiration pneumonia, pulmonary embolism, etc.). As a result, hospitals often look to complications in care as an area to improve patient care quality and save resources as part of implementing other quality of care initiatives (Lagoe & Westert, 2010).

a.) Protocol

Complications in care was automatically recorded via CMC's MediTech patient data platform. Complications in care was recorded as either present or absent, which was how the MediTech system recorded this type of patient information. It is important to note that recording complications in care in this manner did not account for patient acuity. As a result, the total number of patients who experienced complications in care was examined, but acuity level was not.

2.2.2 Patient Satisfaction

Patient satisfaction scores were examined in an effort to gain insight into the implications of the Dual Rounding strategy on the 4th floor from the patient's

perspective. Hospitals heavily rely on patient satisfaction scores for continued care improvements and future business. As a result, it was important to investigate the role of patient satisfaction as it related to rounding type.

a.) Protocol

Press Ganey scores were accessed and compiled via the Customer Relations department at CMC. Due to the vast nature of patient satisfaction scores, only one section was considered within the Overall Assessment section of the Press Ganey Inpatient Report. The Overall Assessment section included the following 3 questions:

- 1.) “Staff worked together to care for you”
- 2.) “Likelihood of recommending hospital”
- 3.) “Overall rating of care given”

Based on input received by the Hospitalist Director and 4th Floor Nursing Direction, these measures were determined to be the most significant indicator of overall satisfaction with the care experience and future business. Using these measures, patient satisfaction scores were collected for all patients receiving care and submitting survey data from the 4th floor medical surgical floor approximately six months before and six months after implementation of the Dual Rounding strategy in July of 2010. In terms of CMC’s Press Ganey reports, this represented data from Q1 of 2010 (January – March 2010) and Q1 of 2011 (January – March 2011).

2.2.3 Communication Processes

2.2.3.1 Clinical Work Measurement Tool

Communication processes data was collected using an adapted form of The Clinical Work Measurement (CMW) Tool. The original form of the CWM tool was developed by the Health Informatics Research & Evaluation Unit (HIREU) at The University of Sydney in Australia. This tool uses multi-dimensional work classifications for measuring work patterns of doctors, nurses, and pharmacists in the healthcare field. The work classifications are part of a software package that can be uploaded onto a personal digital assistant (PDA), which is a mobile device that acts and looks like a hand-held computer, and can be programmed to perform specific tasks (Time Management Guide, 2002). With the PDA in hand, the researcher can follow the research subject as they go about their daily work activities. During this time, the PDA can be used to collect information about work tasks (i.e. what they are doing), as well as information about who is involved in the task and how the task is being completed. Additionally, the tool allows for the researcher to capture the distribution of Hospitalists' and Registered Nurses' time across work tasks (Hammer, 2009).

The CWM Tool was adapted for use in this study to reflect the locations, communication process and role categories at CMC. New categories emerged, and current categories were modified as a result of a 30-hour pilot study conducted before formal data collection began (see Appendix 1 for modified categories). It is important to note that shadowing occurred within the patient room during the pilot study. After the pilot study commenced, the researcher and

primary investigator decided that it was no longer necessary to be present in the patient room to collect the relevant communication process data. They concluded that because the researcher was standing only 6” inside the doorway, conversations could be sufficiently heard 6” outside the doorway for data collection purposes. A 12” difference did not make much difference in the researcher’s ability to hear conversations going on within the Patient Room. Additionally, it became burdensome for the Hospitalist or RN to take the time needed to gain verbal approval from the patient before entering the patient’s room, especially if they were incoherent or disoriented. As a result, the researcher did not enter the Patient Room during the remainder of the observation data collection period; rather the research stood 6” outside the doorway while communication process data was collected within hearing distance.

a.) Protocol

Communication process data was collected for both Hospitalists and Registered Nurses beginning mid-September 2010 through mid-December 2010. Approximately 1 to 3 observation days/sessions took place per week over the 14-week observation period. Data was collected over the course of the week. The researcher arrived at the unit thirty to sixty minutes prior to data collection in order to locate the study participants, log 4th floor patient census data, and prepare for the day. No warning period was given, and data collection commenced immediately.

In order to get an overall assessment of communication processes, observation data was collected only during the 12 hour, 7am to 7pm day shift for

both Hospitalists and RNs. For Hospitalists, observation data was only collected during days 2 through 6 of a 6 consecutive day shift. Day 1 was omitted for Hospitalists because it did not accurately represent a typical day on the unit, as this day was focused on orienting oneself with patient records, status, etc. For RNs, observation data was collected during any day over the course of a 3 or 4 consecutive day shift. No days during the RN shift were omitted because RN shifts were similar in the nature of daily activities, routines, and patterns of work, regardless of whether it was the first or last day of their consecutive day shift. The most significant daily change was patient assignments and patient census, which could vary from day to day and hour to hour.

On each observation day, observation data was collected in approximately 2 hour time periods in the morning (AM) and approximately 2 hour time periods in the afternoon (PM). The approximate AM time periods went from 8AM to 10 AM; or 10AM to 12PM. The approximate PM time periods went from 12PM to 2PM; or 2PM to 4PM. Times were approximated to account for time spent looking for study participants, and any other unexpected issues. The early morning hours (7AM – 8AM), and late afternoon/evening hours (4PM – 7PM) were not included in observation data collection because a majority of rounding activities occurred during the 8AM – 4PM timeframe.

With this observation schedule, one to two study participants could be observed per day. While taking the aforementioned schedule parameters into account, the researcher created an observation schedule based on the Hospitalist and RN staffing schedules issued by CMC. Staffing schedules were issued on a

monthly basis, but were subject to change. Approximately 2 to 4 hours were collected for each study participant on any given day, totaling 16 hours for each study participant over the data collection period. Overall (including the pilot study), approximately 200 hours of observation data was collected over the data collection period.

At the end of each observation day, the data was downloaded by the researcher to a data storage computer using the Active Sync/Backup/Data Extraction tool for the PDA device. The data was then saved to a flash drive which was stored in a secured file cabinet with the researcher when not in use.

All data related to study participants was de-identified using multiple means. First, a unique number was assigned to each participant at the time of written consent and all data collected from observations was associated with the individual's unique number, not their name. Second, the list of participants' names linked to the unique study numbers was stored in a locked filing cabinet in the primary investigator's office at Cornell University. Third, access to all data was limited to the researcher involved in data collection. Fourth, analysis was undertaken with no knowledge of participant identity. Lastly, any reports or publications would maintain individuals' confidentiality, and all data would be presented in either an aggregate form to protect participants' confidentiality, or presented individually using randomly assigned numbers not expressing any correlation to any particular individual.

2.2.4 Open-ended Interviews

The purpose of conducting open-ended interviews was to provide a deeper understanding of findings from the other forms of data collection. Interviews can serve as a valuable means for uncovering information and relationships that cannot otherwise be gathered from the other methods of data collection.

a.) Protocol

Open-ended interviews took place between the researcher and CMC Hospitalists, RNs, and other care team professional who work on the 4th floor medical surgical floor. All interviews were done at the convenience of the interviewee and were either scheduled or opportunistic. With the interviewee's permission, interviews were recorded with a digital audio recorder for future use. After professional transcription, the researcher reviewed transcription notes and used quotes to illustrate key themes that arose during the interviews to further illustrate points raised by other forms of data (i.e., patient outcome data, communication process data). In all cases, the names and identities of interviewees remained anonymous. Based on data findings, a set of interview probes were created to guide the interviews based on role type (see Appendix J and K). Interviews were conducted with 4 RNs, 2 Charge RNs, 3 Hospitalists, 2 Case Managers, and 2 Nurse Aides.

2.3 Site Selection

The study site was located at Cayuga Medical Center (CMC) in Ithaca, NY. CMC was selected because the organization employs 6 full-time/day shift Hospitalists who are in charge of the care of hospitalized patients on the 4th floor

Medical/Surgical Unit. Additionally, Hospitalists occasionally care for patients on the Intensive Care Unit, Short Stay floor, and the Emergency Department, but the 4th floor unit is their primary setting for care activities and rounding. The CMC implemented a Dual Rounding protocol in June 2010 which sought to improve patient care, and collaboration and communication among healthcare team members on the 4th floor. The Medical Director of Hospitalist Medicine, the Nursing Director, hospital administrators, and many other medical staff were interested in examining the impact of this new protocol, without whose support this study would not have been possible.

2.4 Site Description

a.) Cayuga Medical Center

CMC is a 204-bed, acute care hospital that serves over 150,000 people per year. CMC offers state-of-the-art diagnostic and treatment services, a full range of general and specialty care, inpatient and outpatient services, and community health education/outreach services. Additionally, CMC employs approximately 1,200 healthcare professionals from around the area. CMC places a strong emphasis on quality, defined by exceptional care and outcomes, extraordinary patient safety, and superior service and patient satisfaction (Cayuga Medical Center, 2009). CMC is a not-for-profit organization, and accredited by the Joint Commission on Accreditation of Healthcare Organizations and is a Hospital Quality Alliance Participant.

b.) 4th floor Medical/Surgical Unit

The 4th floor consists of two distinct, but similar units – 4-North (4N) and 4-South (4S). 4N is known as the “medical” unit, which means that the unit admits patients with a wide range of ailments and conditions. 4S is a “telemetry” unit which means that in addition to admitting patients with a wide variety of needs, the unit also has the capacity to admit up to 12 patients needing to be monitored. Patient’s not needing monitoring are typically assigned beds on 4N, as administrators encourage 4S to keep beds open for anticipating patients who need monitoring. As a result, patient flow can often be heavier on 4N. The 4th floor’s top five diagnosis-related-groups (DRGs), which are the most common diagnoses billed to Medicare include: Congestive heart failure; Pneumonia; Chest Pain; Stroke; and Chronic Obstructive Pulmonary Disease (COPD).

2.5 Physical Layout

The physical configuration of 4N and 4S is best described as a double-corridor, or “racetrack” design (Figure 2-1). According to Verderber and Fine (2000), a racetrack plan is created by separating room blocks along the two sides of the corridor and inserting a central core containing a wide range of support services like clean holding, medication rooms, and equipment storage.

4N hosts 23 patient rooms and 4S hosts 22 patient rooms all having double-bed capacity. These patient rooms are arranged in a U-shaped pattern that is separated from the central core by the primary corridor. The primary corridor loops around the entire unit, and connects each unit to the main elevator shaft and lobby that connect the two units. A secondary hallway divides the central core into a primary and secondary core space. The primary core contains the

Centralized Nurse Station, Medication Room, Pantry, and auxiliary storage and clean holding. The secondary core space contains the staff Break Room and small conference/activity rooms. The overall layout of both units can be seen in Figure 2-1 and 2-2. Note that the Nursing Unit design on both units is hybrid – containing one Centralized Nurse Station within the central core, and four Decentralized Nurse Stations flanking each corner of the central core.



Figure 2-1: CMC overall floor plan – 4N & 4S

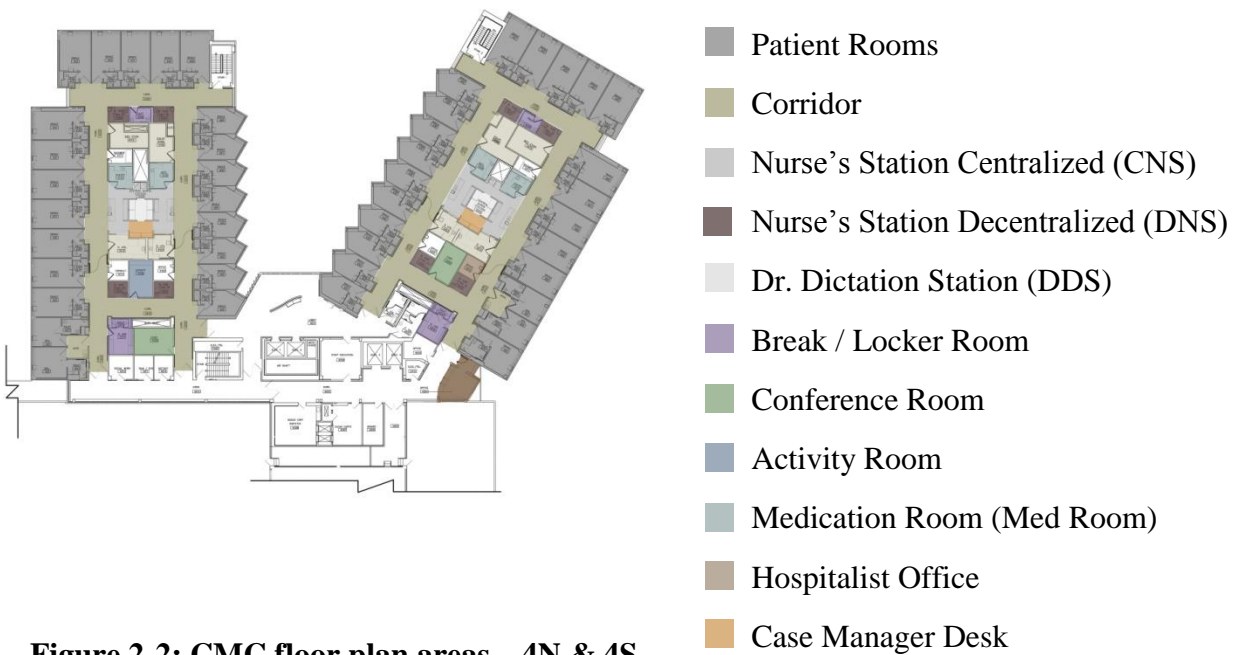


Figure 2-2: CMC floor plan areas – 4N & 4S

2.6 Sample Selection, Size & Recruitment

a.) Sample Selection

Hospitalists and RNs were the primary focus of this study. As a result, the full-time/day shift Hospitalists employed at CMC were invited to participate in the study. Additionally, RNs who worked directly with Hospitalists on the 4th floor medical surgical ward at CMC were invited to participate.

b.) Sample Size

CMC has a consistent staff allocation on the 4th floor every shift, which allowed for the inclusion of a consistent staff size during each observation period.

On any given day, the regular 4th floor staffing would be as follows:

• RNs	8
• Hospitalists	3
• Ward Clerks	2
• Nursing Aides	6
• Tele Tech	1
• Case Managers	4
• RN Unit Manager	1
• RN Director	1

Although the staffing remained consistent on the 4th floor unit, each shift was assigned from a base pool of employees. Shift assignments for Hospitalists and RNs were made on a monthly basis. Many employee schedules were not regular, but followed the six consecutive-day on-off shift for Hospitalists, and three to four consecutive on-off day shift for RNs. On any given day, the same number of day-shift roles would be fulfilled; however, different day-shift individuals could be working together. As a result, the overall nature of staffing

created a dynamic work environment every day. The following categories of medical staff were identified and included in the sample whenever observed interacting with Hospitalists or RNs:

- Hospitalists/MDs
- RNs
- Case Managers
- Allied Health (Social Workers, Respiratory Therapist, etc...)
- Ward Clerks
- Nursing Aides

The following non-medical persons were also part of the sample, but only when they were observed interacting with the Hospitalists or RNs:

- Patients
- Family Members and Visitors

The total sample size for the observation portion of this study was twelve: six full-time/day shift Hospitalists and six full-time/day shift RNs working on the 4th floor at CMC.

Table 2-1: Sample size demographic information

Role Type	N	Males	Females	Age Range	Experience
Hospitalist	6	5	1	30-60+	4-32 years
RN	6	1	5	25-60+	1-30 years
Total	N=12	N=6	N=6		

The full-time/day shift Hospitalist sample included five males and one female, ages ranging from approximately thirty to sixty plus years, having four to thirty-two years of experience. In this sample, the overall length of employment for Hospitalists at CMC ranged from one month to ten years. The full-time/day shift RN sample included five females and one male, ages ranging from approximately twenty-five to sixty plus years, having one to thirty years of experience. In this sample, the overall length of employment for RNs at CMC ranged from one to nineteen years.

b.) Sample Recruitment

The researcher recruited Hospitalists during their monthly meetings by making a formal verbal announcement describing the study, and informal announcements before or during their morning shifts. With the support of Dr. Stallone, Medical Director of the Hospitalist Program at CMC, and Kevin Flint, RN and Director of the 4th floor Medical/Telemetry Unit at CMC, the researcher verbally confirmed individual support of the project on behalf of the staffed Hospitalists and RNs at CMC.

Informed consent forms describing the study were administered to all willing participants by the researcher during the monthly staff meetings or before/ during the participant's shift before the official observation research began. Hospitalists and RNs who signed and returned the informed consent form to the researcher were verbally reminded by the researcher that study participation was completely voluntary, did not reflect employee performance, and that they could

opt out of the study at any time for any reason.. No participants or patients were identified by their name in data analysis or research report or publication.

Informal, opportunistic conversations with Case Managers, Nursing Aides, and other Allied Health Professional who worked with Hospitalists and RNs were conducted to gain greater insight into their attitudes towards hospitalist based care and their own communication processes with both Hospitalists and RNs. Again, no one was identified by name in the data analysis or report or publication, and all such interviewees received the same verbal description of the study, the fact that all participation of any form was voluntary, and all participants would remain anonymous.

2.7 Data Analysis

Using non-parametric descriptive statistics, the CWM tool data was analyzed by percentage of total time of 1.) location of interaction 2.) type of interaction, and 3.) with whom the Hospitalist or Registered Nurse interacted. The duration data was also cross-tabulated to determine type of interaction by location, and type of interaction by person. Cross-tabulations were performed to provide greater insight into how the variables interrelated. In some cases, each of the three variables were also analyzed by frequency of 1.) type of interaction, and 2.) with whom the Hospitalist or RN interacted.

Open-ended interviews were analyzed by the researcher. After the transcription of interviews, the researcher read through each interview transcript and noted additional information or insight that was not evident in other types of

data. These quotations were used to supplement findings from other types of methods.

3. Results

3.1 Overview

Because CMC had recently implemented a Dual Rounding strategy on the 4th floor unit, this research sought to examine the effects of rounding type (Dual vs. Hospitalist-led Individual) on patient outcome, organizational ecology, and communication processes among Hospitalists and RNs. In this study, Dual Rounds were defined as rounds including both Hospitalist and RN, meeting at the same time with the patient in the patient room. Hospitalist-led Individual Rounds were defined as rounds in which the Hospitalist met alone with the patient in the patient room. Approximately half of all rounds observed were Dual Rounds.

Table 3-1: Overall frequency and percent of rounds observed by type

Round Type	N	Overall %
Dual Rounds	90	51%
H-led Individual Rounds	85	49%
Total	N=175	100%

The results of this study have been presented in four sections. Section 3.2 focuses on general findings as they related to research questions and hypotheses. Section 3.3 focuses on the Analysis of Patient Outcome data obtained from CMC. Section 3.4 focuses on Organizational Ecology as it relates to the Physical Layout of 4N & 4S, Available Information and Technology, Organization and Unit Culture, and Section 3.5 focuses on the Analysis of Communication and Interaction Patterns obtained using the CWM Tool.

3.2 Summary of Research Questions, Hypotheses & Findings

The following section explores the research questions and hypotheses that served as a guide for this study. The findings are presented as they relate to the hypotheses within each subsection.

3.2.1 Patient Outcomes

HYPOTHESIS X1: Dual rounding would be associated with lower overall cost of stay, lower overall length of stay, lower percentages of complications in care, and higher patient satisfaction scores.

a.) Findings: Patient Outcomes

The hypotheses for patient outcome measures were not supported by the results, primarily because the data set was deemed unreliable based on methodological grounds. This will be further examined in the Discussion section.

3.2.2 Communication and Interaction Patterns

3.2.2.1 Dual vs. Hospitalist-led Individual Rounding

HYPOTHESIS X2: Dual Rounding would be associated with longer duration when compared to Hospitalist-led Individual Rounding, and

a.) Findings: Duration

- Dual Rounds were approximately 1 minute longer than Hospitalist-led Individual Rounds (4.8 minutes vs. 3.8 minutes, respectively).

HYPOTHESIS X3: Dual Rounding would be associated with significantly more time spent communicating between the Hospitalist and RN in terms of percentage of total time.

b.) Findings: Communication Process Types (CPTs)

- The overall nature of Dual Rounds and Hospitalist-led Individual Rounds were quite similar; with “Patient Interaction” representing the highest percentage of total time (83% vs. 88%, respectively), and “Working Alone” representing the second highest (11% for both round types), which represented time examining patients, or time spent interacting with no one while in the Patient Room. It appears that the presence of the RN did not change the nature of the Dual Round significantly.

Although Dual Rounds were slightly longer than Hospitalist-led Individual Rounds, there were also meaningful differences between round types. Therefore, the hypotheses were supported.

3.2.2.2 Pre/Post Round Discussion

HYPOTHESIS X4: Dual Rounding would be associated with higher frequencies of Pre/Post Round discussion, especially discussions involving “Consultation” interactions.

a.) Findings: Occurrence

- Overall, Pre Round discussion occurred less than half the time before both Dual and Hospitalist-led Individual Rounds (45% vs. 9% overall occurrence, respectively); however, when Pre Round Discussion occurred, “Consultation” CPTs were predominant for both Round Types (74% vs. 83% of total time, respectively). These differences were not statistically significant.
- Overall, Post Round discussion occurred less than half the time after both Dual and Hospitalist-led Individual Rounds (33% vs. 13%, respectively,

overall occurrence); however more Post-Round discussion occurred in Dual Rounding than in Individual

- When Post Round Discussion occurred, “Consultation” CPTs were predominant for both Round Types; (69% Dual vs. 64% Individual of total time).

HYPOTHESIS X5: Pre/Post Round Discussion would primarily take place in the Corridor in terms of percentage of total time.

b.) Findings: Location

- The location of Pre Round Discussion changed depending on Round Type. Pre Round discussion before Dual Rounds primarily occurred while in the Corridor (48% of total time vs. 19% before Hospitalist-led Individual Rounds), whereas before Hospitalist-led Individual Rounds, it occurred while at the CNS (78% of total time vs. 16% before Dual Rounds).
- The location of Post Round Discussion differed significantly as a function of round type. Post Round discussion after Dual Rounds primarily occurred in the Corridor (35% of total time vs. 14% for Hospitalist-led Individual Rounds), while Post Round discussion after Hospitalist-led Individual Rounds primarily occurred while stopped at the CNS (48% of total time vs. 32% of total time for Dual Rounds).

Pre/Post Round discussion was relatively infrequent for both round types. No significant differences in frequency were found in Pre/Post Discussion as a function of rounding type.

3.2.2.3 Morning Meeting

HYPOTHESIS X6: Morning Meetings would be associated with high levels of “Consultation” interactions in terms of percentage of total time, especially between Case Managers and Charge Nurses.

a.) Findings: Communication Process Types

- “Consultation” and “Case Presentation” CPTs are most prevalent during Morning Meetings, (40% and 38% of total time, respectively).
- Interactions between the Hospitalist and Case Manager were the most common (33% of total time), whereas interactions between the Hospitalist and Charge Nurse were less common (5% of total time).

HYPOTHESIS X7: There would not be significant differences in communication patterns among Hospitalists during Morning Meetings.

b.) Findings: Differences Among Hospitalists

- There were minimal differences in communication patterns among Hospitalists during Morning Meetings.

3.2.2.4 Daily Activities

HYPOTHESIS X8: Communication patterns will significantly differ in terms of location between Hospitalists and RNs. Due to physical layout of the unit work processes (i.e. – interactions and individual work activities like charting or documenting on the computer) would occur in close physical proximity at the Dr.

Pods and Centralized Nurse Station than in the Corridor or Decentralized Nursing Stations.

a.) Findings: Location

- Hospitalists spent the most time (55% of total time) at the Dr. Pods, which served as the primary location for all CPTs among Hospitalists, whereas RNs spent the most time (31% of total time) at the Centralized Nurse Station, which also served as the primary location for all CPTs among RNs.

HYPOTHESIS X9: Communication patterns will significantly differ in terms of CPT between Hospitalists and RNs.

b.) Findings: Communication Processes

- Over the course of the day, Hospitalists and RNs spent the most time interacting with “No One” (50% and 57%, respectively).
- Of all interactions with other healthcare team members, Hospitalists spent the most time engaging in “Consultation” interactions (10%), whereas RNs spent the most time engaging in “Information” interactions (7%).

HYPOTHESIS X10: Communication patterns will significantly differ in terms of role pair between Hospitalists and RNs.

c.) Findings: Role Pair

- When interacting with other healthcare team members, Hospitalist spent the most time interacting with fellow Hospitalist/MDs (6%), and RNs spent the most time interacting with fellow RNs (9%).

3.3 Analysis of Patient and Administrative Outcomes

In this study, patient outcome measures included overall cost of stay, patient satisfaction, overall length of stay, and complications in care. Rounding type received by the patient (either Dual or Individual) was considered the explanatory or independent variable.

The sample size was 264 patients, and consisted of two independent groups; 132 receiving the dual round condition (61 males, 71 females) and 132 who were rounded individually (46 males and 86 females). The mean age of the group receiving the Dual Rounding condition was 70.1 years, and 69.5 years for the Hospitalist-led Individual Rounding condition. The two groups represented equal distribution of primary diagnoses, which was indicated as “diagnosis related group” or “DRG”.

Table 3-2: Patient sample demographics

Round Type Condition	N	Males	Females	Ave. Age
Dual Rounded	132	61	71	70.1 years
Individually Rounded	132	46	86	69.5 years
Total	N=264	107	157	69.8 years

Alongside interviews, and observation, further statistical analyses revealed a significant threat to the reliability of the patient data set. After much consideration, the primary investigator and researcher concluded that the inability to control for patient acuity skewed the data so that it could not be analyzed fairly or adequately. As a result, patient outcomes have been omitted from this section because the data was not further analyzed. Suggestions for future methodological considerations and recommendations will be examined in the Discussion section.

3.4 Analysis of Organizational Ecology

To gain insight into the interrelationships and interdependencies between variables, an organizational ecological framework was used. As previously stated, organizational ecology recognizes that the workplace is made up of a series of systems in which “physical design factors both shape and are shaped by work processes, the organization’s culture, workforce demographics, and information technologies” (Becker, 2006, p.6). This framework aided in the development of a deeper and more comprehensive understanding of the current systems related to rounding activities and communication patterns occurring between Hospitalist’s and RNs outside the Patient Room. Because work processes are so patient-centric in the healthcare setting, data gleaned from an organizational ecological approach was considered important because these systems directly and indirectly impact a patient’s care experience from a medical and administrative perspective.

3.4.1 Physical Layout

The physical layout of the 4th floor units can be described as a hybrid design, where Patient Rooms are wrapped around a central core service area with secondary service stations located around the periphery. All spaces are connected by a primary Corridor that loops around the entire unit. The surrounding Corridor serves as the most public space on the unit. The Corridor also defines the periphery of an unobstructed privacy gradient that follows a progression of public (Corridor), semi public (Centralized Nurse Station), and private space (Dr. Pods). This relationship can be seen in Figure 3.1.

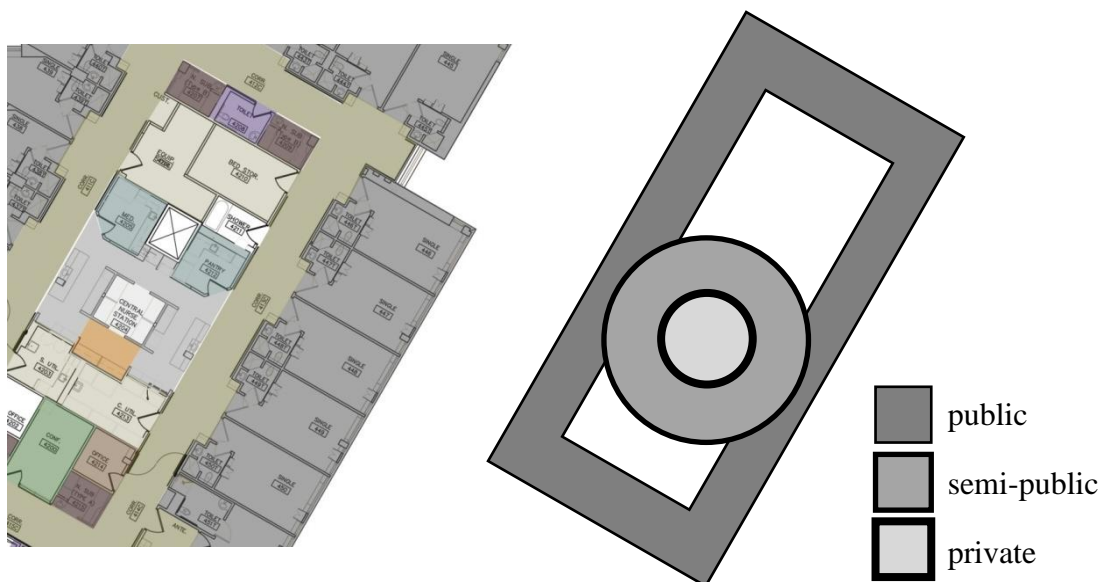


Figure 3-1: Privacy gradient on 4th floor unit

a.) Centralized Nurse Station (CNS)

Off of the primary Corridor, the Centralized Nurse Station (CNS) serves as the central core on the unit (Figure 3-3). Two large, rectangular workstations are situated on opposing ends of the CNS and are equipped with computers; one printer, telephones, and telemetry monitors on 4S (Figure 3-4 and Figure 3-5). These workstations are primarily used by the Ward Clerk, Charge Nurse, and other RNs. The CNS is also a common place for gathering during morning and evening shift changes and “Safety Briefings” throughout the day.

Overall, the CNS serves as the primary workstation for many healthcare providers and can often be noisy and bustling with activity. When asked about working at the CNS, one RN said:

“In the middle, there’s more commotion and more activities...and visitors tend to congregate there too because they think that you’re their family member’s nurse, and they look at you like “You should know everything about every patient on this floor.”

According to one of the Hospitalists, the CNS was comparable to:

“a watering hole in the jungle...people gravitate there.”

On the other hand, another RN suggested that working at the CNS made the healthcare team more visible:

“If you are in your pod...that can be a hideout. Yes, you’re by your patients, yet when you’re not visible to other nurses, it looks like you’re trying to do what *you* need to do...So, when you’re poking your head in [at the CNS] and seeing if other people need help...that helps a lot.”

b.) Dr. Pods (DPs)

Situated in the center of the active CNS are the Dr. Pods (DP) area (Figure 3-8). This space includes four designated workstations that are encased with mid-height walls with glass enclosure, and privacy screens between workstation surfaces. All four workstations include a computer, and a telephone (Figure 3-9). This is a common place for Hospitalists and fellow MDs to look over patient charts, electronic medical records, dictate patient discharge summaries, and collaborate with other members of the healthcare team. Visual access between the DP and CNS has been achieved via the use of the clear glass enclosures that allow for greater acoustical privacy and visual access (Figure 3-10). When asked about the physical layout of the DPs, one Hospitalist replied:

“It is close to the nurses...I like the fact that you can see what’s going on with the glass and that the sound is blocked out with the glass...it’s built with an openness where the nurses feel comfortable in coming to talk to us”.

For many RNs, the layout of the DP was helpful for “keeping tabs” on the Hospitalists throughout the day, especially when issues arose or questions needed to be addressed. According to one RN:

“I like the layout because I can always look to see if they’re there...especially before I call or page them. If I find them there, then I don’t have to.”

Within the unit, the DP is the most private space without a door as it is truly “nestled” within the CNS. When work stations were available during high-activity times of the day, RNs could also be found working in this space to get away from the chaos. When asked about why RNs would choose to work at the DP over the centralized or decentralized locations, one RN stated:

“I’m always helping everybody, so they always come to me. So, I have to hide in the doctor pods in order to document...If I sit on the outside and people can see me, so it’s always “Hey, can you help me with something?” At the doctor pods, you can actually sit down low, and nobody walks past you.”

Immediately adjacent to the DP, is the Case Manager’s Desk. Case Managers singly occupy these workstations, and can often be found working on their laptops at this location (Figure 3-11). The immediate adjacency to the DP allows for impromptu interactions between the Case Managers and Hospitalists/MDs working at the DP.

c.) Medication Room and Pantry

Around the periphery of the CNS are the Medication Room (Med Room) and the Pantry. The Med Room is locked at all times, and only RNs possess keys for access. Restricted access to the Med Room creates an interesting culture among RNs. Because this space is locked, according to many RNs, it has been

deemed as a “getaway space” or “Nurse’s Oasis” for “venting”, “encouragement and support”, “brainstorming” and “bouncing ideas off one another”, (Figure 3-15). When asked about the nature of the Med Room in light of it’s sensitive purpose, one RN replied:

“We actually do talk quite a bit, even when we’re getting meds...but there are other eyes that are looking. Again, when you’re experienced, you have multiple eyes and if you notice that someone has not gotten two [pills] like they’re supposed to, you can jump in and say, “Hey! You’re supposed to get two”.

Similarly, another RN responded:

“If we’re talking and somebody’s pulling meds, they’ll just turn around and kind of give you ‘the look’...and then everybody else quiets down....we’re professional enough to know that we can’t screw somebody up.”

This central location also allows for RNs to easily contact fellow RNs for “witnessing”, or confirming a dosage on certain drugs and medications before administration. The Pantry is located on the opposing side of the Medication Room and contains a refridgerator, sink, and ice machine. Although infrequently occupied, this space is primarily used for getting cups of ice and water for patients. On a few occasions, it was observed that this space was used for having personal cell phone conversations. This is not suprising since the space is unlocked, has a door, and is very close to the CNS.

d.) Decentralized Nurse Stations (DNS)

Four Decentralized Nurse Stations (DNS) are located on the four corners of the central core and are known as “pods” on the unit (Figure 3-12). Each pod is encased by a sliding glass panel on one side, and contains two computers, one

telemonitor, one telephone, Accu-Chek Inform kit, one Dinamap Pro300 mobile vitals cart or one Phillips Intelivue MPST (Figure 3-14). Oftentimes, these stations are occupied by Nursing Aides who are inputting the latest Patient vital signs. RNs typically use these stations when more privacy or quiet is desired during focused work or charting activities. Personal preference also impacts where a RN chooses to work. When asked about reasons for working at the DNS as opposed to the CNS, one RN responded:

“I kind of like to hide in my pod to do my charting and get my work done...it’s quieter there...then I’ll come out in the middle.”

Another RN preferred working in the pods for the same reason:

“I personally need my own quiet time so I can concentrate, so I’m not going to write something wrong on the wrong patient. A lot of people [nurses] prefer the centralized nurse station because they’re readily available to the charts, the doctors if they happen to be there, the unit clerk...I don’t care. I’d rather call them or walk, so I’m closer to my patients and can get my charting done.”

e.) Auxiliary Spaces

The central core also includes rooms for storing equipment and clean supplies. The equipment room contains items like patient lifts, bathroom assistance equipment, and wheelchairs. The clean holding supplies room contains items like bed linens, patient gowns, gauze, gloves, saline drip lines, etc...Additional patient supplies are also located outside of every patient room. At every decentralized supply location or “nurse server”, there are items like: shampoo, toothpaste, liquids containers, nasal swabs, biohazard disposal bags, etc...Dirty laundry can be deposited at each nurse server location. The nurse

servers are stocked from the clean holding room. However, they are often missing supplies. As one RN put it:

“the only thing that gets frustrating is the stocking of the supply stations...when there’s stuff out there, it’s not consistent.”

Dirty and clean holding rooms are located on opposing ends so to not confuse the two. Interviews with RNs revealed that a better labeling system and more logical set up could help save time finding supplies, especially for new or floating nurses. When asked about efficiency on the unit during interviews, one RN stated:

“We have stuff for dressings in at least two different places..For me to go in and grab things quickly, I still have to stop and think where things are at, and I’ve been here for four years.”

The staff Break Room is not within the central core, yet it is located off of the main Corridor on each unit. This Break Room is a designated space for RNs and Nursing Aides to store their personal belongings. This space contains lockers, hooks, a small table and chairs, coffee machine, sink, and bathroom (Figure 3-16). Although this space is designated for “breaks”, it is rarely used. This is not surprising as the Break Room has no windows, is quite cluttered, and can only comfortably accommodate approximately 2-3 people at any given time. While discussing the infrequent use of the Break Room, one RN stated:

“It’s not really inviting to go there. You’ve got a bench and a freaking chair with a table that rocks...Plus, who wants to eat their lunch in there when there’s a bathroom in there?”

Often, personal belongings can be found under workstations at the CNS and DNS.

Coffee and lunch breaks are often taken on the 1st floor cafeteria or 4th floor

Activity Room instead.

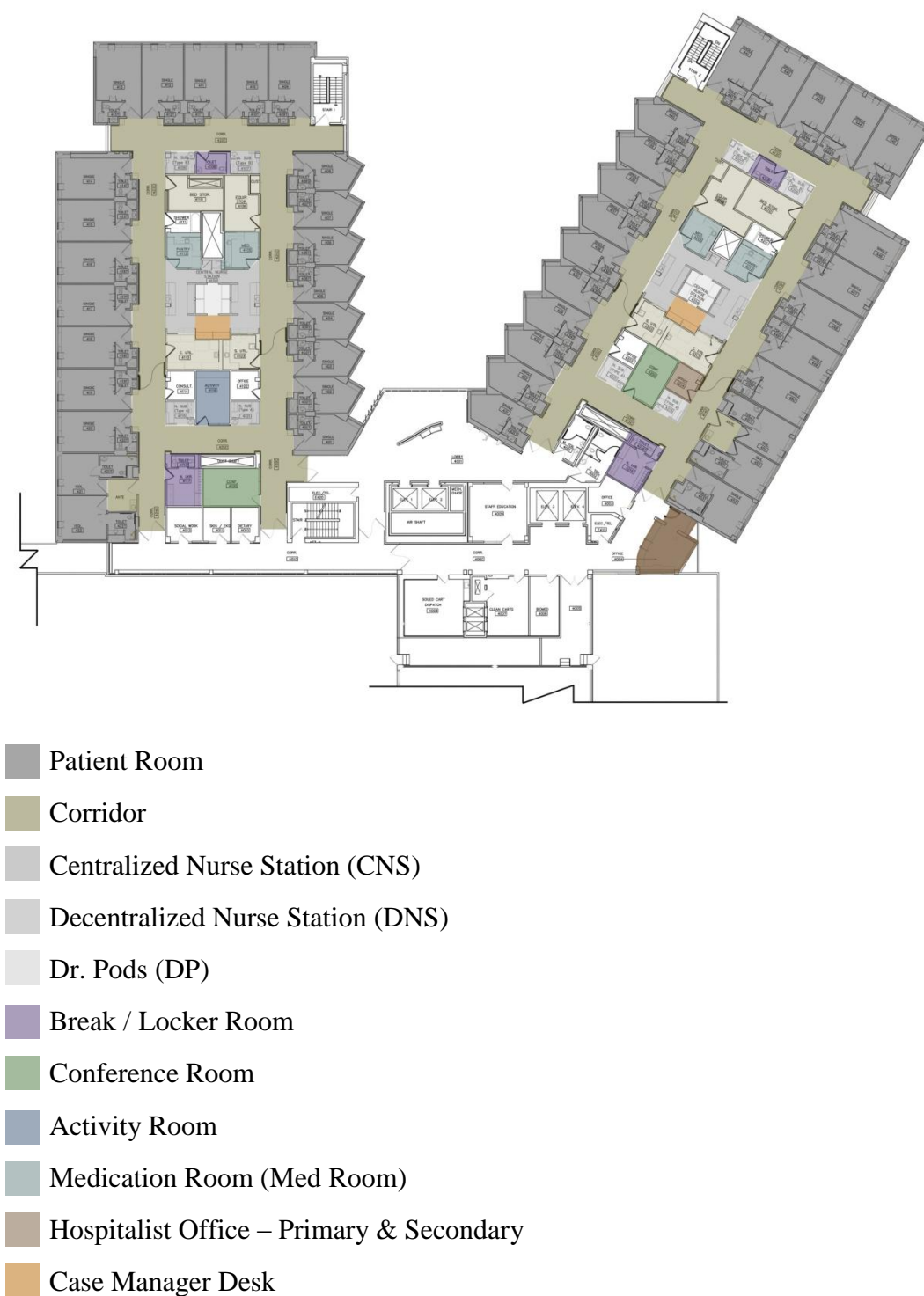


Figure 3-2: Physical layout of 4N & 4S

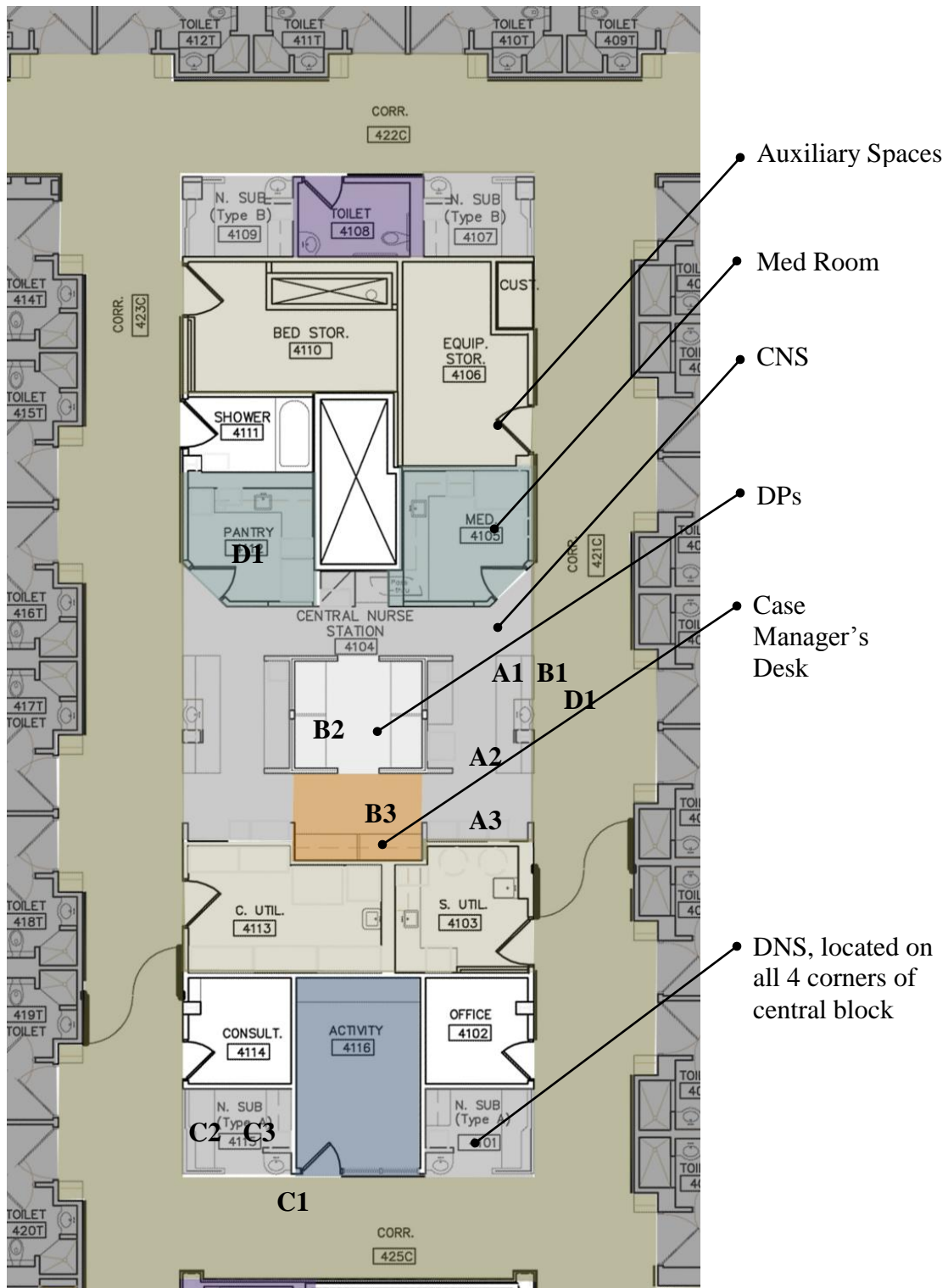


Figure 3-3: Physical layout of central core



Figure 3-4: View of CNS A1 from corridor



Figure 3-5: View of CNS work surface A2



Figure 3-6: View of CNS work surface A2



Figure 3-7: Movable carts with patient charts along wall at location A3



Figure 3-8: View of DP from location B1



Figure 3-9: View of DP work surface at location B2



Figure 3-10: View of clear glass enclosure around DP from location B3



Figure 3-11: View of case manager desk from location B4



Figure 3-12: View of DNS from location C1



Figure 3-13: View of DNS work surface at location C2

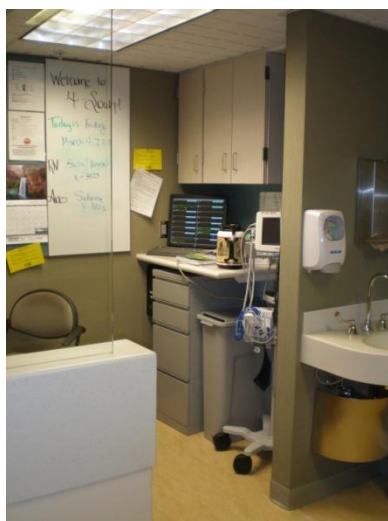


Figure 3-14: View of DNS work surface and monitors at location C3



Figure 3-15: View of med room from location D1



Figure 3-16: View of sitting area in small break room

3.4.2 Available Information and Technology

a.) Patient Records and Assignments

Electronic medical records are used by both Hospitalists and RNs.

Electronic medical records are available on all computers on the unit, which can be accessed via MediTech. All healthcare providers must login with the correct login ID and password to gain access to this information. Once logged in, healthcare providers have access to past medical records, medical charts, lab results, X-Ray imagery, EKGs, doctor notes and orders, up to date patient vitals,

etc. Hospitalists, RNs, and other members of the healthcare team are constantly inputting new notes, orders, and patient information into MediTech throughout the day. This electronic system allows for ease of access to this patient information depository for immediate briefing on up to date information for all members of the healthcare team.

Patient charts are also used by all Hospitalists and RNs. Patient charts are kept in blue binders on two movable cart along the wall at the CNS (Figure 3-7). Each binder is labeled by patient name and room number, and is placed in the corresponding room number slot on the movable cart. A distinct color coding scheme is used to indicate patient chart status. Black indicates “No Orders”, red indicates “Stat Orders”, blue indicates “Orders taken off RN needs to check”, green indicates “Discharge”, and yellow indicates “New Orders Written”. Each patient binder contains the following sections: healthcare proxy/DNR forms, fact sheet DRG proxy, physical history, progress notes, lab work, X-ray/EKG, report of operation, other consents, doctor’s orders, and patient discharge information packets. The central location of the patient’s chart makes the chart easily accessible for both RNs and Hospitalists who are working at the CNS or DP, but not at the DNS for example.

Once patient assignments are recorded at shift change, patient assignments are posted by the Charge Nurse at the beginning of every shift. Detailed patient assignments are posted on paper at the DP and via white-board which is located on the wall at the CNS. This displays the room number, patient’s name, assigned MD, RN, RN cell phone number, and Nursing Aide.

Hospitalists and RNs have their own personal systems for keeping track of their patient assignments. It was observed that some Hospitalists used their patient assignment printouts to take notes throughout the day whereas others carried around briefcase-like bags full of items and/or information they needed. It was observed that most RNs used their own personal binders for their patient assignments throughout the day. Typically, personal binders contained the “report sheet” for all patients under their care for the day, as well as supplemental information regarding patient’s medicine account record (MAR), record of pain, and Kardex sheets containing patient status information. Some RNs also used their binders for storing protocols and procedures at hand. These protocols and procedures could be found and printed from CMC’s intranet, which is only permitted by CMC employees.

b.) Patient Status Light System

The patient status light system consisted of two colored light fixtures located outside of each patient room, one red light and one white (Figure 3-17). When activated, both lights were accompanied by a mild auditory alarm that could be heard at the Nurse Station closest to the patient in need.

- White light: activated by patient if s/he needs assistance
- Red light: activated when a patient has tried to get out of bed (bed exit alarm)



Figure 3-17: Patient status light system as seen from corridor

c.) Telemetry Monitors and Print Station

Two telemetry monitors and print station were located at the CNS on 4S (Figure 3-18). Telemetry monitors allowed for healthcare staff to track changes in heart rhythm, so mild alarms sounded when a patient's heart entered dysrhythmia. These alarms would sound often, as the monitor was sensitive to patient movement, and was a significant source of noise at the CNS on 4S.

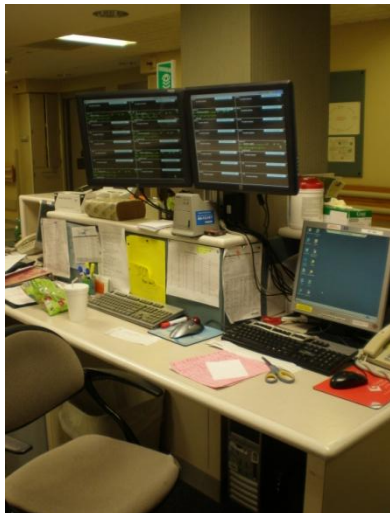


Figure 3-18: Telemetry monitor and print station

d.) Medications

Located in the Med Room, the Pyxis MedStation is a large computerized station that is compartmentalized with many drawers and cubbies containing different types of medications (Figure 3-19). It used automated medication management technology to facilitate communication between RNs and Pharmacists for dispensing patient medication. Before accessing any medication within the Pyxis system, a RN must first enter his/her login code or fingerprint identification. Upon approval, the Pyxis machine would then allow the user to access medications. Each medication is accessed one at a time. Before each medication compartment was closed, medications had to be physically counted and input into the system before moving on to the next medication. This was a timely process for many RNs, who would often spend time waiting in line to access the Pyxis machine.



Figure 3-19: Pyxis system in med room

3.4.3 Organization and Unit Culture

4N is a “medicine” unit which means that the unit admits patients with a wide range of ailments and conditions. Generally, patients are elderly, less active, and possibly confused. 4S is a “telemetry” unit which means that in addition to admitting patients with a wide variety of needs, the unit also has the capacity to admit up to twelve patients needing to be monitored via “tele packs”. This could include patients with heart distress symptoms or stroke. Tele packs are adhered to a patient’s chest and transmit wireless signals to be read at the telemetry monitors. As a result, patients on 4S typically require additional surveillance under such strict monitoring conditions. A staffed tele-tech relieves the RN of some of these additional responsibilities.

The 4th floor experiences an average census of thirty-four patients on any given day, seven days per week. Targeted Hospitalist-Patient ratios are 1:11 to 1:15 at CMC. Typically, Hospitalists can be found caring for approximately 12 patients on any given day. Targeted patient ratios for RNs are 1:5, although it can be common to find a RN caring for six patients on any given day. When asked about RN-patient ratios, one RN said that:

“Caring for six patients can be frustrating at times, especially if 2 of them are critical or really demanding. Otherwise it works for the most part. When you have 7, that’s when things get unsafe.”

Patient census data was recorded on observation days throughout the fourteen week observation period, and can be seen in Figure 3-20.

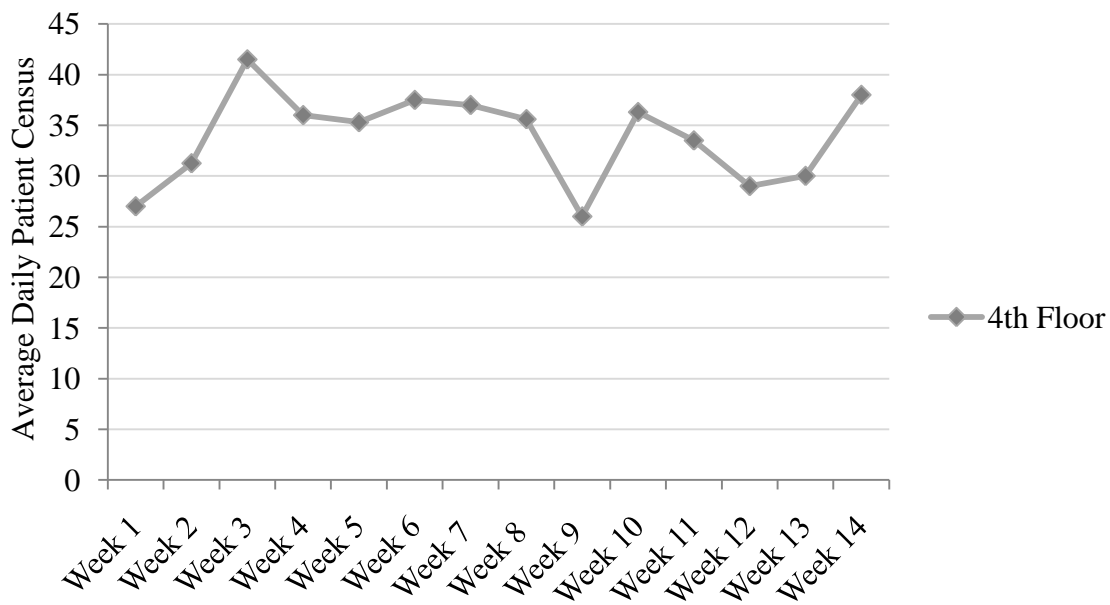


Figure 3-20: Average 4th floor patient census by week

During observation during high census days, the researcher could not help but notice that both units were often noisy and somewhat chaotic when compared to other units at the hospital. One cause for this kind of atmosphere is the wide range of diagnoses among the 4th floor units, and the constant sounding alarms sounding on 4S. Addressing such a wide variety of patients requires special attention to allocating time and resources, personnel, types of expertise, information, equipment, and supplies, etc.

3.4.4 Implementation of the Dual Rounding Strategy

In July of 2010, implementation of the Dual Rounding strategy was adopted on the 4th floor unit in an effort to improve patient care by better addressing the needs of such a wide range of patients. As with any organizational shift, implementation of this new strategy brought about interesting changes to work processes within unit, especially as it related to Hospitalists and RNs.

a.) Advantages of Dual Rounding

Since implementation, the Dual Rounding strategy has been credited as a beneficial strategy by Hospitalists, RNs and Case Managers. Specifically, it has been suggested that the Dual Rounding strategy at CMC has had a positive impact on:

- Efficiency
- Continuity of care
- Trust building
- Communication with family members

When asked about the advantages of the Dual Rounding strategy during interviews, Hospitalists viewed the Dual Rounding strategy as a means to give patients better continuity of care and saving time. As one Hospitalist put it:

“Both the nurse and I know what the plan is when we walk out of the room. There’s less ‘What are you doing on this patient?’ The patient gets a feeling of continuity and we’re both on the same page...It’s much more efficient than me going in there and telling the patient and then coming out and talking to the nurse. I think it’s definitely a time saver.”

Another Hospitalist shared similar opinions:

“It helps when we are all on a united front. You repeat information so many times that it gets distorted. Before, you would go into the patient’s room, tell them the plan, and then you’d come outside and you do everything again...In the beginning, I thought it [Dual Rounding] was going to be more time consuming because when you are in the room with the nurse, she’ll have questions or something, so it takes longer, but it saves time later on because she was going to talk to you anyway...inside the room, outside the room, so in the end, you still save time.”

From the RNs perspective, some of the advantages of Dual Rounding strategy included more solicited input from Hospitalists, being more informed on

patient care plan decisions, and greater opportunities for relationship building.

Since the implementation of the Dual Rounding strategy, one RN stated that:

“We’re more of a team...and the doctors are more likely to ask for your input and bounce ideas off of you and talk aloud. You get to hear a lot more of what the doctor is thinking about...when you can hear their thought process –that is helpful for understanding the patient’s care plan.”

Another RN had similar insight:

“At first, everybody was like ‘How are we going to fit this in?’ But everyone realized afterward that when you go in [to the patient room], you actually know what’s going on because there may have been something that you didn’t know that the doctor talked to them about. So, you have more quality in being able to take care of the patient the way it should be...to follow through.”

Additionally, some RNs shared similar thoughts with Hospitalists in that the Dual Rounding strategy was a significant time-saver. As one RN said:

“I find it very useful because I find out a lot more and I don’t go in *after the fact*, where the patient says ‘Oh, the doctor says I’m good to go.’ I say, ‘Oh, really?’, and I go and look on the chart and there’s nothing there. But, when I’m in [the patient room] with the doc and he says, ‘Well, I’m going to let you go if the lab work is done...etc...’ It’s just like we’re all on the same page...It also makes it easier to talk to families because then you can say what the doctor said...I think in the long run it saves a lot of time.”

Another RN commented on how the Dual Rounding strategy gave RNs and Hospitalists greater opportunities to get to know one another:

“You get to know the doctors more. You start feeling more comfortable being around them...Unless you round with them, you don’t talk to them that much.”

Although Case Managers and Charge Nurses were not physically present during Dual Rounding activities, it was also found that Dual Rounding had a positive impact on their work as well. According to one Case Manager:

“Families have fewer questions. A lot of times they’ll [the families] call us [case managers] with questions because our names are on the bulletin boards in every single room...When the nurse rounds with the doctor, s/he’s able to relay that information when the family comes in or if they call....so it doesn’t come to us at all...and that alone is a huge time saver.”

For one Charge Nurse, the Dual Rounding strategy helped decrease the need for a middle – person for interactions between RNs and Hospitalists:

“There’s better communication between the doctor and the nurse directly...there’s less of that ‘nurse asking the charge nurse to ask the doctor something’, which is good because it decreases that third party in making sure that communication happens...”

b.) Disadvantages of Dual Rounding

When asked about the disadvantages of the Dual Rounding strategy, there were few. The primary disadvantage stemmed from scheduling constraints – neither RNs nor Hospitalists found it convenient or appropriate to wait for the other, especially during busy times of the day. According to one Hospitalist:

“to actually find that nurse...I mean, she’s out there giving medications or she’s in one room changing the bedpans and then you’re in another room and she’s busy doing that, why do I need to wait for her? I think they [RNs] add value, but am I going to just wait there for 15 minutes? No.”

Another Hospitalist shared the same view:

“The only disadvantage is that sometimes if a nurse isn’t available, I have to decide whether or not I’m going to wait for that nurse, or I’m just going to say, ‘Listen, I have to get this done. I don’t have time to wait’...but I’d say 95% of the time it’s better to do it [Dual Rounding] with a nurse.”

Similarly, from the RNs perspective:

“It’s hard sometimes...somebody needs to be changed and the doc is here and they only have a few minutes and they’re in a rush...it’s difficult to get everything organized and you never know when the docs going to be able to come up.”

Another RN acknowledged:

“it [Dual Rounding] can be an added stress...just two people with different schedules trying to get with each other.”

c.) Advantages to Individually Rounding

Because Dual Rounding did not occur in all cases, it was important to consider why Hospitalist-led Individual Rounding occurred, and when it was appropriate. Overall, when the researcher asked about the advantages of individually rounding, there were two primary reasons that differed between Hospitalists and RNs. For Hospitalists, the primary advantage was convenience, which was significantly associated with scheduling constraints as mentioned above. For RNs, the primary advantage was patient openness/honesty. This was interesting, as it came up on multiple occasions during interviews. When asked about the advantages of individually rounding, RNs responded similarly:

“When doing it [individually rounding] by yourself, a lot of times, the feedback you get from the patient is totally different from what the doctor said...”

“You could be able to ask a patient, ‘Really, how is your care?’ and they might be honest with you.”

“Sometimes, the patients are more likely to tell a nurse something than the doctor...I’ve noticed that when it’s just the doctor talking to them, they won’t tell. But if they see the nurse comes in, they’re more likely to talk...they’re more comfortable with the nurses than with the doctors.”

3.5 Analysis of Communication and Interaction Patterns

The communication and interaction patterns of both Hospitalists and RNs were analyzed from week two through week fourteen. Analysis began in week two to give the researcher time to get used to the CWM tool, and to allow for study participants to get used to being observed. The table below shows the observation time in minutes for each Hospitalist and RN. These recorded minutes do not include any data from the pilot study conducted by the researcher in order to accustom her to the CMW tool and study participants to being shadowed. A total of six Hospitalists were observed with an average of 664.1 minutes or approximately eleven hours for each Hospitalist. A total of six RNs were observed with an average of 657.1 minutes or approximately 10.9 hours for each RN. The data was analyzed by total time, average time per interaction, and percentage of total time. Observation and responses from open-ended interviews were used to further make sense of the CWM tool data.

Table 3-3: Observation data collection summary

Hospitalist	Obs. Time (m)	RN	Obs. Time (m)
1	741.9	1	639.1
2	689.2	2	643.8
3	571.5	3	726.1
4	795.4	4	626.7
5	564.5	5	692.9
6	622.5	6	613.3
Total	3986.3	Total	3942.1

Due to the varied nature of research questions, the results for Section 3.5 Analysis of Communication and Interaction Patterns have been presented in four

distinct sub-sections. Section 3.5.1 addresses Communication and Interaction Patterns among Hospitalists during Pre Round Discussion; Section 3.5.2 addresses Communication and Interaction Patterns among Hospitalists during Rounding Activities; Section 3.5.3 addresses Communication and Interaction Patterns among Hospitalists during Post Round Discussion; Section 3.5.4 addresses Communication and Interaction patterns among Hospitalists during Morning Meetings; and Section 3.5.5 addresses Communication and Interaction Patterns among Hospitalists and RNs during Daily Activities. Research questions and a summary of key findings will be included at the beginning of each sub-section.

3.5.1 Pre Round Discussion

a.) Initiating Pre Round Discussion before Dual Rounds

Initiation of Pre Round Discussion before Dual Rounds typically began with the Hospitalist approaching the patient board with RN assignments at the Centralized Nurse Station. After the Hospitalist identified the patient's RN generally, the Hospitalist attempted contacting the RN using three primary means: "Hunt" – walking around in search of the RN if s/he was not within immediate visual range; "See" - looking around the immediate vicinity in search of RN, or "Phone"- using the phone or cell phone to verbally contact the RN.

Once face-to-face with the RN, Pre Round Discussions before Dual Rounds were generally initiated by the Hospitalist to the RN via discussions like:

Hospitalist: *"Would you like to go see 423 with me?"*

RN: *"Sure."*

Hospitalist: *"How's he doing today?"*

RN: *"He went down for an EKG this morning, and"*

b.) Initiating Pre Round Discussion before Hospitalist-led Individual Rounds

Initiation of Pre Round Discussion before Hospitalist-led Individual Rounds was much like initiation before Dual Rounds; however interactions were often different. Once face-to-face with the RN, the following scenarios demonstrated how Pre Round Discussion occurred before Hospitalist-led Individual Rounds:

Scenario 1: The Hospitalist initiated contact with the RN and was successful. The RN was not invited to round, or it was not assumed that the RN be in attendance. An interaction like this would go as follows:

Hospitalist approaching RN: *"How is 423 doing today?"*

RN: *"He went down for an EKG this morning, and"*

Hospitalist: *"Okay, great – thanks."*

Scenario 2: The Hospitalist initiated contact with the RN and was successful. The Hospitalist invited the RN to Dual Round. The RN accepted, yet got sidetracked by other tasks and missed the round entirely.

An interaction like this would go as follows:

Hospitalist approaching RN: *"Would you like to go see 423 with me? How is he doing today?"*

RN: *"Sure, let me finish giving this one patient her meds, and I can be right over."*

Hospitalist: *"Okay, great – How is he doing today?"*

RN: *"He went down for an EKG this morning, and...."*

Hospitalist: *"Good, I'll see you there."*

**NOTE: The RN never shows, but could possible touch base with the Hospitalist later, which would be considered post-round discussion*

Scenario 3: The Hospitalist initiated contact with the RN and was successful. The Hospitalist invited the RN to Dual Round. The RN rejected because they were too busy tending to other tasks and patients, etc.... An interaction like this would go as follows:

Hospitalist approaching RN: *“Would you like to go see 423 with me? How is he doing today?”*

RN: *“I can’t right now, but he went down for an EKG this morning and...”*

Hospitalist: *“Okay, I’m going to go check in on him right now.”*

c.) Overall Occurrence of Pre Round Discussion

In the context of Pre Round discussion, the occurrence of Pre Round discussion was logged by hand as either “Pre - Present” or “Pre-Absent” in the researcher’s field note log, and was documented at the end of each observation period. As a result, “% Occurrence” referred to the overall occurrence of Pre Round discussion before a Dual or Hospitalist-led Individual Round were performed. A significantly higher percentage of Pre Round discussion occurred before Dual Round than before Hospitalist-led Individual Rounds (45% vs. 9% overall occurrence).

Given that the Hospitalists typically invited the RN to round with them, it was considered important to understand why Pre Round Discussion occurred less than half the time, and what the Hospitalists and RNs saw as the implications of having Pre Round discussions in terms of care quality, relationship building, etc...

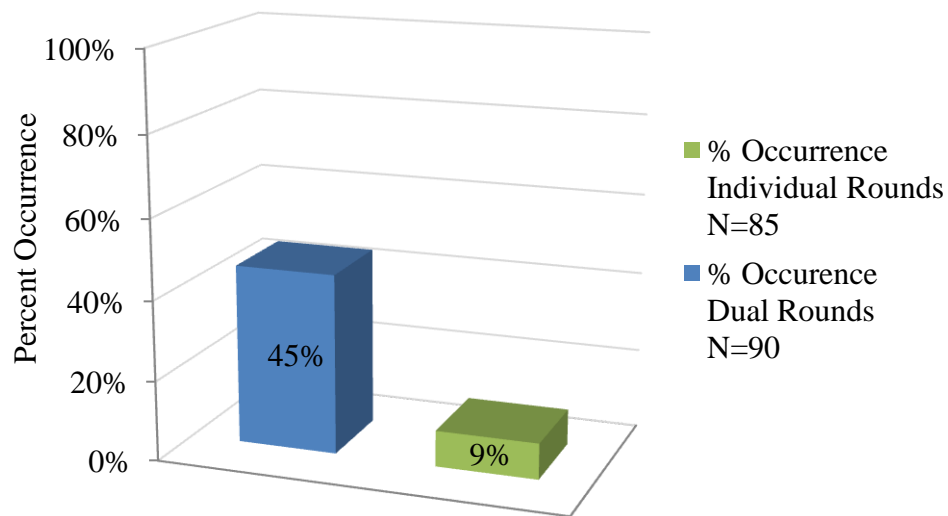


Figure 3-21: Overall percent occurrence of Pre Round Discussions by round type

d.) Location of Pre Round Discussion

Pre Round Discussion before Dual Rounds primarily occurred while in the Corridor (49%), whereas before Hospitalist-led Individual Rounds, it primarily occurred at the CNS (73%). This reflected the fact that during Hospitalist-led Individual Rounds the Hospitalist and RN did not attend the round together; therefore there was no reason to continue an interaction while walking towards the patient room. Generally, they did not proceed together because the RN was not invited, it was *not* assumed that the RN should attend, the RN got sidetracked by other activities/patients, or because the RN rejected because s/he was too busy.

Table 3-4: Total time, average time, and percentage of total time of Pre Round Discussion by location and round type

Location	Pre Round Discussion					
	Dual (N=90)			H-led Individual (N=85)		
	Total Time (s)	Ave. Time (s)	%	Total Time (s)	Ave. Time (s)	%
DP	553	32.5	36%	10	10	3%
CNS	235	11.7	16%	297	21.2	78%
Case Mgr Desk	-	-	-	-	-	-
DNS	5	5	>1%	-	-	-
Corridor	724	16.4	48%	74	37	19%
Total	1517	18.7	100%	381	22.4	100%

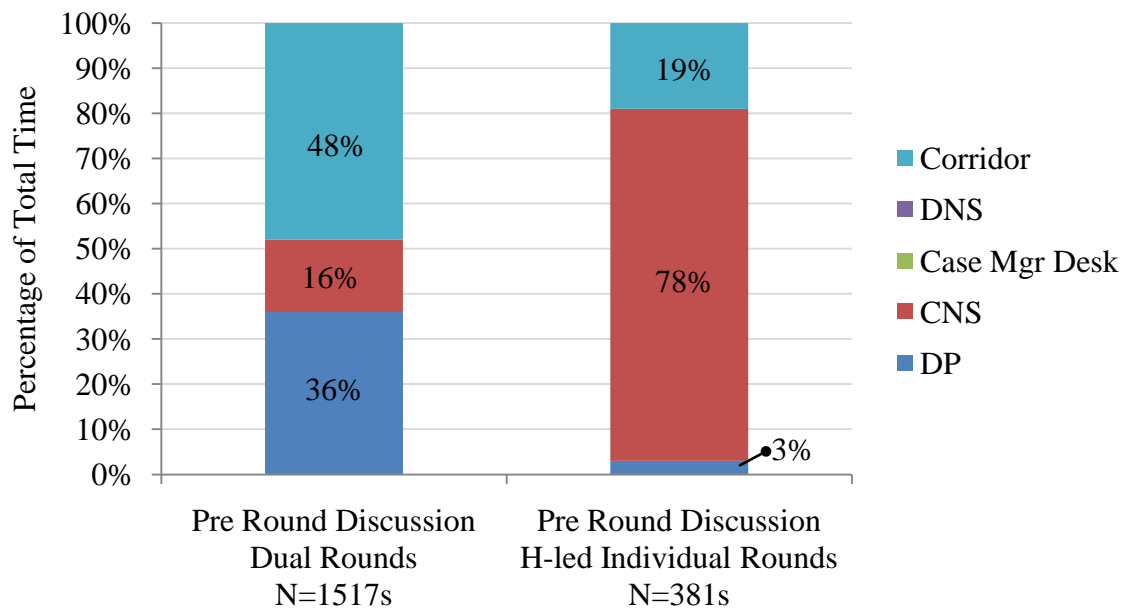


Figure 3-22: Percentage of total time of Pre Round Discussion by location and round type

As a result, there is a more “active” flow to Pre Round discussion before Dual Rounds (i.e. – initiation of discussion and then time spent walking and talking in the corridor), and a very “static” flow before Hospitalist-led Individual Rounds (i.e. initiation of discussion and end of discussion in same location). This is primarily because Pre Round Discussion before Dual Rounds commonly

occurred while “walking and talking” in the Corridor. Although Pre Round discussion before Dual Rounds was common in the Corridor – the CNS served as an anchor for initiation then continuation into the Corridor and ultimately the Patient Room. Figure 3-23 shows the typical path of travel by Round Type.

Dual Rounds

H-led Individual Rounds



Figure 3-23: Typical route of Pre Round Discussion before rounds by type

e.) The Overall Nature of Pre Round Discussion before Rounds

Generally, Pre Round discussions before both Dual and Hospitalist-led Individual Rounds were “Consultation” in nature (74% vs. 84%, respectively). “Other” types of interactions were more common before Dual Rounds than before Hospitalist-led Individual Rounds (14% vs. 2%, respectively). “Social” types of communication processes were not present in Pre Round discussion before Hospitalist-led Individual Rounds. They were present before Dual Rounding. As

mentioned before, the nature of Pre Round discussion before Dual Rounding did not always involve the patient. “Social” interactions before rounds could include comments such as:

“Are you going to be able to make it to the Holiday party this year? Last year’s party was so much fun and most people were able to make it which was nice.”

“Other” interactions before rounds could include comments such as:

“Did you go to that meeting the other day? Yeah, I was”

Table 3-5: Total time, average time, and percentage of total time by CPT and round type

CPT	Pre Round Discussion					
	Dual (N=90)			H-led Individual (N=85)		
	Total Time (s)	Ave. Time (s)	%	Total Time (s)	Ave. Time (s)	%
Social	36	7.2	2%	-	-	-
Consultation	1128	27.5	74%	315	35	83%
Information	137	6.5	10%	57	8.1	15%
Other	216	15.4	14%	9	9	2%
Total	1517	18.72	100%	381	22.4	100%

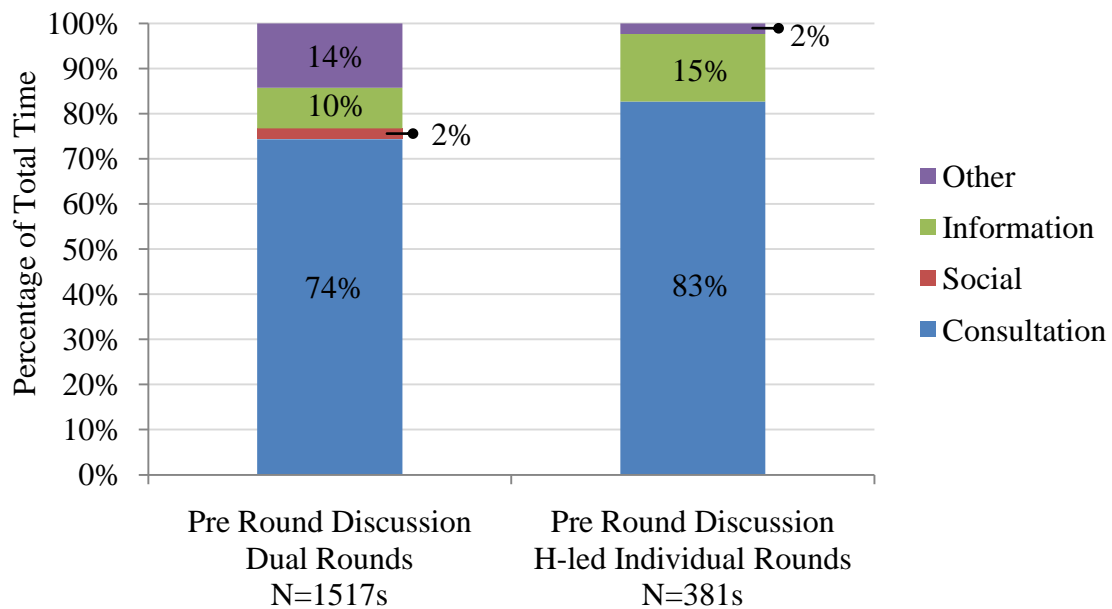


Figure 3-24: Percentage of total time of Pre Round Discussion by CPT and round type

f.) Summary of Key Findings – Pre Round Discussion

- Overall, significantly more Pre Round discussion occurred for Dual compared to Hospitalist-led Individual Rounding (45% vs. 9% overall occurrence, respectively). When Pre Round Discussion occurred, “Consultation” CPTs were predominant for both Dual and Hospitalist-led Rounding types, with more Consultation occurring before Individual Rounding (74% vs. 83% of total time, respectively).
- The location of Pre Round Discussion changed depending on Round Type. Pre Round discussion before Dual Rounds primarily occurred while in the Corridor (48% vs. 19% before Hospitalist-led Individual Rounds), whereas before Hospitalist-led Individual Rounds, it occurred while at the CNS (78% versus 16% before Dual Rounds).

3.5.2 Rounding Activities

a.) Duration of Rounds

Dual Rounds were approximately 1 minute longer than Hospitalist-led Individual Rounds (4.8 minutes vs. 3.8 minutes, respectively), which suggested that Dual Rounds resulted in slightly more face-to-face time with the patient.

Table 3-6: Total time and average time of round by type

Round Type	N	Total Time (m)	Ave. Time (m)
Dual Rounds	90	435.3m	4.8m
H-led Individual Rounds	85	325.2m	3.8m
Total	N=175	750.5m	4.3m

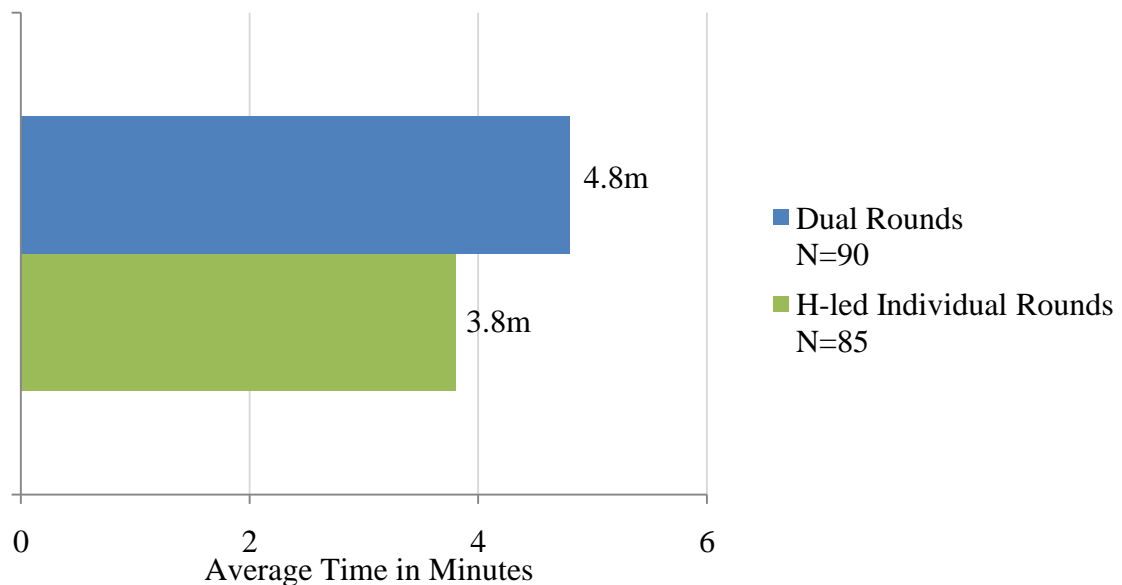


Figure 3-25: Average time of round by type

b.) The Nature of Rounds: Dual Rounds versus Hospitalist-led Individual Rounds

The overall nature of both Dual and Hospitalist-led Individual Rounds were similar. Of the total time spent in rounds, “Patient Interaction” was the most dominant communication process type (CPT) in both Dual and Individual Rounding (83% vs. 88%, respectively), followed by “Working Alone” (11% for

both rounding types), which represented time spent interacting with no one. This included time spent listening to a patient's heart, lungs, or partaking in patient care activities while not interacting with anyone.

During Dual Rounds, "Consultation" and "Information" interactions among the Hospitalist and RN were relatively infrequent compared to Hospitalist-led Individual Rounding (4% and 2% vs. 1% and 0%, respectively), suggesting that although the RN was present, it did not change the overall nature of the round significantly.

Table 3-7: Total time, average time, and overall percentage of CPTs during rounds by type

CPT	Dual (N=77)				H-led Individual (N=69)			
	N	Total Time (s)	Ave. Time (s)	%	N	Total Time (s)	Ave. Time (s)	%
Pat Int	335	18289	54.6	83%	145	13330	91.9	88%
Wk A	117	2466	21	11%	72	1689	23.5	11%
Soc	2	10	5	>1%	-	-	-	-
Cons	89	803	9	4%	8	180	22.5	1%
Info	55	450	8.2	2%	3	23	7.7	>1%
Other	11	50	4.5	>1%	-	-	-	-
Phone	-	-	-	-	-	-	-	-
Total	609	22068	36.2	100%	228	15222	66.7	100%

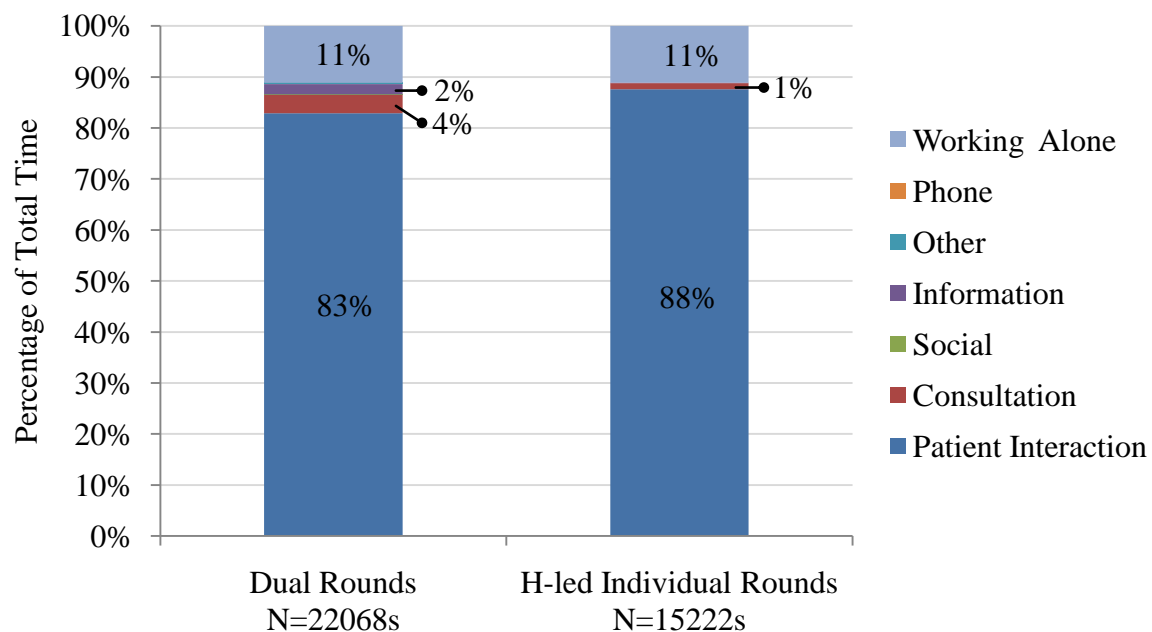


Figure 3-26: Percentage of total time by CPT and round type

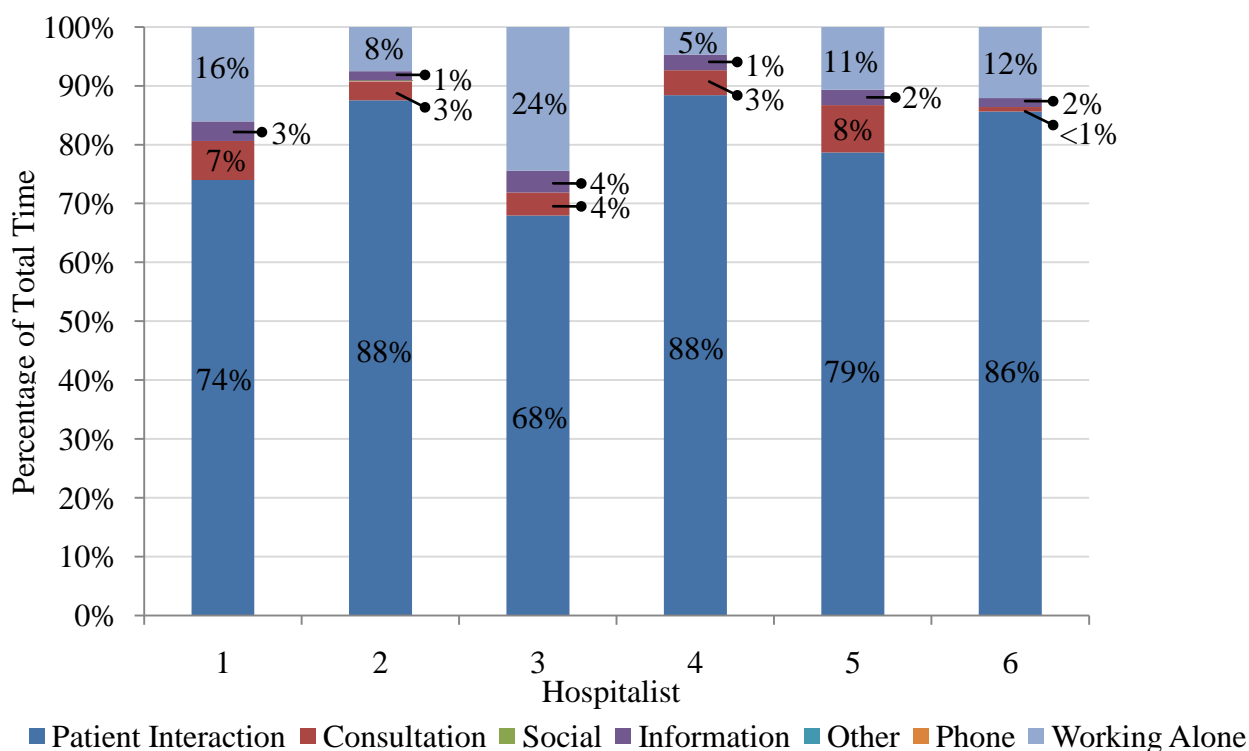


Figure 3-27: Percentage of total time during Dual Rounds by CPT and Hospitalist

c.) Summary of Key Findings – Dual Rounds versus Hospitalist-led Individual Rounds

- Dual Rounds were approximately 1 minute longer than Hospitalist-led Individual Rounds (4.8 minutes vs. 3.8 minutes, respectively).
- The overall nature of Dual Rounds and Hospitalist-led Individual Rounds were quite similar with “Patient Interaction” representing the highest percentage of total time (83% vs. 88%, respectively), and “Working Alone” representing the second highest (11% for both rounding types).
- “Consultation” and “Information” interactions represent higher percentages of total time in Dual Rounds (4% and 2%, respectively), which varies when compared to Hospitalist-led Individual Rounds (1% and 0%, respectively). However, the average duration of each “patient interaction” was significantly longer during Hospitalist-led Individual Rounds than for Dual Rounds (91.9 seconds vs. 54.6 seconds, respectively)

3.5.3 Post Round Discussion

a.) Initiating Post Round Discussion after Dual Rounds

Since the Hospitalist and RN were already together, a typical Post Round interaction could begin as follows:

Hospitalist: *“It seems like his pain is going down, which is good...He’s probably going to get to go home in a few days.”*

RN: *“Yeah, I think so. He’s been sleeping a little better lately too. Do you think we should bump him down to Tylenol as needed?”*

Hospitalist: *“Yes – sounds good. I think I’m going to lower his dosage of Lovinox from 30mg to 20mg too. I’ll place the order for that right away.”*

RN: *“Great, thanks.”*

b.) Initiating Post Round Discussion after Hospitalist-led Individual Rounds

Post Round discussions after Hospitalist-led Individual Rounds were different from those occurring after Dual Rounds because the Hospitalist and RN were not exiting the Patient Room together. Generally, Hospitalists initiated Post Round Discussion after Hospitalist-led Individual Rounds via “Hunt”, “See”, or “Phone”. Once face-to-face with the RN, the following scenarios demonstrated how Post Round Discussion occurred after Hospitalist-led Individual Rounds:

Scenario 1: The Hospitalist initiated contact with the RN, and was successful. When face-to-face, Post Round discussions could include interactions such as:

Hospitalist approaching RN: *“I just went in to see 423, and I wanted to know if you thought his pain tolerance has been getting any better since yesterday?”*

RN: *“As of today, I don’t think so, but....”*

Hospitalist: *“Okay. He asked me to change some of his meds, but he’s already on quite a bit of morphine, so I’m going to leave his med list the way it is. If you think he needs anything else, let me know and I can write a new order.”*

RN: *“Sounds good.”*

Scenario 2: The RN initiated contact with the Hospitalist, and was successful. This mainly occurred when the RN either missed the Dual Round, or was invited but unable to attend. When face-to-face, Post Round Discussion could include interactions such as:

RN: *“Hey, I wanted to touch base with you about 423. Sorry I couldn’t make it but one of my patient’s needed help going to the bathroom. Did you want to make any changes to his care plan?”*

Hospitalist: “Yeah, I just placed some new orders, and they are in his chart. I’m also lowering his Lovinox dosage from 30mg to 20mg.”

RN: “Okay, sounds good to me.”

c.) Overall Occurrence of Post Round Discussion

In the context of Post Round discussion, “% Occurrence” refers to the overall occurrence of Post Round discussion after a Dual or Individual Round was performed. A significantly higher percentage of Post Round discussions occurred after Dual Rounds than after Hospitalist-led Individual Rounds (33% vs. 13% overall occurrence). Given the infrequency with which such Post Round discussions occurred, it was considered important to understand why this was the case, and what the Hospitalists and RNs saw as the implications of so few Post Round discussions.

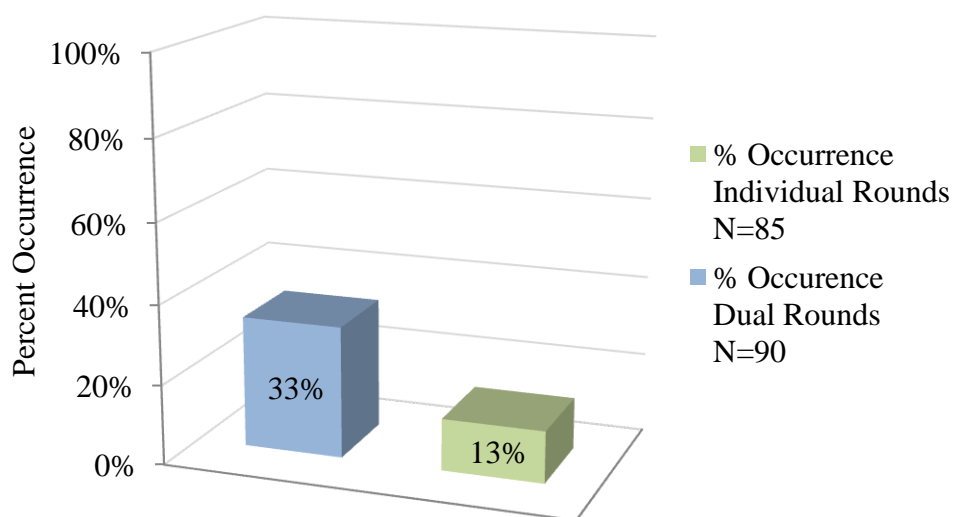


Figure 3-28: Overall percent occurrence of Post Round Discussions by round type

d.) Location of Post Round Discussion

Post Round Discussion after Dual Rounds primarily occurred while in the Corridor (36%), whereas after Hospitalist-led Individual Rounds, it primarily occurred at the CNS (48%). Since the Hospitalist and RN did not attend the Hospitalist-led Individual Round together, there was no opportunity for continued interaction while walking away from the patient room, which could explain the dominance of the CNS for Post Round Discussion after Hospitalist-led Individual Rounds

Table 3-8: Total time, average time, and percentage of total time of Post Round Discussion by location and round type

Location	Post Round Discussion					
	Dual (N=90)			H-led Individual (N=85)		
	Total Time (s)	Ave. Time (s)	%	Total Time (s)	Ave. Time (s)	%
DP	243	22	26%	174	34.8	38%
CNS	294	24.5	32%	219	12.8	48%
Case Mgr Desk	23	23	2%	-	-	-
DNS	36	9	4%	-	-	-
Corridor	325	10.9	35%	65	18.5	14%
Total	921	15.8	100%	458	18.3	100%

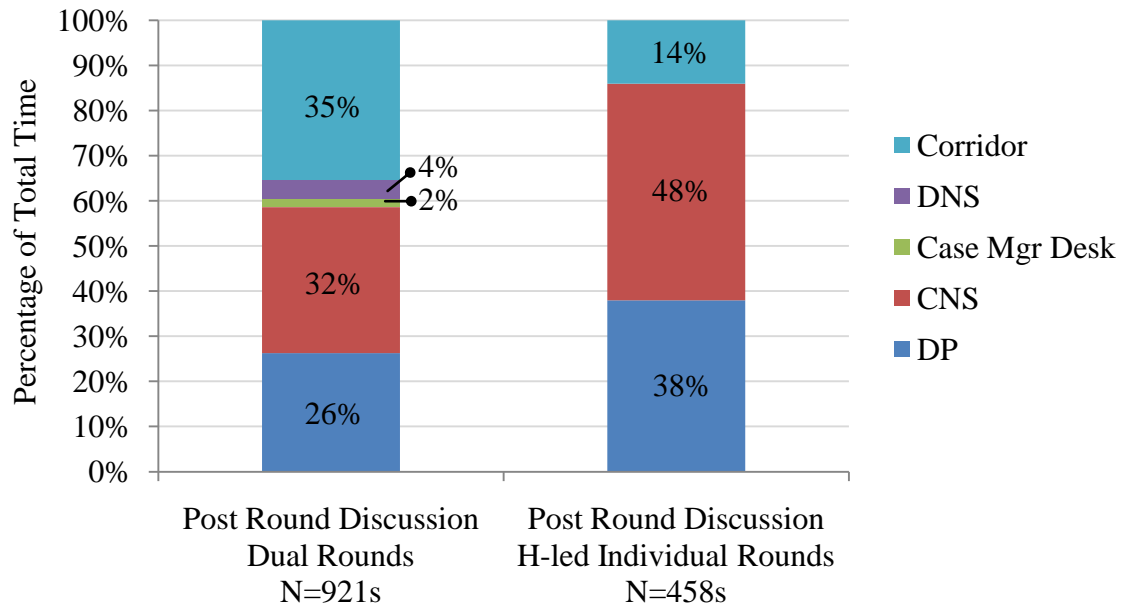


Figure 3-29: Percentage of total time of Post Round Discussion by location and round type

As a result, there is a very “active” flow to Post Round discussion after Dual Rounds (i.e. – interactions initiated while stopped in corridor and continue while walking in corridor towards Centralized Nurse Station). Figure 3-30 shows the typical path of travel by Round Type, which is anchored by the CNS.

Dual Rounds



● Start

● Stop

↔ Path of Travel

H-led Individual Rounds



● Start

● Stop

Figure 3-30: Typical route of Post Round Discussion by round type

e.) The Overall Nature of Post Round Discussion

Generally, Post Round discussions after both Dual and Hospitalist-led Individual Rounds were “Consultation” in nature (69% vs. 64%, respectively). Although Post Round Discussions after Dual Rounds were more prevalent in terms of overall occurrence, the overall nature of Post Round Discussion was similar for both. Similar patterns suggest that whether Dual or Hospitalist-led Individual Rounds occurred, there was not a significant difference in the types of issues discussed.

Table 3-9: Total time, average time, and percentage of total time of Post Round Discussion by CPT and round type

CPT	Post Round Discussion					
	Dual (N=90)			H-led Individual (N=85)		
	Total Time (s)	Ave. Time (s)	%	Total Time (s)	Ave. Time (s)	%
Social	18	9	2%	6	6	1%
Consultation	591	24.65	64%	318	28.9	70%
Information	160	8.42	17%	87	10.87	19%
Other	152	11.69	17%	47	9.4	10%
Total	921	15.87	100%	458	18.32	100%

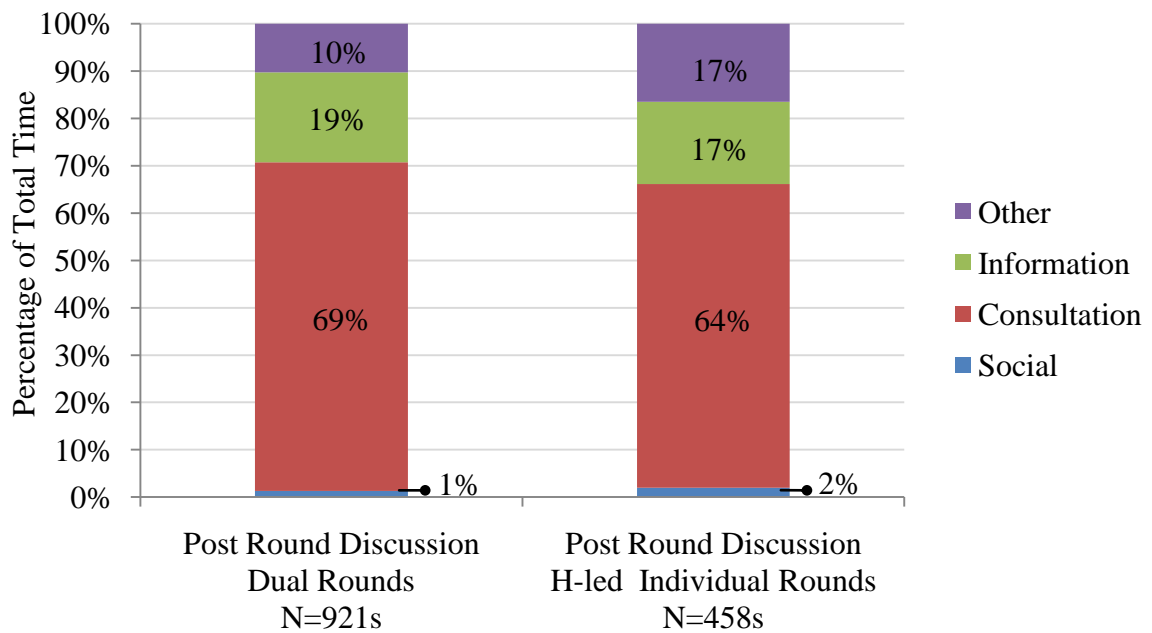


Figure 3-31: Percentage of total time of Post Round Discussion by CPT and round type

f.) Summary of Key Findings – Post Round Discussion

- Overall, Post Round discussion occurred less than half the time after both Dual and Hospitalist-led Individual Rounds (33% vs. 13% overall occurrence, respectively), but such meetings occurred significantly more often with Dual compared to Hospitalist-led Individual Rounds. When

Post Round Discussion occurred, “Consultation” CPTs were predominant for both Dual and Hospitalist-led Round types; (69% vs. 64% of total time, respectively).

- The location of Post Round Discussion changed depending on Round Type. Post Round discussion after Dual Rounds primarily occurred while in the Corridor (35% of total time versus 14% after Hospitalist-led Individual Rounds). Post Round discussion after Hospitalist-led Individual Rounds primarily occurred while stopped at the CNS (48% of total time vs. 32% after Dual Rounds).

3.5.4 Morning Meetings

A total of six Hospitalists were observed multiple times over the course of sixteen Morning Meetings. These recorded minutes did not include any data from the pilot study conducted by the researcher in order to accustom her to the CMW tool and study participants to being shadowed. Table 3-10 shows the observation time in minutes for each Hospitalist during Morning Meetings.

Morning Meetings began at approximately 9:00am, and generally lasted until no later than 10:00am. One Morning Meeting occurred during each 7am - 7pm day shift, Monday through Friday. All Morning Meetings took place in the conference room on the 4th floor Medical/Surgical Unit, which can be seen in Figure 3-32. The purpose of Morning Meeting was to briefly discuss inpatient status and coordinate care plan decisions.



Figure 3-32: View of conference room while unoccupied

Generally, the Hospitalist did not round on any patients before they attended the Morning Meeting. Rather, Hospitalist would be found briefing themselves on their patients at the DPs – going through patient’s charts and reviewing electronic medical records alone, making any notes on their patient printout list. During interviews, when asked about Morning Meeting preparation and the need for rounding beforehand, many Hospitalists explained that preparation was minimal, and rounding wasn’t possible. This is partially because there was not enough time beforehand (especially for the Hospitalist staffing the 9:00am to 9:00pm shift), and it was not necessary as patients would be rounded upon at a later time. According to one Hospitalist:

“I don’t do anything special for them...I wouldn’t have time to round, and it [the morning meeting] is really just based on what my knowledge is of the patient and what my plan is.”

Typically, the following healthcare team members attended the Morning Meeting: one Nurse Director, one to two Unit Managers, four Case Managers, one RN appointed as Charge Nurse for the day shift, two Social Workers (logged

as Allied Health), one RN Supervisor, one to two Clergy, one to two Hospitalist Administrators, one Palliative Care MD (logged as Non-Hospitalist MD), one Infection Control Officer, and 2 Administrators. Attendance ranged from approximately ten to seventeen on any given day, and the conference room often could not comfortably accommodate all in attendance.

Formal completion of the Morning Meeting was indicated by having all Hospitalists (typically three on any given day-shift) complete their morning Case Presentations to everyone, one at a time - as Hospitalists did not attend the entirety of the Morning Meeting. Once this had been sufficiently accomplished, members would disperse except for all Case Managers and Social Worker, who would stay approximately thirty minutes after the primary meeting ended to coordinate and follow up with patient care plans that strictly involved their areas of expertise.

a.) Duration of Morning Meeting

Table 3-10 shows the observation time in minutes for each Hospitalist during Morning Meetings. Average time per meeting ranged from 8.7 to 14.8 minutes. The average duration of Morning Meetings for each Hospitalist was approximately 12.1 minutes (Table 3-10).

Table 3-10: Observation data collection for Morning Meetings

Hospitalist	Morning Meetings		
	N	Total Time (min)	Ave. Time (min)
1	2	22.7	11.3
2	4	24.35	10.4
3	2	43.2	12.1
4	2	17.5	8.7
5	4	59.5	14.8
6	2	25.9	12.9
Total	N=16	193.8	12.1

Typical initiation of the Morning Meetings could begin as follows:

Hospitalist to Everyone: *“Hello everyone- how are you all doing today? (sits down) Ok, I’ve got Mary Smith in 423. She’s been in here for the past three days, and just came back positive with....She’s been eating very little....etc...”*

The Morning Meeting was used to discuss approximately 10 to 15 patients on any given day. When asked about using 12 minutes to cover many patients, one Hospitalist said:

“It’s just a summary...so I tell you about the patient, past medical history, came in with these symptoms, and I think he has ‘X’ and ‘Y’, so my plan is ‘Z’. Otherwise, it would be very long...if you go longer than that, people don’t pay attention.”

Another Hospitalist summarized why the 12 minutes was sufficient:

“It’s sufficient because all I want do is say ‘this is why the patient is here’, in case they [other morning meeting members] don’t know. Some of them [patients] may be more complicated, but the things that take the most time aren’t my clinical scenarios, it’s the social problems that incur in terms of getting them [patients] out of the hospital.”

b.) Communication Process Types (CPTs)

In examining CPTs during Morning Meetings from the Hospitalist’s perspective; “Consultation” and “Case Presentation” CPTs were the most prevalent in terms of total time (40% and 38%, respectively).

Table 3-11: Total Time, average time, and percentage of total time during Morning Meetings by CPT

CPT	Morning Meetings		
	Total Time (s)	Ave. Time (s)	%
Social	565	16.6	5%
Information	107	7.6	>1%
Consultation	4643	14.6	40%
Other	1128	16.6	10%
Case Presentation (CP)	4388	21.9	38%
Phone	345	86.2	3%
Self	427	7.23	4%
Total	11603	16.43	100%

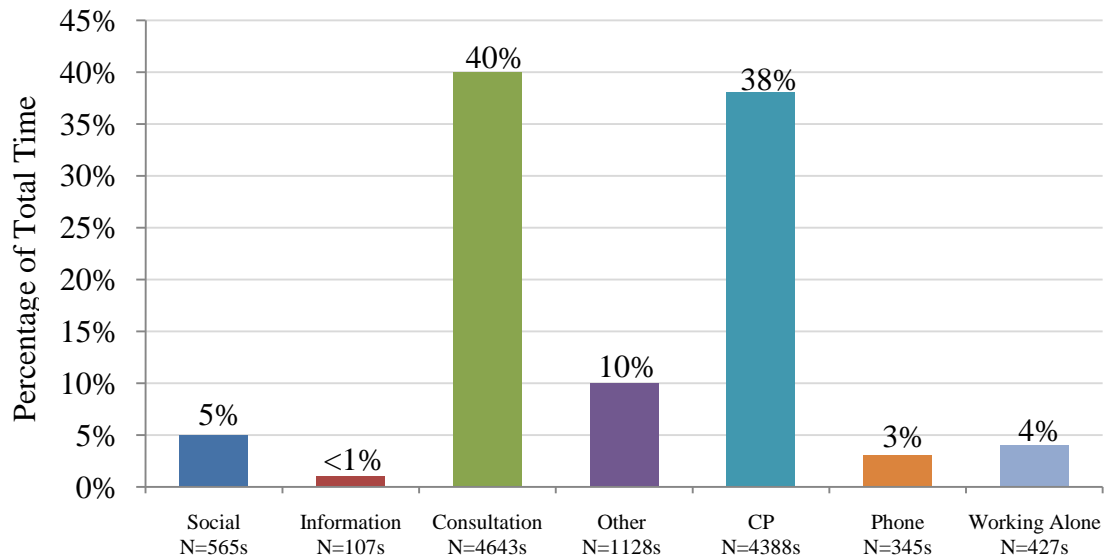


Figure 3-33: Percentage of total time during Morning Meetings by CPT

There were slight differences among Hospitalists when it came to examining CPTs and total time spent interacting during Morning Meetings. The differences among Hospitalist can be seen in Figure 3-34. The most significant range (25% to 48% of total time) occurred in “Consultation” interactions.

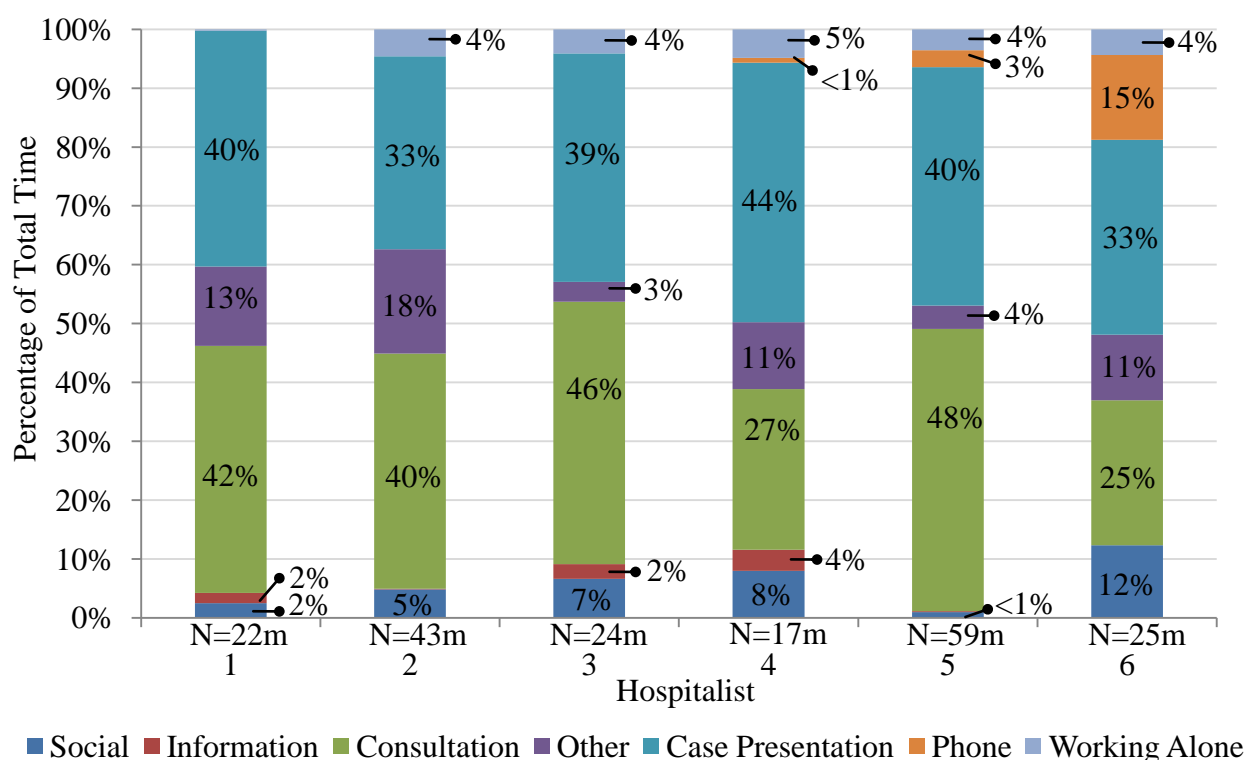


Figure 3-34: Percentage of total time during Morning Meetings by CPT and Hospitalist

c.) Role Pair

From the Hospitalist’ perspective, Hospitalists spent the most time engaging in interactions with Case Managers and Everyone (33% and 32%, respectively); whereas Hospitalists spent the least amount of time engaging in interactions with the Palliative Care MD (MD) and the Charge Nurse (RN) (4% and 5%, respectively).

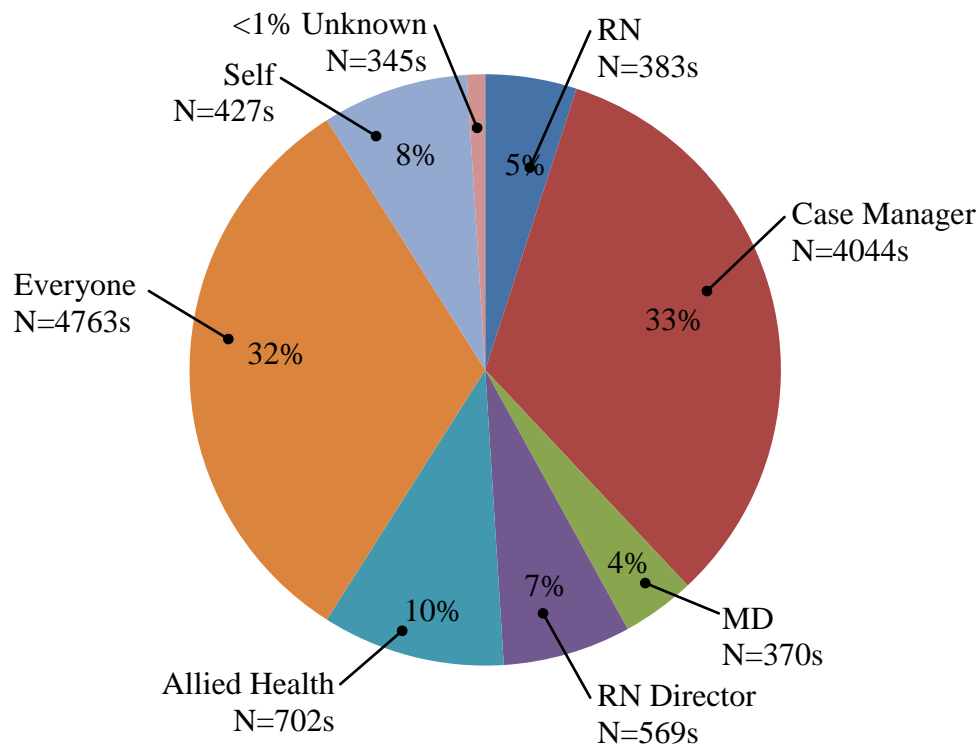


Figure 3-35: Percentage of total time during Morning Meeting by role pair

d.) CPT and Role Pair

Of the total time Hospitalists spent engaging in all types of interactions during Morning Meetings, a majority of that time was spent interacting with Case Managers. This finding did not negate the total time spent addressing Everyone rather, this data showed that when Hospitalists were interacting on a more individual level – there were significant differences among members of the Morning Meeting.

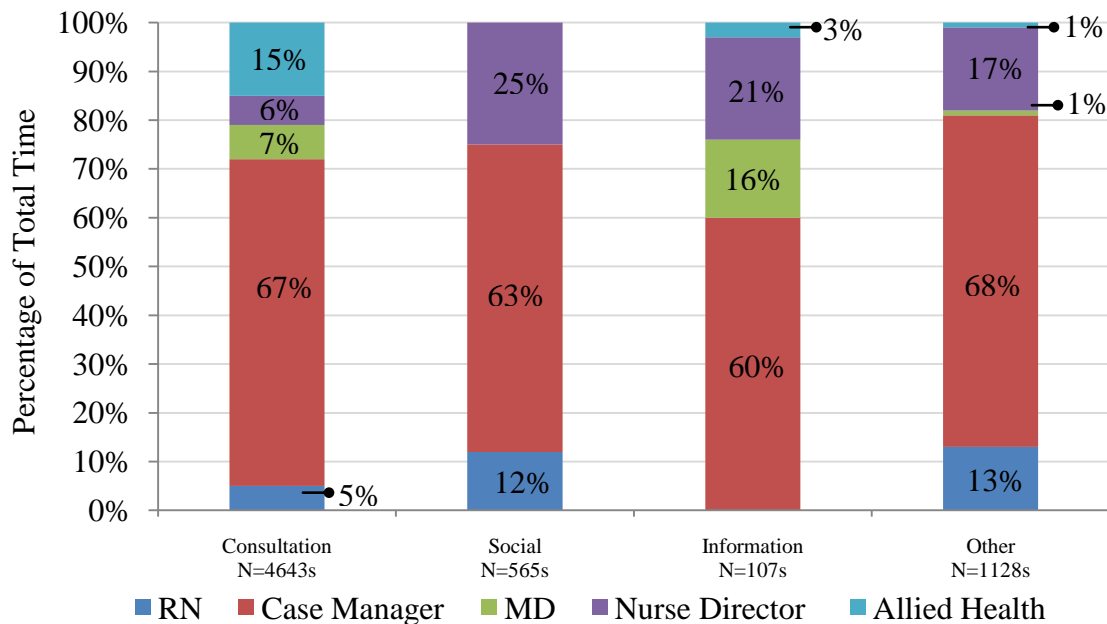


Figure 3-36: Percentage of total time during Morning Meeting by CPT and role pair

e.) Summary of Key Findings

- There is a cyclical flow between “Case Presentation” and “Consultation” during Morning Meetings, which serves as an effective means for discussing 10-15 patient cases in 12 minutes on any given day
- “Consultation” and “Case Presentation” CPTs are most prevalent during Morning Meetings, (40% and 38% of total time, respectively).
- Interactions between the Hospitalist and Case Manager are the most common (33% of total time), whereas interactions between the Hospitalist and Charge Nurse are less common (5% of total time).

3.5.5 Daily Activities

The data suggested that interactions between the Hospitalist and RN occurred during other activities outside of Pre/Post Round Discussion, Dual Rounding, and Morning Meetings. As a result, it became important to understand

where these interactions between Hospitalists, RNs, and other members of the healthcare team occurred and their overall nature during daily activities.

a.) Location

The DP served as the primary location for Hospitalist interactions and activities, representing 55% of total time. The CNS served as the primary location for RNs, representing 31% of total time. This finding aligns with the formally designated working spaces for both groups. Hospitalists and RNs did not have formally assigned workspaces within each station – as workspaces were available on a first come first serve basis. The data also showed a very dominant preference for RNs to work at the CNS versus the DNS (31% vs. 14% of total time, respectively). When working at the DNS or CNS, RNs tended to situate themselves at the pod that was closest to their assigned patients for the day.

Table 3-12: Total time, average time, and percentage of total time of all interactions for Hospitalists and RNs by location

Location	Daily Activities					
	Hospitalist			RN		
	Total Time (s)	Ave. Time (s)	%	Total Time (s)	Ave. Time (s)	%
DP	135760	83.2	55%	4903	32.2	2%
CNS	15953	29.4	7%	74161	31.7	31%
Med. Records	4494	236.5	2%	-	-	-
Conf. Room	14853	20.8	6%	-	-	-
Patient Room	42692	50.1	18%	63926	32.5	27%
Med. Room	-	-	-	18427	40.1	8%
DNS	-	-	-	34045	62.6	14%
In Transit	20697	24	9%	34080	18.4	14%
Corridor	4732	30.5	2%	6880	13.8	3%
Total	239181	50.1	100%	7801	236422	100%

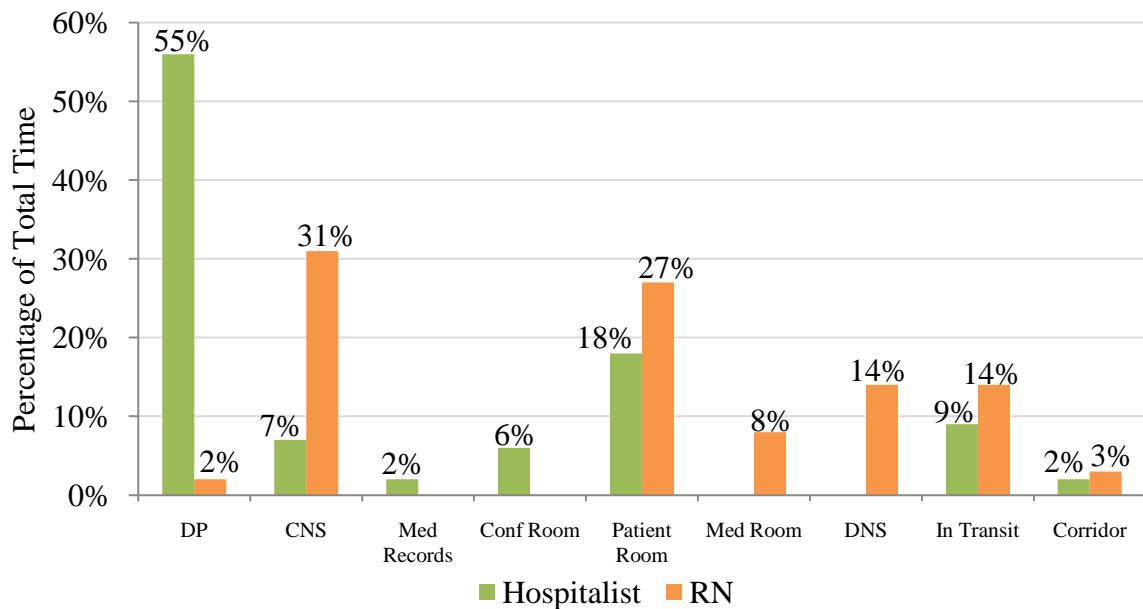


Figure 3-37: Percentage of total time by location

b.) CPT

During a typical day, about half of the workday was spent “Working Alone” for both Hospitalists and RNs (45% and 50% of total time, respectively). This finding suggested that although many healthcare members are available throughout the day, little time is spent interacting face-to-face. With respect to all face-to-face interactions involving other people, Hospitalists and RNs spent the most time interacting with Patients/Visitors (19% and 24%, respectively).

Although less prevalent overall, face-to-face interactions among members of the healthcare team were important to consider more in-depth in light of different types of communication processes. Among Hospitalists, “Consultation” CPTs were the most common – representing 10% of total time. Among RNs, “Information” CPTs were the most common – representing 7% of total time.

Table 3-13: Total time, average time, and percentage of total time by CPT

CPT	Daily Activities					
	Hospitalist			RN		
	Total Time (s)	Ave. Time (s)	%	Total Time (s)	Ave. Time (s)	%
Patient Interaction	42697	80.7	19%	47650	35.4	24%
Consultation	21392	25.3	10%	9841	25.6	5%
Social	3738	18.2	2%	8641	26.4	4%
Information	3566	10.4	2%	14308	15.5	7%
Other	7142	18.2	3%	7762	16.5	4%
Working Alone	99474	86.4	45%	102368	43.7	50%
Phone	37110	121.2	17%	12599	54.3	6%
Case Presentation (CP)	4388	21.9	2%	-	-	-
Total	219489	55.3	100%	203169	33.7	100%

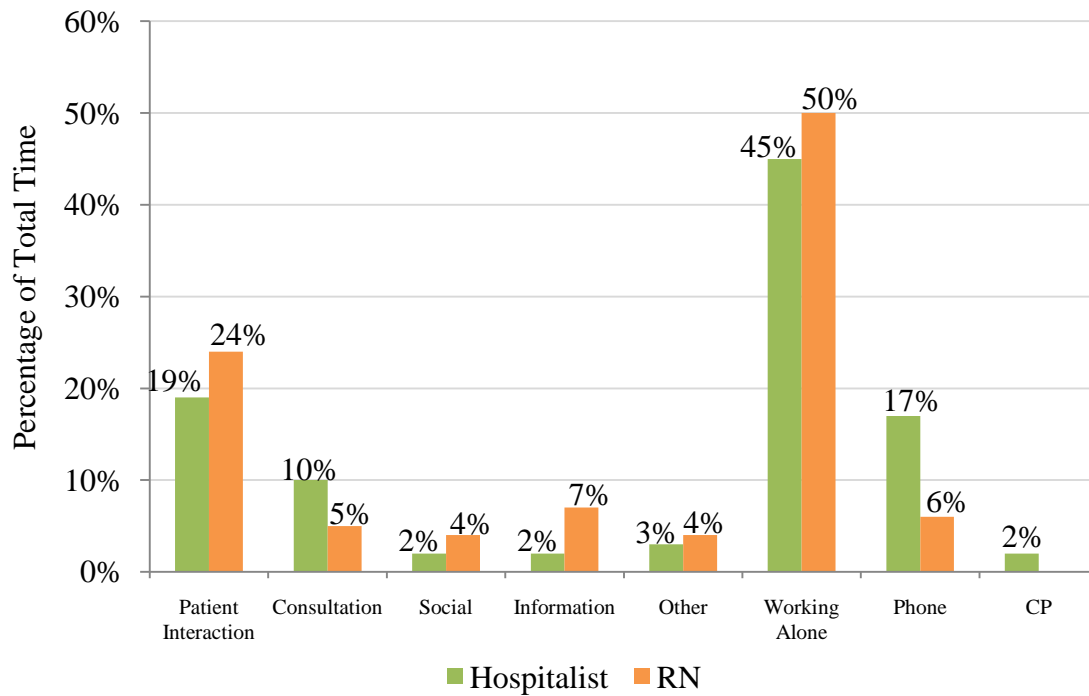


Figure 3-38: Percentage of total time by CPT

c.) Role Pair

For both Hospitalists and RNs, a majority of time was spent alone, or interacting with “No One”, which was represented as “Self” in the role pair data (50% and 57%, respectively). This could include time spent alone while “In Transit” and time spent “Working Alone”. With respect to all face-to-face interactions involving other people, Hospitalists and RNs spent the greatest amount of time interacting with Patients/Visitors (18% and 20%, respectively). With respect to all face-to-face interactions involving other members of the healthcare team, Hospitalists spent the most time interacting with fellow Hospitalist/MDs (6%), and RNs spent the most time interacting with fellow RNs (9%).

Table 3-14: Total time, average time, and percentage of total time by role pair

Role Pair	Daily Activities					
	Hospitalist			RN		
	Total Time (s)	Ave. Time (s)	%	Total Time (s)	Ave. Time (s)	%
Patient/Visitor	42679	80.6	18%	47650	35.4	20%
RN	11349	15.4	5%	21727	21.8	9%
Nurse Aide	525	25	>1%	6186	15	3%
Ward Clerk	441	9.5	>1%	3606	13.9	2%
Case Manager	5142	17	2%	660	15	>1%
Hospitalist/MD	15101	30.1	6%	6043	22.2	3%
Allied Health	2905	19.4	1%	2330	19.9	>1%
Self	119166	61.1	50%	135621	32.8	57%
Unknown	37110	121.2	16%	12599	54.3	5%
ALL – Morning Meeting	4763	12	2%	-	-	-
Total	239181	50.1	100%	236422	30.3	100%

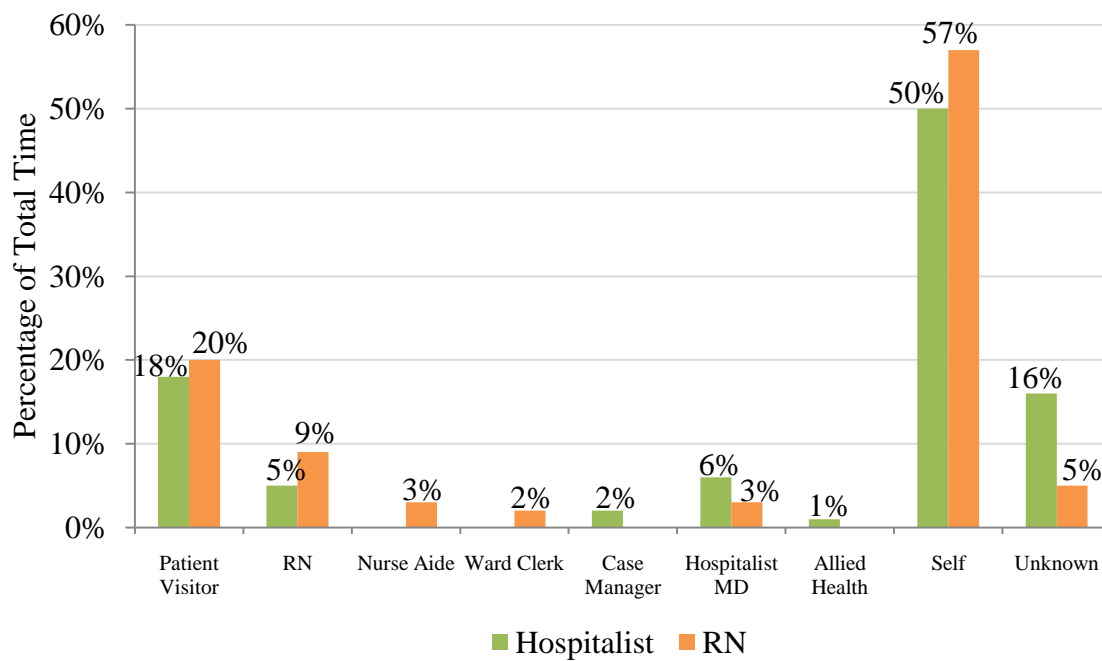


Figure 3-39: Percentage of total time by role pair

d.) CPT and Role Pair

Hospitalists spend the most time engaging in “Consultation” (30%), “Social” (50%) and “Other” (45%) types of interactions with other Hospitalists/MDs, whereas RNs spend the most time engaging in “Consultation” (46%), “Social” (43%), “Information” (60%), and “Other” (63%) types of interactions with other RNs. As a result, a dominant same role preference exists for most types of interactions among the two groups.

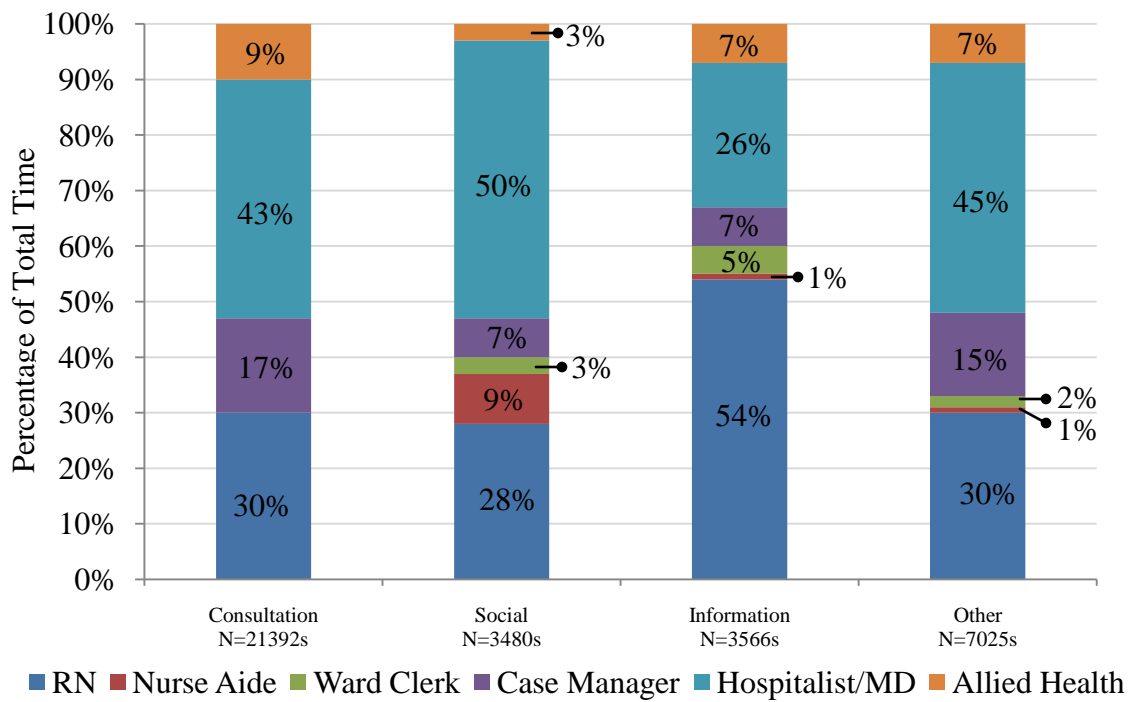


Figure 3-40: Percentage of Total Time by CPT and role pair –Hospitalists

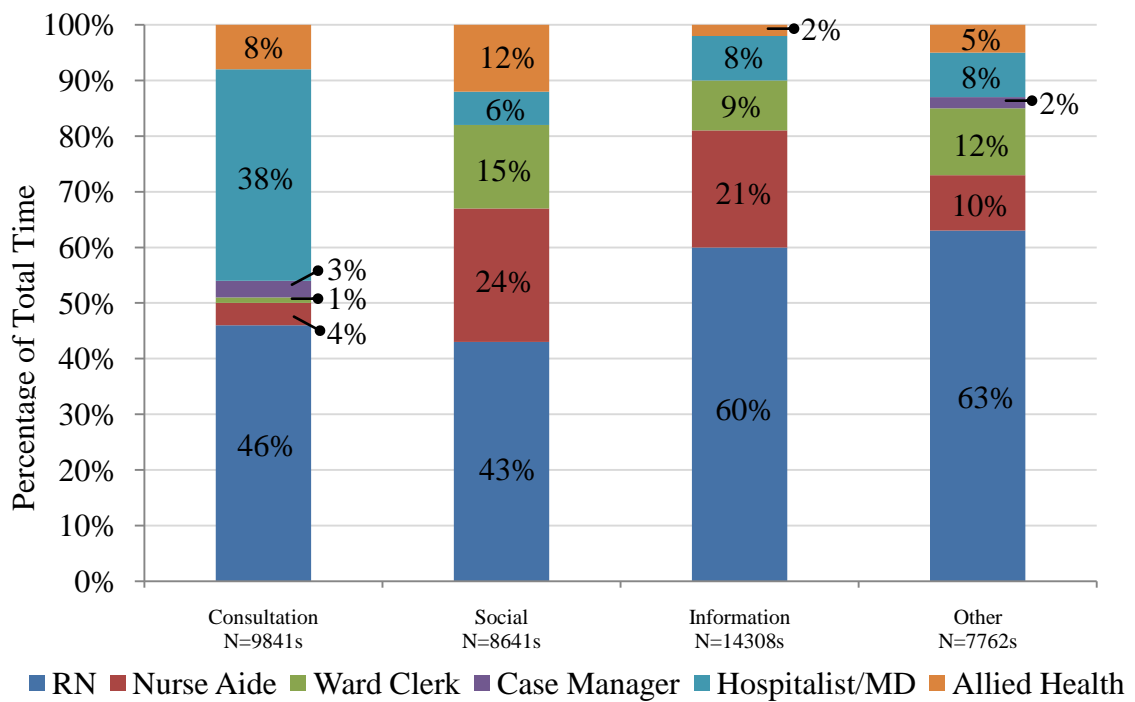


Figure 3-41: Percentage of Total Time by CPT and role pair - RNs

Table 3-15: Total time, average time, and percentage of total time of by CPT and role pair

	Hospitalist			RN		
	Consultation CPT					
Role Pair	Total Time (s)	Ave. Time (s)	%	Total Time (s)	Ave. Time (s)	%
RN	6355	19.6	30%	4523	23.8	46%
Nurse Aide	68	13.6	>1%	371	12.3	4%
Ward Clerk	35	17.5	>1%	119	19.8	1%
Case Manager	3566	17.1	17%	306	23.5	3%
Hospitalist/MD	9277	43.5	43%	3773	34.3	38%
Allied Health	2091	22.2	10%	749	22	8%
Total	21392	25.3	100%	9841	25.6	100%
	Social CPT					
Role Pair	Total Time (s)	Ave. Time (s)	%	Total Time (s)	Ave. Time (s)	%
RN	985	14.7	28%	3714	28.7	43%
Nurse Aide	311	38.8	9%	2057	24.7	24%
Ward Clerk	89	11.1	3%	1292	24.3	15%
Case Manager	251	17.9	7%	73	12.1	>1%
Hospitalist/MD	1749	21.3	50%	506	18.7	6%
Allied Health	95	10.5	3%	999	34.4	12%
Total	3480	18.5	100%	8641	26.4	100%
	Information CPT					
Role Pair	Total Time (s)	Ave. Time (s)	%	Total Time (s)	Ave. Time (s)	%
RN	1916	9.1	54%	8575	20.6	60%
Nurse Aide	38	9.5	1%	2970	12.7	21%
Ward Clerk	184	8.7	5%	1234	9.9	9%
Case Manager	245	10.2	7%	136	9.7	>1%
Hospitalist/MD	940	14	26%	1157	11.2	8%
Allied Health	243	14.2	7%	236	8.4	2%
Total	3566	10.4	100%	14308	15.5	100%
	Other CPT					
Role Pair	Total Time (s)	Ave. Time (s)	%	Total Time (s)	Ave. Time (s)	%
RN	2093	15.2	30%	4915	18.8	63%
Nurse Aide	108	27	1%	788	12.1	10%
Ward Clerk	133	8.8	2%	961	12.8	12%
Case Manager	1080	19.6	15%	145	13.1	2%
Hospitalist/MD	3135	22.5	45%	607	19.5	8%
Allied Health	476	16.4	7%	346	13.3	5%
Total	7025	18.5	100%	7762	16.5	100%

e.) CPT and Location

When examining CPTs by location, Hospitalists spend the most time engaging in “Consultation”, “Social”, “Information”, “Other”, and “Phone”, as well as while “Working Alone” at the DP. RNs spend the most time engaging in “Consultation”, “Social”, “Other”, and “Phone”, as well as while “Working Alone” while at the CNS.

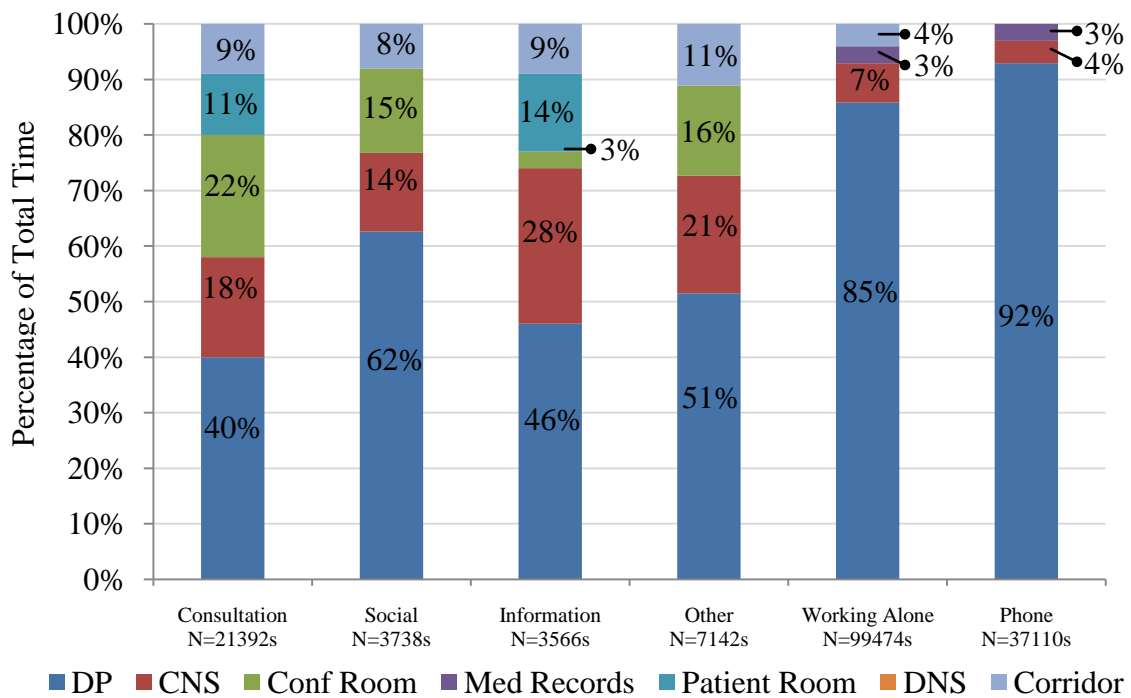


Figure 3-42: Percentage of total time by CPT and location - Hospitalists

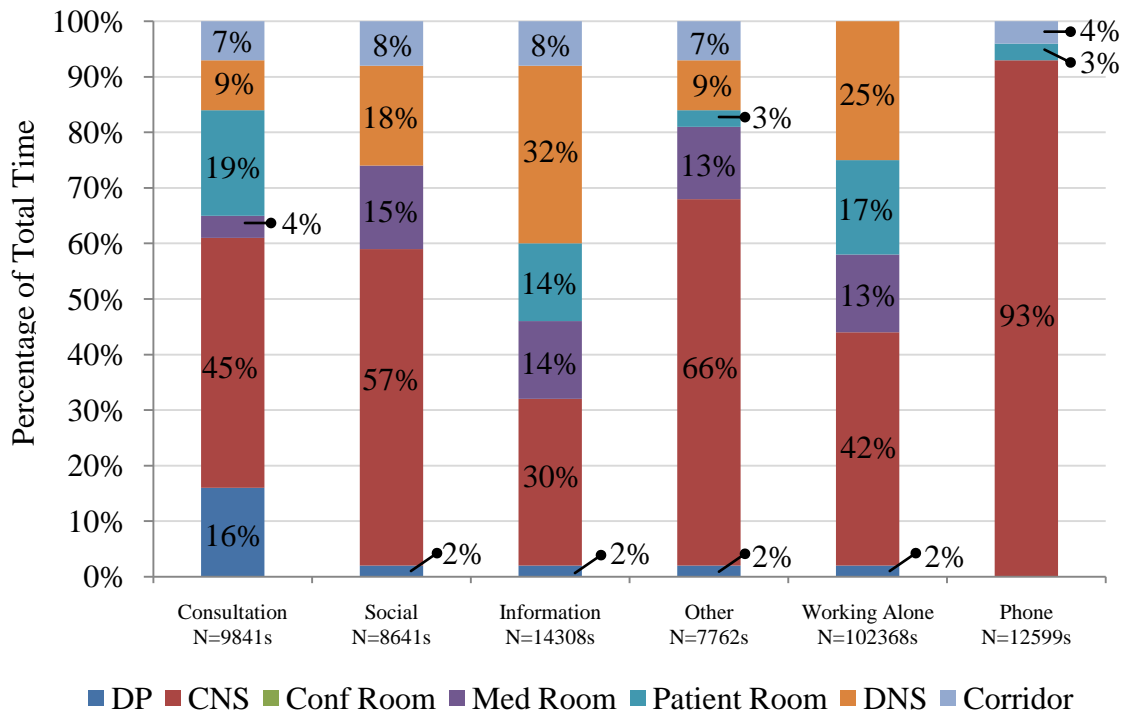


Figure 3-43: Percentage of total time by CPT and location - RNs

Table 3-16: Total time, average time, and percentage of total time of “Consultation” and “Social” CPTs by location

Location	Hospitalist			RN		
	Consultation CPT					
	Total Time (s)	Ave. Time (s)	%	Total Time (s)	Ave. Time (s)	%
DP	8517	39.2	40%	1603	28.6	16%
CNS	3806	32.2	18%	4383	24.1	45%
Med. Records	146	73	<1%	-	-	-
Conf. Room	4681	14.5	22%	-	-	-
Patient Room	2371	21.7	11%	1889	37.7	19%
Med. Room	-	-	-	414	27.6	4%
DNS	-	-	-	932	25.8	9%
Corridor	1489	28.6	9%	620		7%
Total	21392	50.4	100%	9841	25.6	100%
	Social CPT					
Location	Total Time (s)	Ave. Time (s)	%	Total Time (s)	Ave. Time (s)	%
DP	2326	20.7	62%	189	23.6	2%
CNS	507	15.8	14%	4939	21.9	57%
Med. Records	15	15	<1%	-	-	-
Conf. Room	565	16.6	15%	-	-	-
Patient Room	10	5	<1%	18	4.5	<1%
Med. Room	-	-	-	1290	36.8	15%
DNS	-	-	-	1552	53.5	18%
Corridor	315	13.1	8%	653	25.1	8%
Total	3738	18.2	100%	8641	26.4	100%

Table 3-17: Total time, average time, and percentage of total time of “Information” and “Other” CPTs by location

Location	Hospitalist			RN		
	Information CPT					
	Total Time (s)	Ave. Time (s)	%	Total Time (s)	Ave. Time (s)	%
DP	1654	12.9	46%	270	9.3	2%
CNS	1008	9.2	28%	4358	10.5	30%
Med. Records	-	-	-	-	-	-
Conf. Room	107	7.6	3%	-	-	-
Patient Room	491	7.9	14%	1978	21.7	14%
Med. Room	-	-	-	1944	21.8	14%
DNS	-	-	-	4646	25.8	32%
Corridor	306	10.5	9%	1112	9.5	8%
Total	3566	10.4	100%	14308	15.5	100%
Location	Other CPT					
	Total Time (s)	Ave. Time (s)	%	Total Time (s)	Ave. Time (s)	%
	Total Time (s)	Ave. Time (s)	%	Total Time (s)	Ave. Time (s)	%
DP	3646	21.5	51%	149	10.6	2%
CNS	1494	17.5	21%	5115	16.5	66%
Med. Records	71	23.6	<1%	-	-	-
Conf. Room	1128	14.6	16%	-	-	-
Patient Room	68	5.6	<1%	224	12.4	3%
Med. Room	-	-	-	1034	22.4	13%
DNS	-	-	-	665	18.4	9%
Corridor	735	16.3	11%	575	12.7	7%
Total	7142	18.2	100%	7762	16.5	100%

Table 3-18: Total time, average time, and percentage of total time of “Phone” and “Working Alone” CPTs by location

	Hospitalist			RN		
	Phone CPT					
Location	Total Time (s)	Ave. Time (s)	%	Total Time (s)	Ave. Time (s)	%
DP	34299	130.4	92%	83	20.7	<1%
CNS	1495	46.7	4%	11680	58.4	93%
Med. Records	839	279.6	3%	-	-	-
Conf. Room	345	86.2	<1%	-	-	-
Patient Room	132	33	<1%	338	84.5	3%
Med. Room	-	-	-	-	-	-
DNS	-	-	-	-	-	-
Corridor	-	-	-	498	35.5	4%
Total	37110	121.2	100%	12599	54.3	100%
	Working Alone CPT					
Location	Total Time (s)	Ave. Time (s)	%	Total Time (s)	Ave. Time (s)	%
DP	84758	115.4	85%	2558	63.9	2%
CNS	6786	42.6	7%	42896	43.9	42%
Med. Records	3423	342.3	3%	-	-	-
Conf. Room	427	7.2	<1%	-	-	-
Patient Room	3735	21.5	4%	17163	21.6	17%
Med. Room	-	-	-	13745	50.1	13%
DNS	-	-	-	25925	102.8	25%
Corridor	345	21.5	<1%	81	13.5	<1%
Total	99474	86.4	100%	102368	59.4	100%

f.) Summary of Key Findings

- Hospitalists spent the most time (55% of total time) at the DP, which served as the primary location for all CPTs among Hospitalists, whereas RNs spent the most time (31% of total time) at the CNS, which also served as the primary location for all CPTs among RNs.
- Over the course of the day, Hospitalists and RNs spent the most time interacting with “No One” (50% and 57%, respectively).

- When interacting with other healthcare team members, Hospitalist spent the most time interacting with fellow Hospitalist/MDs (6%), and RNs spent the most time interacting with fellow RNs (9%).
- Of all interactions with other healthcare team members, Hospitalists spent the most time engaging in “Consultation” interactions (10%), whereas RNs spent the most time engaging in “Information” interactions (7%).

4 Discussion and Conclusion

4.1 Rounding Type and Patient Outcome

This section addresses the first research question: are there significant differences in medical and administrative outcomes associated with Dual versus Hospitalist-led Individual Rounding? We hypothesized that Dual Rounding would be associated with lower overall cost of stay, overall length of stay, and complications in care; and higher patient satisfaction scores. Alongside interviews and observation, further investigation revealed a significant threat to the reliability of the patient outcome data set.

a.) Patient Acuity & Complications in Care

After much consideration, the primary investigator and researcher concluded that the inability to control for patient acuity skewed the data so that it could not be analyzed fairly or adequately. This was primarily attributed to the fact that patient acuity levels were not collected and therefore not controlled for during analysis. Typically, when a more acute patient is admitted to the hospital (a patient having one or more chronic illness or injury, with severe exacerbation or progression), the overall cost of stay and overall length of stay tend to be higher when compared with patients who are admitted with less difficult diagnoses (a patient having one self-limited or minor problem). Current research suggests factors that correlate to patient acuity and complexity most commonly include: admission source, length of stay, patient age, and charges (Bharucha & Dixon, 2009). Future research should consider how patient acuity can be accounted for and recorded in hospital data platforms so they can be accurately controlled for

and integrated into statistical models for further data analysis. Additionally, more attention should be paid to the interrelationships between patient complexity, acuity, and their subsequent impact on complications in care.

b.) “Dual Rounded” Patient Threshold

At the end of this study, it was concluded that the “Dual Rounded” patient threshold (being any patient receiving a dual round at least once during a length of stay no greater than seven days including the day of admission), was not exclusive enough to make a significant impact on patient outcomes; in that, a patient receiving only one dual round during a length of stay of seven days would not necessarily translate into any significant changes.

c.) Evaluating the Implementation the Dual Rounding Strategy

Although the Dual Rounding strategy was implemented under the assumption that all Hospitalists would Dual Round on all patients during the day shift, this was not the case because oftentimes Hospitalists and RNs were too busy, forgot, or only considered Dual Rounding for complex patient cases.

When asked about reasons why one would Dual Round on a patient, one Hospitalist stated:

“I think it depends on...the acuity of the patient. If it [the patient] looks like it’s kind of a simple admission to me, I mean, it’s not a complicated issue, I’ll just read the nurse’s note. But, if there’s something that is brought to my attention...or something that I just say, ‘Something doesn’t look right here,’ then I will ask a nurse. But I mean, is it for every patient every day? I would say probably not.”

As stated earlier, interviews also confirmed that often “Dual Rounded” patients would not get recorded as such, therefore many patients receiving a Dual

Round during their stay were actually in the Individual Round condition by default. RNs often forgot to input the rounding order indicating that a patient had been Dual Rounded upon. As a result, an unknown number of patients who *were* Dual Rounded were not recorded. This could be partially attributed to the newness of the strategy or an increase in job responsibilities. Many RNs were responsible for documenting a considerable amount of information throughout the day. Inputting the rounding order could have been easy to forget because this new process had not been part of the RNs typical routine. Forgetfulness was often cited as one of the most significant disadvantages of the Dual Rounding strategy. A simple, bright bracelet worn by the RNs could serve as an effective means for reminding the RNs to input the order.

Additionally, the number of “Dual Rounded” patients significantly decreased from December 2010 to January 2011 after the observation period ended in December 2010. This finding suggests that when the researcher was present on the 4th floor unit during the observation period (Sep. 2010 – Dec. 2010) the RNs were more likely to remember to input the rounding order. This association suggests that inputting the rounding order had not yet become part of the RNs daily routine, and observer bias was present. During interviews, this was also verbalized as one RN commented:

“Sometimes I forget, even when it happens. But, when you were here, it was like – oh yeah, the rounding lady is here, so I should do this.”

d.) Solidifying the Strategy Using Change Management

These findings significantly contribute to the skewed nature of the patient outcome data. However, it is important to note that for many organizations, acceptance and adoption of new work processes takes time. Current research on organizational behavior in healthcare setting suggests that because hospitals and

staff members are part of such a complex entity, implementing changes of any kind can be difficult (Ramanujam & Rousseau, 2006; Borkowski, 2005). Additionally, resistance and lack of commitment to change efforts have been cited as some of the risks and difficulties involved in implementing change efforts.

Implementation of the Dual Rounding Strategy could have benefited by using a change management framework. According to Gill (2003), successful change efforts not only require good management, but effective leadership so changes will be appropriately introduced and sustained. Change must also be well planned, organized, directed, and controlled. In this study, the Dual Rounding Strategy was introduced, but not fully sustained.

Specifically, if the introduction of the Dual Rounding Strategy had been more formalized by leadership staff from the beginning the initiative could have been better sustained. Formalized training sessions with role playing could have benefited both Hospitalists and RNs by clarifying their roles during Rounding Activities. Training could have also further clarified the expectations of what was supposed to occur during Dual Rounding activities, and why it was important. In many ways, this training could have improved Hospitalist and RN “buy in” by establishing a sense of urgency and motivation for improving patient care and collaboration between Hospitalists and RN. This type of training could have also implied a stronger sense of duty to RNs, which could have resulted in more effective rounding order entry.

After formal training had been conducted and initial introduction of the Dual Rounding Strategy had taken place, it would have been more appropriate to

have collected both observation and patient outcome data one to two years after initiation, and for greater durations of time. This study took place approximately six months after implementation, which was not enough time for Hospitalists and RNs to consider the strategy part of their daily routine.

This extended time frame would have allowed for the collection of patient outcome data after a change effort had been successfully implemented *and* sustained. A longer data collection period would have allowed for more patient outcome data to be collected, and therefore a higher “Dual Round” threshold could have been achieved. This study considered any patient for the Dual Round condition if they had been Dual Rounded at least once over a length of stay no greater than seven days including the day of admission. These patient parameters were too inclusive. Future studies should create patient parameters that are more exclusive to include higher thresholds for number of dual rounds, and lower thresholds for length of stay.

But, it must be noted that effective introduction, training, education, communication, and rounding order entry would have to be achieved before any of these change efforts can be sustained. Alongside these considerations, Gill (2003) proposed that vision, strategy, and the development of shared values that contribute to a culture of shared goals and vision can also help leaders achieve effective change efforts.

4.2 Rounding Type and Communication Processes

This section addresses research questions having to do with communication processes and rounding type. We hypothesized that Dual

Rounding would be associated with longer duration when compared to Hospitalist-led Individual Rounding, and that more time would be dedicated to discussion between the Hospitalists and RNs during Dual Rounding activities. Although Dual Rounds were slightly longer than Hospitalist-led Individual Rounds, there were only slight, but meaningful differences between round types. Therefore, the hypotheses were supported. When the RN was present, the overall nature of Dual Rounds entailed four times as much “Consultation” interactions between the RN and MD when compared to Hospitalist-led Individual Rounds (4% vs. 1% of total time, respectively).

However, it is important to note that the average duration of patient interactions were approximately twice as long during Hospitalist-led Individual Rounds than during Dual Rounds (91.9 seconds vs. 54.6 seconds, respectively). Interviews revealed that the presence of the RN helped keep the round focused, which suggests that longer average duration could be partially attributed to the Hospitalist being alone, and less focused during discussions with the patient.

a.) Factors that Influence RN Involvement in Dual Rounding Activities

Minimal RN involvement during Dual Rounding activities was primarily due to the RN’s comfort level with the Hospitalist, which was generally impacted by the personality of the Hospitalist and the length of the RNs experience working with that particular Hospitalist. As one RN stated:

“There are some doctors that don’t even look at you... like you’re not in the room and there are some that kind of glance [at you] and go, ‘Do you have anything to add?’ I do different things depending on the different doctor and their different style.”

This finding is interesting to consider as it relates to the Dual Round serving as a setting for relationship-building activities between the Hospitalist and the RN, specifically. It was found that although minimal interactions occurred, trust building occurred during Dual Rounding when one could observe how the Hospitalist or RN interacted with the patient, responded to the patient's cares and concerns, and/or responded to one another while *in front of* the patient. Once comfort levels and trust are established, social relationships could subsequently follow.

Additionally, ambiguity in soliciting and giving input during Dual Rounds also impacted whether RNs would speak up, especially as it related to knowledge sharing and identifying with the patient's perspective. Many RNs demonstrated discretion in offering information and knowledge because they did not want to tell the Hospitalists something they already knew, or take away from the patient's time with their doctor. As a few RNs stated:

"I think unless I have an issue in the room, I won't say anything ... The hard part is trying to make sure that you're not telling them something they already know."

"I don't talk too much. I bring stuff up that I think got forgotten or overlooked, or if there's a question I can answer, I'll answer it. But for the most part, I feel like if I was getting my 'X' amount of minutes with my doctor every 24 hours, I'd be irritated if somebody interrupted me...I really just want to be there as a facilitator and to hear, and to know exactly what's going on without interrupting...it's not about me."

However, in certain cases RNs expressed the need to speak up as patient advocates. Oftentimes, RNs would speak up when a Hospitalist was not effectively communicating with the patient and/or family. Both Hospitalists and RNs noted that Dual Rounding activities benefitted the patient because the RN

was there to clarify patient care plan decisions, procedures, etc., and was better informed for answering questions throughout the day. As one Hospitalist put it:

“Sometimes when you say something to the patient and the family and they understand it in a different way...When you have the nurse there, she understands what you’re trying to say, so she can go through the day saying, ‘That’s not what the doctor meant’...etc...”

Similarly, RNs expressed similar insight into the importance of speaking up for the sake of the patient, and the importance for communicating in layman’s terms:

“when we’re there, we can tell when a patient doesn’t understand, so we’re there to interject with the layman’s terms, which kind of hints to them [hospitalists] ‘Hey, slow down...tell them something they can understand.’ And if they don’t want to, they can say their big jargon-filled speck and we can stay back and interpret that for the patient later on.”

“You have to try not to talk in medical terms. I see a lot of nurses and doctors who don’t do that in front of patients... A lot of people don’t understand that patients can’t understand that...we need to talk in layman’s terms so everyone understands.”

b.) Listening & Leading Roles during Dual Rounding Activities

Most often, RNs took on a “listening” role during Dual Rounding activities. Hospitalists, on the other hand, took on a role of leadership, actively engaging with the patient during most of the Dual and Hospitalist-led Individual Rounds. This finding aligns with role expectations among both Hospitalists and RNs at CMC. When asked about the roles of the Hospitalist and the RN during Dual Rounding Activities, some RNs responded:

“It’s just a matter of having another body being present in the room to hear what they’re [the doctors] are saying to then carry on those actions or activities.”

“They [hospitalists] have a lot more people on their mind, and their decisions are a lot more serious. We help implement, and we help suggest, but they are the ones that are responsible.”

Similarly, a Hospitalist stated:

“Physicians feel that they are leading the pack. So, you have the team, but we are leading. So, I want to listen to the opinions of others, and I like to hear what they [RNs] have to say because they spend a lot more time with the patient...but in the end, it's my plan that's going to go forward.”

Research by Busby and Gilchrist (1992) found that when examining communication during MDRs, rounds were dominated by the physician and other healthcare professionals had little involvement, which is consistent with findings of this study. Atwal and Caldwell (2005) suggest that the dominating nature of the physician during rounding activities presents an unfortunate disconnect, as multi-disciplinary interactions have been cited as an important component of decision making. Although it appears that an unfortunate disconnect exists, it is important to acknowledge the benefits of listening behaviors. In this study, listening was found to be one of the key characteristics of good team members. As a result, more attention should be paid to the benefits of both active and passive roles during rounding activities. In light of this finding, it is important to consider how active listening could be considered part of “good” communication behaviors.

Additionally, the direction of communication could be considered, as this study found that unless the Hospitalist solicited input or the RN was “known for” speaking up, Dual Rounds were generally dominated by the Hospitalist. Generally, RNs would only speak up when spoken to, and Hospitalist was unsure about whether it was their responsibility for soliciting input during the round.

Specifically, research by Manias and Street (2001) suggests that a formal invitation on behalf of a physician via direct questioning to the RN creates a ‘space to speak’ (Manias & Street, 2001). This verbal invitation during Dual Rounding activities could help meet Hospitalists and RN’s communication expectations, and in turn, improve nurse-doctor interactions (Apker et al., 2005) and patient outcome (Aiken, Smith, & Lake, 1994).

While engaging in either “active engagement” or “active listening” roles, it was found that both Hospitalists and RN perceived the Dual Rounds as a beneficial activity, even when there was minimal interaction. However, clarification in role expectations for soliciting and giving input could help improve communication and collaboration during Dual Rounding activities. This is especially important since rounding is considered a forum for communication between healthcare team members, and provides ample opportunity for enhancing quality of care as well as improving decision making processes for better patient outcomes.

As stated earlier, expectations and benefits from the Dual Rounding Strategy could have been clearly defined using change managements strategies. To effectively introduce and sustain change efforts, formal training and role playing could have been employed to better define what constitutes a “Dual Round” between a Hospitalist and an RN, what is expected before, during, and after a Dual Round takes place, and why the Dual Round is considered important to the organization, the unit, the healthcare team, and the patient. The lack of formal training, role playing, and in-depth discussion was something that was

somewhat overlooked at the beginning of implementation. It is clear that change management strategies are important to consider so that patient care activities, discussions, and relationship building opportunities are not based upon unstated assumptions.

4.3 Pre & Post Round Discussions

This section addresses research questions surrounding Pre/Post Round Discussions. We hypothesized that Dual Rounding would be associated with higher frequencies of Pre/Post Round discussion; especially discussions involving “Consultation” interactions, and that such discussions were beneficial. Using Donabedian’s Structure Process Outcome model, we examined Pre Round Discussion as a means to gather and assemble information to prepare for a round, and Post Round Discussion as a means to coordinate and execute care plans based on decisions made during the round (Donabedian, 1966).

Although Pre/Post Round Discussion was relatively infrequent for both round types, it was generally acknowledged that Pre/Post Round Discussion could be beneficial in all circumstances, but was only necessary in select patient circumstances. Specifically, when the patient was particularly difficult e.g., a patient leaving the room to smoke outside but claiming they are not ready to leave the hospital), or if the patient’s case was particularly complex (e.g., co-morbidities, simultaneous treatments, or unknown condition, etc...). Pre/Post Round Discussion was beneficial for both Hospitalists and RNs because this interaction either prepared them before the round, or was sufficient for wrapping up on issues that were not discussed in front of patients. Additionally, in certain

circumstances before and after Dual Rounding, Pre/Post Round Discussion also served as a forum for social interactions between Hospitalist and RN. As a result, it is important to consider Pre/Post Round Discussions as opportunities for relationship and trust building between Hospitalist and RN

a.) Creating Opportunities for Trust Building

Both Hospitalists and RNs indicated that when the patient had a very straightforward case, then Pre/Post Round Discussion was not necessary as they expressed faith in one another in knowing what to do next. This was interesting because in some cases a lack of Pre/Post Round Discussion provided opportunities for trust building on behalf of both care providers. According to one Hospitalist:

“After dual rounds, when we walk out of the room together, sometimes we just look at each other and we know what the plan is and walk away.”

Similarly, on RN commented:

“If it’s a fairly straightforward case, there’s really no need for pre and post round discussion...I know how to take care of them, and I know how the doctors will write the orders.”

In many ways, this showed that trust building occurred via competence, in proving oneself by knowledge and actions rather than words. This type of “unspoken” trust building was reiterated when asked about trust in the workplace during interviews. According to several Hospitalists:

“Trust is a two-way street in the sense that I have to have faith that the nurse is giving me correct information and will really carry out appropriate instructions for care and they have to trust in me that I know what I’m doing.”

“You want someone that’s knowledgeable and someone whose judgment you trust. By *showing me* that you have a certain level of medical knowledge and that you do have cares and concerns about your patients...that builds trust and rapport, and when I know where they are coming from, I can rely on their judgment.”

As one RN stated:

“If we are helping watch their [hospitalists] back and consistently checking labs and reporting back on abnormalities and such, they appreciate it. They can feel that the patient is safe with you there and they know that they can trust you, especially if they know that you are helping them out *without being told*.”

Knowledge-based trusting behavior is said to develop over time as one accumulates trust-relevant knowledge through experience with the other person (Holmes, 1991; Lewicki & Bunker, 1995). According to Lewicki and Bunker (1995), at the beginning of a relationship, trust is based on institutional structures, and as time goes on, trust becomes based on knowledge and history with the other person. Research surrounding MD and RN relationship-building suggest that competence is essential for trust building and collaboration (Schmalenberg, et al. 2005). Additionally, the trusting relationship between the MD and RN has also been cited as one means for RN empowerment and autonomy (Kramer & Schmalenberg, 2004; Zwarenstein & Reeves, 2002). It is important to consider RN autonomy from the patient’s perspective, as RN autonomy has been considered essential for quality patient care (Schmalenberg, et. al., 2005). Although Pre/Post Round Discussion did not occur as frequently as anticipated, the absence of such discussions may actually indicate, build, and convey trust, which is critical to the development of effective collaboration among Hospitalist and RNs specifically.

4.4 Morning Meetings and the Link to Rounding Activities

Morning Meetings were observed to gain a greater understanding of the primary CPTs used by Hospitalist to discuss patient status information.

We hypothesized that Morning Meetings would be associated with high levels of “Consultation” interactions in terms of percentage of total time, especially between Case Managers and Charge Nurses, and there would not be significant differences among Hospitalists. The hypotheses were supported by the results, with the exception of interactions occurring between the Hospitalist and the Charge Nurse, as these interactions were infrequent relative to all other members of the healthcare team.

Because there was so much time spent interacting with Case Managers and so little time interacting with Charge Nurses, we thought it was important to understand why this occurred, especially as it related to their respective roles on the healthcare team. Additionally, we were interested in understanding if, how, and when patient care plan information was being relayed and communicated to bedside RNs. This was important to clarify, especially since bedside RNs were part of Dual Rounding activities but were not present during Morning Meetings, whereas Case Managers and Charge Nurses were present during Morning Meetings, but were not part of Dual Rounding activities.

a.) The “Messengers”

Morning Meetings served as a formal means for guaranteeing that healthcare team members would receive face-to-face time with the Hospitalists each day. In many ways, the Morning Meeting served as a forum for decision making, where decisions would be discussed, and then subsequently communicated and disseminated to other members of the healthcare team (ie. –

bedside RNs) who were not present. As a result, it was required that someone act as the “messenger”.

Interviews revealed that information was being communicated to bedside RNs from both Case Manager and Charge Nurse as to avoid a ‘voltage drop’ in information. That is, information lost in translation or mis-communicated due to ineffective communication channels, etc. Written notes taken during the Morning Meeting served as a means of tracking current patient status information, and verbally communicating that information face-to-face with bedside RNs throughout the day. This was to make sure that the information was getting accurately relayed to the proper personnel. Case Managers and Charge Nurses did not assume that the Hospitalist would relay this information to the bedside RN during Dual Rounding activities, so they took it upon themselves to make sure that proper communication channels were used to transmit correct patient information and status updates. This communication chain looks something like follows:

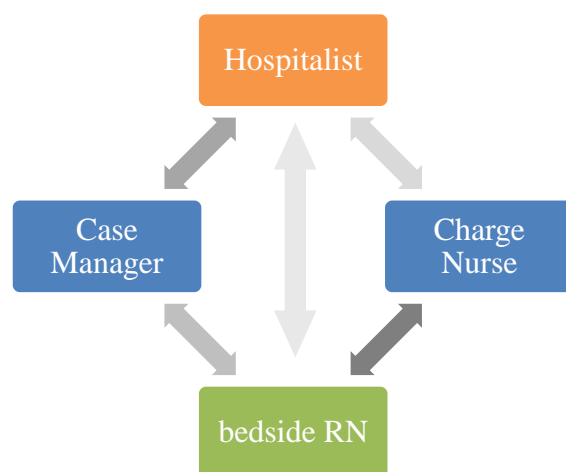


Figure 3-44: Information dissemination diagram

This chain of communication involved many healthcare team members communicating with bedside RNs throughout the day. As a result, this chain of communication could have negative implications on efficiency and patient outcome. Accurately conveying patient information is crucial for quality of care, as poor communication has been commonly cited as the culprit of sentinel events (The Joint Commission, 2006). Since this study commenced, the effectiveness of the Morning Meeting has been re-evaluated and streamlined so that they are shorter and patient case presentations by the Hospitalists are scripted so that the subsequent consultations are more efficient. This change is interesting in light of the fact that the average duration of each Morning Meeting was only 12.1 minutes to discuss approximately 12-15 patients on any given day. Interviews revealed that this was adequate because if it were any longer, people attending the Morning Meeting would no longer pay attention. Since the streamlining of this formal forum for face-to-face discussion, the short duration of these interactions should be considered for future research, especially because these interactions seem to occur throughout the course of the day rather than during planned activities like the Morning Meeting.

4.5 Daily Activities and Communication Processes

Because interactions occurring between the Hospitalist and RN did not always occur while in the Patient Room during Dual Rounding activities, Pre/Post Round Discussion, and Morning Meetings, it was concluded that communication processes between the Hospitalist and the RN occurred elsewhere outside of the Patient Room. As a result, it became important to consider the communication

processes of Hospitalists and RNs during daily activities gain a deeper understanding of where they interacted, how they interacted, and with whom they were interacting. We hypothesized that communication patterns would differ in terms of location, communication process type, and role pair between Hospitalists and RNs; and that due to the physical layout of the unit work processes would occur in close physical proximity to the Dr. Pods and Centralized Nurse Station. The hypotheses were supported by the results with the exception of the amount of time spent working alone. In light of these findings, it was concluded that a deeper understanding of physical space, work processes, technology, and culture were needed to understand the larger ecological context in which rounding activities occurred.

a.) Visual Accessibility and the Interaction Epicenter

Instead of interacting in the Patient Room during rounding activities, Hospitalists and RNs spent the most time interacting with each other while at the Dr. Pods and the Centralized Nurse Station throughout the day. Essentially the Centralized Nurse Station and the embedded Dr. Pods formed a ‘hub’ where many healthcare team members congregated. As one Hospitalist put it, the design of the Dr. Pods within the Centralized Nursing Stations was much like “a watering hole in the jungle.”

According to Becker and Steele (1995), locating elements in close proximity creates “activity magnets”, or areas that employees need because these elements are part of their daily routine. In many ways, the design of the Dr. Pods within the Centralized Nurse Station created an “activity magnet” because patient

charts, patient/RN/MD assignments, computer workstations, telephones, and telemetry monitors were all located in this area. These findings are particularly salient as they relate to visual accessibility and communication, as the physical design of the Dr. Pods and Centralized Nurse Station provided Hospitalists and RNs with direct sightlines to one another's designated work stations. Visual accessibility is also important to consider as it relates to communication and built environment. Since communication and collaboration between the Hospitalist and RN did not seem to be related to Dual Rounding, Pre/Post Round Discussion, or Morning Meetings; the physical design of the Dr. Pods embedded within the Centralized Nurse Station appeared to be the most important setting for face-to-face interactions than any other, including the Dual Round itself.

These findings provide support for previous research demonstrating that visual proximity is critical for informal communication in the workplace. According to Becker (2006), visually accessible spaces (i.e. "spatial transparency") provide greater opportunity for sharing information and fostering trust. Research by Kalisch and Begeny (2005) supplements this notion by concluding that visual proximity is directly related to opportunities for interaction. In the context of teamwork and sightlines, they claim that less visual proximity leads to lower likelihood of chance encounters and opportunities for information sharing (Kalisch & Begney, 2005).

Due to the physical proximity of the Dr. Pod to the Centralized Nurse Station, Hospitalists and RNs had significantly more opportunity for chance encounters and information sharing. This finding is particularly important in light

of the significant shift towards patient-centered care. Current research suggests that effective communication between healthcare providers is critical for successful initiatives aimed improving patient safety and quality of care (Coiera, Jayasuriya, Hardy, Bannan, & Thorpe, 2002; Firth-Cozens, 2001; The Joint Commission, 2005). As a result, visual accessibility in the design of the integrated Centralized Nurse Station plays a crucial role in supporting opportunistic communicative behaviors between Hospitalists and RNs that can lead to better patient outcomes.

b.) Noise Levels, Work Type, and Visibility

Although the design of the Dr. Pods and Centralized Nurse Station was conducive to communication via visual accessibility, it was found that one of the downsides of close physical proximity was excessive noise levels. It has been cited that medical equipment and staff voices often produced noise levels similar to those in a busy restaurant (Blomkvist, Eriksen, Theorell, Ulrich, & Rasmanis, 2005). Noise levels are important to consider during focused work activities like updating a patient's medication chart, or getting a consultation about a critical patient over the phone. Current research suggests that the greater the noise level, the greater the negative impact on more complicated tasks (Leather, Beale, & Sullivan, 2003).

During focused work activities, RNs strategically chose to work at the Decentralized Nurse Station or the Dr. Pods. However, in working at the Decentralized Nurse Station, RNs became less visible to other members of the healthcare team, as some RNs considered it a place to "hide out". This became

particularly difficult when other RNs needed assistance throughout the day, or when Hospitalists were looking for the RN before Dual Rounding activities. It was acknowledged that these missed opportunities for face-to-face interactions were also missed opportunities for trust building and teamwork. As one RN commented:

“when you’re working at the pods [decentralized nurse station] you’re basically sequestering yourself from everyone else, and it looks like you don’t want to help out. Everyone is busy, but that doesn’t mean you cannot help. You have to figure out ways to be efficient during the day. So, if someone needs help, you can drop what you’re doing because you’re going to need help at some point too. So, you know that you actually have a team that you’re dealing with and that you’re not on your own.”

Over the course of the day, RNs preferred to work in certain locations due to noise levels, work type, and personal preference. This occurred among RNs who preferred to work at the Decentralized Nurse Stations primarily because it was away from the chaos of the Centralized Nurse Station, not necessarily because it was closer to their patients. This finding is interesting because the intended justification for Decentralized Nurse Stations was to be closer to patients. Instead, RNs used them as a means for escaping noise and activity in favor of quieter settings. However, it is important to note that RNs who preferred working at the Decentralized Nurse Stations still expressed the need to use the Centralized Nursing unit for accessing the Medication Room, retrieving patient charts, and interacting with fellow healthcare team members when needed. When asked if working at the Decentralized Nurse Station decreased the likelihood of seeking out help and/or advice, most RNs were willing to walk or simply call someone when necessary. Charge Nurses were commonly sought out in these

circumstances, as their constant presence at the Centralized Nurse Station enabled them to have a heightened awareness as to what was going on in the unit (e.g., if Dr. X was rounding, or if RN Y was at lunch, etc..).

These findings have implications on the design of the Decentralized Nurse Stations, especially as they relate to “activity based planning” strategies.

According to Becker (2005), activity based planning considers that individuals do not work in one location; rather, individuals chose to work in a variety of settings throughout the day. Specifically, these settings are linked by information technology and the physical movement of individuals (Becker, 2005). These findings could have implications on how similarly or dissimilarly Decentralized and Centralized Nurse Stations are designed. Instead of trying to design the nurse station as an all-encompassing setting for every type of work task, it will be important to consider exactly how the design of these environments can support the often unpredictable series of work tasks that take place at different locations throughout the day.

c.) The Information Age and the Electronic Medical Record

With the continued adoption of advanced medical information systems and the electronic medical record, the need for face-to-face interactions cannot be replaced by technologies, especially in the healthcare setting. Safran and colleagues (1999) concluded that regardless of the presence of an electronic medical record system, there is still a strong preference for informal face-to-face communication. Similarly, in this study, it was acknowledged that the use of the electronic medical record required a significant amount of time working along on

the computer, but face-to-face communication was still necessary because of the need for further detail and explanation, especially during impromptu consultations and clarification on written orders.

As more hospitals continue to adopt electronic medical systems, it will be important to consider the individualistic nature of computer-based work. In designing locations for this type of work, specific attention should be paid the location of computer stations and territoriality, as neutral areas (i.e.- areas not “owned” by any one healthcare professional, or role) could encourage more mixing among healthcare providers occupying different roles on the healthcare team. According to Becker (2007), neutral zones create fewer spatial status distinctions, and increase chances for informal interaction. Additionally, like the visual accessibility and proximity of the Dr. Pods, the physical design of computer work stations should support visual accessibility, to encourage interaction among all members of the healthcare team.

d.) The Medication Room: Purpose, Pleasure, or Both?

The medication room serves as an isolated space for filling patient medication orders for administration. Bound by four walls and a locked door, Medication Rooms are usually restricted, and can only be accessed under lock and key. Furthermore, once inside the space, medications can only be accessed via pass code or fingerprint scan from the Pyxis machine. As a result, these spaces were “off-limits” to most health care professionals with the exception of RNs.

In this study, the Medication Room was considered the “RN’s oasis” - away from the constant chaos and demands of other healthcare providers. This

locked room provided RNs with silence when they were alone, or with acoustical privacy when they were talking to other RNs while tending to medications, or waiting in line to use the Pyxis machine. As a result, the social nature of this space is particularly interesting because of the sensitive activities taking place inside. Immense focus must be maintained while fulfilling medication orders, as incorrect dosages or orders could be fatal.

Fulfilling medication orders while interacting with other RNs contradicts the intended nature of a space designated for focused work activities. Instead, the Medication Room was used for both purpose and pleasure; RNs simultaneously participated in discussion *while* working (e.g., multi-tasking). As a result, it is important to understand that this dichotomy is what made the secluded nature of the Medication Room successful. This is in contrast to merely socializing with little acoustical privacy while at the Centralized Nurse Station (e.g., taking a break to “vent”). It can be assumed that from a managerial perspective, working while engaging with other healthcare providers is inevitably more productive than simply socializing or “hanging out”. Designers should consider the characteristics of alternative locations (e.g., kitchen, supplies room, etc...) for facilitating both types of work processes, so that RNs can feel comfortable engaging in such interactions while working on less-focused patient care activities (e.g., filling water cups, retrieving supplies, etc.).

4.6 Overall Conclusion- Implications for Practice

The rise in use of team-based structures in healthcare has forced many professionals to re-evaluate their roles and responsibilities in the workplace

(Atwal & Caldwell, 2005). According to Apker et al., (2005), in team contexts; RNs currently coordinate and collaborate with physicians and other healthcare providers on a very regular basis. As central members of the healthcare team, communication activities between Hospitalists and RNs are crucial for carrying through on patient care plan activities. In light of this change, communication and teamwork have been cited as significant variables in patient-centered care initiatives (Rachid, 2009). This is especially important to consider as it relates to patient care activities such as rounding.

The aim of this study was to understand the effects of rounding type on patient outcome and communication processes. Using an organizational ecological framework, we specifically sought to examine these factors as they related to the physical layout of the unit, organizational culture, and available information and technologies. The results of this study suggest that rounding activities do not have a significant impact on communication processes between Hospitalists and RNs. Rather, informal face-to-face communication between the Hospitalist and RN occurred opportunistically throughout the day and not in front of the patient while in the Patient Room. These opportunistic interactions can be further examined via communities of practice.

According to Wenger (1998), communities of practice consist of people who work and practice within particular or similar knowledge domains. Similarly, Becker (2007) states that communities of practice depend on networks of people who share a common task, interest, or goal. The current study provides support for the importance of framing knowledge sharing across informal networks of

people that go beyond those who share the same role in the workplace. The fact that of all healthcare team members, Hospitalists spent the most time interacting with other Hospitalists and MDs and RNs spent the most time interacting with other RNs suggests that the built environment should address the need for visual accessibility in accessing other members of the healthcare team, and for fostering opportunities for short-lived, informal face-to-face interactions and collaboration between multiple types of healthcare professionals. Current research suggests that this type of setting should be conducive to empowering the healthcare professional and patient, while supporting work processes aimed at achieving safe, efficient, patient-centered care (Clark & Malone, 2006; Henrich & Chow, 2008). Going forward, the challenge is to bring these many elements together in the context of the current hospital building boom, and a heightened awareness about the influence of nursing unit design on communication and work processes.

In the context of this study, these findings suggest that it is important to consider the integrated design of the Centralized Nurse Station and Dr. Pods; especially as it relates to the dependence on computer-based individualistic work processes and bridging communication gaps between different members of the healthcare team. Specifically, visual accessibility was found to be one of the most important factors for enabling face-to-face communication to occur between the Hospitalist and RN. Visual sightlines were maintained via physical proximity to the Centralized Nurse Station and use of clear glass around the Dr. Pods fostered communication between Hospitalists and RNs. However, in conjunction with the differences in problem solving strategies between Hospitalists and RNs

(Hospitalists seeking other Hospitalists/MDs, and RNs seeking other RNs for help/advice); physical proximity among colleagues significantly contributed to this relationship. Future designs should consider this in light of team-based structures aimed at integrating the knowledge base of multiple people occupying different roles on the healthcare team.

Additionally, this study found that there was a significant tradeoff associated with the integration of the Dr. Pods and the Centralized Nurse Station. RNs chose to work at Decentralized Nurse Station locations to avoid noise and commotion so they could perform focused work activities. Although it was acknowledged that it was convenient to be closer to patients, working at these locations was based on noise levels and the type of work task that was taking place. This finding should be considered as it relates to justifying Decentralized Nurse Unit design using an activity based planning framework.

In conclusion, this study provided support for the notion that rounding activities, and communication processes are indeed influenced by the nursing unit ecosystem and its web of interconnected activities. In this complex web, it has become apparent that individual systems must be considered in detail, but should be examined as part of a greater whole, operating simultaneously and dependent upon other sub-systems. As healthcare continues to become more service-driven, hospitals are acting more like businesses in an effort to survive in a competitive marketplace, and should consider this integrated approach for making transformative change in patient centered care initiatives. Effective teamwork has been cited as one of the most critical aspects for successful communication and

the creation of quality inpatient care (Olender, 2005). As the bottom line lies with the patient, it will be increasingly important to consider how Hospitalist-led Dual Rounding strategies can better impact patient outcomes and communication with RNs and other healthcare team members as a means of providing high quality of care and ensuring organizational survival.

4.7 Study Limitations

a.) Patient Outcome Data Collection Methodology

The patient outcome data collection methodology should be reconsidered for future research. After integrating the “rounding order” into the MediTech system, it was just one more order that RNs had to complete when they were charting each day, and oftentimes RNs forgot to input the “rounding order”, even when a Dual Round took place.

When patient outcome data was collected, it became apparent that during the peak months of observation, more patients were documented having received the Dual Rounding condition. As a result, there were also observer effects in the documentation of the rounding condition. Additionally, in interviewing RNs after the communication process data had been analyzed, one of the primary disadvantages to Dual Rounding was that many RNs forgot to input the order into the patient’s chart, even when Dual Rounding occurred. As one RN stated,

“Sometimes I forget, even when it happens. But, when you were here, it was like – oh yeah, the rounding lady is here, so I should do this”.

b.) Controlling for Patient Acuity

Most importantly, patient acuity was not controlled for in the patient outcome data set, so the data was considered unreliable. Future research should

consider how patient acuity can be accounted for and recorded in hospital data platforms so they can be accurately controlled for and integrated into statistical models for further data analysis. Additionally, more attention should be paid to the interrelationships between patient complexity, acuity, and their subsequent impact on complications in care.

c.) “Dual Rounded” Patient Threshold

This study’s threshold for “Dual Rounded” patients was not exclusive enough to make a significant impact on patient outcomes. As a result, the threshold should be re-evaluated to be more exclusive. For example, “Dual Rounded” patients should be any patient receiving three or more Dual Rounds during a length of stay no greater than five days including the day of admission. Implementing a higher threshold would provide a stronger patient outcome data set for “Dual Rounded” patients.

c.) Implementation: Timing of Data Collection

Another study limitation associated with the Dual Rounding strategy could have to do with the timing of implementation and the start of the research. Because patient outcome data was collected from October 2010 to January 2011, (approximately six months after the strategy was implemented), it was still relatively new for the unit. Any significant change in the work processes of an organization requires time for formal introduction, adoption, and acceptance as a daily routine. This study took place during the adoption phase; therefore it appeared as though the Dual Rounding had not been fully accepted as standard

work practice. As one RN put it, “We just do it [dual rounding], and we’re supposed to know how to do it”.

d.) Implementation: Change Management

Implementation of the Dual Rounding strategy was informally presented via verbal communication by the Director of the Hospitalist Program at CMC. However, it is important to note that no formal training took place. Implementing change efforts using a change management framework could have effectively introduced and sustained this change effort. Additionally, formal training and role playing could have given Hospitalists and RNs the opportunity to understand how to go about Dual Rounding, Pre/Post Round Discussion, and to establish expectations among healthcare providers.

Additionally, after the researcher conducted interviews, Hospitalists verbalized that they were more likely to ask the RN to round with them when the patient’s case was particularly complex. Although implementation of the Dual Rounding strategy expected Hospitalists to Dual Round on all patients at some point during the day, this was not necessarily the case.

e.) CWM Tool Data Collection Methodology

Although the IRB approved the researcher to be present inside the patient room during rounding activities, data was not collected in patient rooms due to the inconvenience of asking for verbal agreement on behalf of each patient. During the pilot study, the researcher determined that standing 6 inches outside the patient room was sufficient for documenting interactions occurring within the patient room. As a result, unique interaction patterns occurring between the Hospitalist

and the RN within the room could have been missed because the researcher was not physically present in the room.

4.8 Directions for Future Research

a.) Accounting for Patient Acuity

Future research examining patient outcome data should integrate accurate measures for patient acuity. Researchers could work closely with the hospital's Information Systems Department to develop methods for accurately determining this measure so that it can be accurately controlled for and integrated into statistical models for further data analysis. As stated earlier, more attention should be paid to the interrelationships between patient complexity, acuity, and their subsequent impact on complications in care.

b.) Re-define "Dual Rounded" Patient

Future research should reconsider the threshold for "Dual Rounded" patients. As stated earlier, the threshold should be re-evaluated to be more exclusive. For example, "Dual Rounded" patients could be any patient receiving three or more Dual Rounds during a length of stay no greater than five days including the day of admission. Implementing a higher threshold would provide a stronger patient outcome data set for "Dual Rounded" patients.

c.) Dual Rounding Activities – One to Two Years Later

Since this study took place during the adoption phase of the Dual Rounding strategy, the results of this study could serve as the baseline for the early stages of implementation. It would be interesting to revisit this study one to two years after the Dual Rounding strategy had become commonplace on the 4th

floor unit, and after patient acuity could be accounted and controlled for. This would allow for adequate time for adoption, and the results could be compared to see any improvements over time.

d.) Perceptions of the Patient and Family Members

Future research could also examine round type as it relates to the perceptions of both patients and family members. This could include patient satisfaction measures, and insight from family members regarding their experience as a supporter, caregiver, and patient advocate. As single patient rooms allow for more family members to be present in the patient room, it would be interesting to gain insight into Dual Rounding activities from their perspective.

e.) The Healthcare Team

Interviews revealed that the Charge Nurse played a particularly important role in transmitting information between Hospitalists and bedside RNs. Although Charge Nurses were not the focus of this study, they appeared to play a crucial role as ‘liaison’ between Hospitalist and RN, going beyond providing bedside RNs with patient status updates gleaned from Morning Meetings. Charge Nurse claimed this ‘liaison’ role was used as a mechanism to “make sure things happened”. Having no patient assignments freed Charge Nurses, making them physically available to both Hospitalists and bedside RN who were constantly on the go. Their constant presence on the unit makes them highly visible members of the healthcare team, which would be interesting to examine as it relates to interactions occurring between the Charge Nurse and the Hospitalist and RNs specifically.

f.) Customizing CWM Tool Categories

In the future, researchers interested in using the CWM as part of their methodology should consider re-evaluating the standard programming and organization of the CWM Tool, specifically the categories for “Communication Process Type” and “Person”, and the technology used to support the systems.

Modern personal handheld devices are well equipped with updated capabilities.

After the research was conducted, it was apparent that customization of the CWM Tool’s communication process categories would have yielded more specific results having to do with additional types of interactions involving rounding activities specifically. For example, the tool was not programmed to specifically capture Pre or Post Round Discussion before or after Rounds. Additional communication process type categories would have been helpful for capturing these types of interactions in a more straightforward manner.

Since Hospitalists and RNs spent so much time working alone, additional customization of the CWM Tool categories for time spent working alone and should be considered. This would allow for researchers to gain greater insight into the detailed breakdown of how time is spent when interacting with no one. For example, time spent charting by hand or time spent charting on the computer, etc...Currently the CWM Tool only allows researchers to capture the “working alone” category as one encompassing type.

It was also apparent that the “Person” category could have been more inclusive to the variety of healthcare providers that currently work in hospitals. It would have been useful to include more specific “Person” categories, as key

members of the healthcare were often pooled into the same group, despite their role or level of expertise. For example, the tool was programmed for “RN”, but there were no separate categories for “RN Orientee” or “Charge Nurse”, who are both RNs, but significantly differ in their years and level of experiences as well as job responsibilities.

Additionally, it would have been interesting to gain insight into the direction of conversation, whether interactions were initiated or received by the person being observed. This information would have given the data greater depth into the frequency in which healthcare team members seek out interactions with other healthcare team members.

APPENDIX A

HELLO HEALTHCARE TEAM MEMBERS



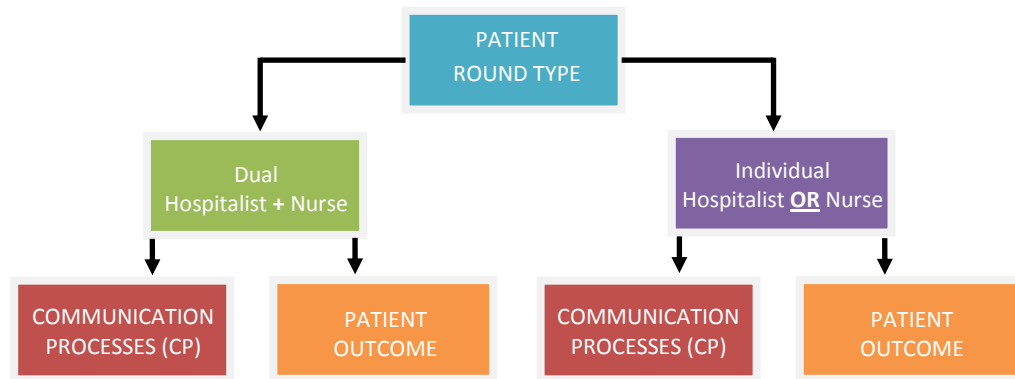
My name is Gretta, and I am a 2nd year graduate student pursuing a Master of Science in Applied Research in Human Environment Relations at Cornell University. You will be seeing my face around here in the next couple of months as I will be collecting data for my thesis project. In an effort to keep everyone informed, I wanted to give a general overview of the study here at Cayuga Medical Center:

WHO:

Hospitalists and Registered Nurses who work with Hospitalists at CMC.

WHAT:

To examine the impact of dual vs. individual rounding on patient outcome and communication processes. Here's a diagram of the study:



WHERE: 4th Floor North & 4th Floor South @ CMC.

WHEN: various days over the next 3-6 months

WHY: It's important to understand the implications of working collaboratively versus alone.

HOW: **DIRECT OBSERVATION of COMMUNICATION PROCESSES**

- Who do you talk to?
- For how long?
- Where? corridor, nurse station, etc...
- How? face to face, phone, etc...
- What is the overall content? assist, inform, negotiate, educate, consultation, etc...

INTERVIEWS with healthcare team members

PATIENT OUTCOME DATA

- average length of stay, cost of care, complications in care, satisfaction

Please feel free to contact me with any questions/concerns
email: gmv27@cornell.edu ; cell: 541-941-2887

THANK YOU!

APPENDIX B

Cornell University
Department of Design & Environmental Analysis
3M13 Martha Van Rensselaer Hall
Ithaca, NY 14853-4410
T: 607-255-2144
F: 607-255-0305

July 1, 2010

To all admitting Physicians:

During the next three to six months, a graduate student from Cornell University will be conducting research on the 4th floor medical surgical unit at Cayuga Medical Center. The study aims to gain a greater understanding of the effects of rounding type on communication processes among healthcare team members and patient outcome. The researcher will be shadowing staffed hospitalists and registered nurses, and will be conducting interviews with different members of the healthcare team. The researcher would appreciate any insight from admitting Physicians who are not full-time employees of Cayuga Medical Center. If you have any questions, or are interested in participating in a brief interview relating to your communication behaviors during hospital rounds, please feel free to contact Professor Frank Becker at fdb2@cornell.edu, or Gretta Vandell at gmv27@cornell.edu.

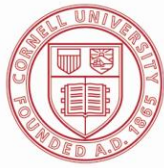
Thanks in advance,

David Evelyn, MD
Vice President
Medical Affairs
Cayuga Medical Center

and

Gretta Vandell
M.S. Candidate, Applied Research in Human Environment Relations
Cornell University

APPENDIX C



Cornell University



Cayuga
Medical Center

CONSENT TO ACT AS A HUMAN RESEARCH SUBJECT

Title of Research: The Ecology of the Hospitalist-Led Patient Round: Examining the Effects of Rounding Type on Communication Processes and Patient Outcome

Principal Investigator: Frank D. Becker, PhD., Professor, Department of Design and Environmental Analysis, Cornell University

Co- Investigator: Gretta Vandell, M.S. Candidate, Applied Research in Human Environment Relations, Department of Design and Environmental Analysis, Cornell University

Introduction: You are invited to take part in a research study that examines the effects of patient rounding type on communication processes between healthcare team members and patient outcome. Please read this form carefully and ask any questions you may have before agreeing to take part in the study.

Participation in this study is completely voluntary. If you decide to take part, you are free to withdraw at any time without penalty or loss of benefits to which you are otherwise entitled.

What this study is about: The purpose of this study is to gain a greater understanding of how healthcare providers function during rounding activities as it relates to communication processes and patient outcome measures.

What we will ask you to do: If you agree to take part in this study, we will ask you to participate in open-ended, one-on-one interviews during the course of this study. The interview data will supplement other methods of data collection and will provide useful explanations of employees' feelings, perceptions, and reactions. The interviews will be conducted at times when it is convenient for you and will not interfere with your work. Audio recordings of interviews will be requested, and in all cases audio recording is entirely voluntary. Its purpose is to allow the researcher to focus on conversation rather than trying to both talk and write at the same time.

Additional data collection methods employed in this study but which require no direct time or involvement on your part will include:

- Cornell researcher "shadowing" (i.e. following at a distance) hospitalists and registered nurses to track type, location, and duration of interactions with other staff using a Palm Pilot programmed for this form of data collection. We are interested in learning how staff uses their workspace, and how they communicate with other care team members. In no way will the shadowing interfere with your work, and all recorded data will remain confidential.

- An evaluation of the physical qualities (e.g., the design, layout) of your work setting such as the nurse station, break and lounge areas, and corridors so that we can better understand and describe the physical setting in which you work.
- Photo documentation of the available information technologies used for communication (e.g., computer type, phone system, white boards) so that we can create a visual log of available modes of communication on the 4th floor medical surgical unit.

Risks and benefits: We do not anticipate any risks to you participating in this study other than those encountered in day-to-day life. There are no direct benefits to you. We do expect that the results of this research will contribute to a better understanding of patient rounding, and a growing body of knowledge of evidence based design that strives to transform hospital design.

Cost/Payments: There will be no payment for your participation, and there will be no costs to you for participating.

Your behaviors and answers will be confidential. All identifying details obtained by the researchers will remain confidential – data relating to participating hospitalists and registered nurses will be de-identified in the following way:

- a unique number will be assigned to each participant at the time of written consent
- The list of participants' names linked to the unique study numbers will be stored in a locked filing cabinet in Professor Becker's office at Cornell University
- data collected from observations will be associated with the individual's unique number, not their name
- analysis will be undertaken with no knowledge of participant identity;
- access to data will be limited to the researchers involved in the collection process
- any reports or publications will maintain individuals' confidentiality, and all data will be presented in an aggregate form when required to protect participants' confidentiality

If you have questions: The Principal Investigator for this study is Franklin Becker, Professor of Design and Environmental Analysis, Cornell University. The co-investigator for this study is Gretta Vandell. Please ask any questions you have now. If you have questions later, you may contact Professor Becker at fdb2@cornell.edu or at 607.255.1950. If you have any questions or concerns regarding your rights as a subject in this study, you may contact the Institutional Review Board for Human Subjects at 607-255-3943 or access their website at <http://www.irb.cornell.edu>. This project has also been reviewed by the Cayuga Medical Center Institutional Review Board (IRB).

You will be given a copy of this form to keep for your records.

Statement of Consent: I have read the above information, and have received answers to any questions I asked. I consent to take part in the study by *signing* the consent for each part of the study in which I agree to participate.

Consent to agree to be **shadowed / interviewed / audiotaped during interview/ ALL**: Please circle all that apply.

Name of subject (please print)_____

Your Signature_____Date_____

Signature of person obtaining informed consent

I have explained the research to the subject and answered all his/her questions. I believe that he/she understands the information described in this document and freely gives consent to participate. I have been given a copy of this signed informed consent form to the research subject.

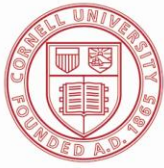
Name of person obtaining informed
consent_____

Signature of person obtaining informed
consent_____Date_____

CORNELL IRB Study Identification #:_____

CMC IRB Study Identification #:_____

APPENDIX D



Cornell University



Cayuga
Medical Center

HIPPA CONSENT FORM

Title of Research: The Ecology of the Hospitalist-Led Patient Round: Examining the Effects of Rounding Type on Communication Processes and Patient Outcome

I understand that as part of my participation in the study entitled “The Ecology of the Hospitalist-Led Patient Round: Examining the Effects of Rounding Type on Communication Processes and Patient Outcome”, individual health information about patients will be heard during patient, hospitalist, and nurse conversation. This personal health information (PHI) may include demographic information, medical records, medical history, results of physical exams, surgical and treatment information, and laboratory and diagnostic test results. **By signing this consent form, I agree to not disclose any personal health information regarding patients.**

Statement of Consent: I have read the above information; I consent to not disclose any personal health information regarding patients, or information suggesting the identity of the patient for this study.

Principal Investigator: Frank D. Becker, PhD., Professor, Department of Design and Environmental Analysis, Cornell University

Name (please print)_____

Your Signature_____Date_____

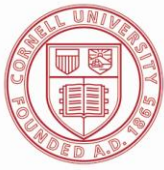
Co- Investigator: Gretta Vandell, M.S. Candidate, Applied Research in Human Environment Relations, Department of Design and Environmental Analysis, Cornell University

Name (please print)_____

Your Signature_____Date_____

CORNELL IRB Study Identification #:_____

CMC IRB Study Identification #:_____



Cornell University

APPENDIX E



Cayuga
Medical Center

HOSPITALIST CLINICAL WORK MEASUREMENT STUDY

DEMOGRAPHIC INFORMATION

Name (please print): _____ Study ID: _____

Classification:

- ☐ Intern
- ☐ Resident
- ☐ Registrar

Ward/Unit: _____

Length of Experience: _____

Length of time employed at CMC: _____

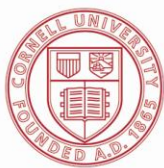
Length of time on current ward/unit: _____

Status:

- ☐ Full-Time
- ☐ Part-Time
- ☐ Casual

Age Band:

- ☐ 0-18 years
- ☐ 19-29 years
- ☐ 30-44 years
- ☐ 45-59 years
- ☐ 60+ years



REGISTERED NURSE CLINICAL WORK MEASUREMENT STUDY

DEMOGRAPHIC INFORMATION

Name (please print): _____ Study ID: _____

Classification:

- ☐ RN New Grad
- ☐ RN 2-4 years
- ☐ RN 5+ years
- ☐ CNS:

Ward/Unit: _____

Length of Experience: _____

Length of time employed at CMC: _____

Length of time on current ward/unit: _____

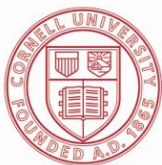
Status:

- ☐ Full-Time
- ☐ Part-Time
- ☐ Casual Pool
- ☐ Agency

Age Band:

- ☐ 0-18 years
- ☐ 19-29 years
- ☐ 30-44 years
- ☐ 45-59 years
- ☐ 60+ years

APPENDIX G



Cornell University



Cayuga
Medical Center

ROUNDING TYPE & PATIENT OUTCOME MEASURES AGREEMENT

AGREEMENT:

Cornell University's research team **will not have access** to the link connecting patients to the data set for this study at Cayuga Medical Center.

Cornell University's research team **will not have direct access** to patient outcome measures from the CRIMSON data platform.

Name (please print)_____

Your Signature_____Date_____

APPENDIX H

Interaction/Communication Process Categories

1. Consultation: *discussion/negotiation of patient medical status or care plan other care providers as considered collaborative work, as the result of dialogue. Can be provided or sought out.*
2. Information: *task oriented questions, answers, or directions.*
3. Social: *Any social or personal activity or discussion that is **non work-related**, including personal phone calls,*
4. Phone: *work-related dialogue occurring via phone either received or initiated, or work related patient dictation; this only includes phone calls for admitting and discharge dictation. RNs do not complete this task.*
5. Other: *any other tasks or categories not covered above. Can include work-related discussion but not pertaining to patient care activities, but rather personal or work-related discussion that is **work related**. To include venting about work-related experience, such as complaining or expressing frustration.*

With Whom Categories

1. Patient
2. RN
3. Case Manager/Discharge Planner
4. Hospitalist/MD
5. Unknown
6. Ward Clerk
7. Allied Health Professional
8. Nurse Aide
9. No one
10. Visitor

Location Categories

1. Dr. Dictation Desk
2. Nurse Station - Centralized
3. Case Manager Desk
4. Conference Room
5. Patient Room
6. Med Room
7. Nurse Station - Decentralized
8. Hospitalist Office (Primary /Secondary)
9. Break/Locker Room/Lunch
10. Corridor

APPENDIX I

Location Categories

1. Dr. Dictation Desk
2. Nurse Station - Centralized
3. Case Manager Desk
4. Conference Room
5. Patient Room
6. Med Room
7. Nurse Station - Decentralized
8. Hospitalist Office (Primary /Secondary)
9. Break/Locker Room/Lunch
10. Corridor

Interaction/Communication Process Categories

1. Consultation:
 - a. DEFINITION: *discussion/negotiation of patient medical status or care plan other care providers as considered collaborative work, as the result of dialogue. Can be provided or sought out.*
 - b. EXAMPLES:
 - *“I just went in and checked on Mrs. Smith – she’s in a lot of pain since after breakfast. I told her I’d talk to you about getting her some more pain meds, but I don’t know what you’d like to do. She’s been eating well up until today, as she vomited after lunch and is feeling nauseated”*
 - *“So how is Mrs. Smith doing today? I just looked over her charts, and her EKG came back and it looks really good. Is there anything else I should know?”*
 - *“Do you know if she’s gone down for her stress test yet? How did she do?”*
 - *“Hey Dr. Smith. Just wanted to let you know that I gave Mrs. Smith the Lovinox you ordered, and her blood count is a little low now. Is that something we need to worry about right now, or is that a normal response? I know she’s diabetic. Okay, I’ll just keep an eye on her.”*
 - *“The patient’s monitor isn’t responding like it should, and I can’t find the manual. I’m worried that the monitor isn’t working like it should, and I’m not sure what to do next – do you know who I can call from Dialysis, or what I should do next? I’m worried that maybe she’s not*

responding because of the way she's sitting in the bed. Yeah, I'll try repositioning her. Thanks"

- *"His body temperature went up two degrees since you gave him the first bag of plasma – is that normal? I didn't think so"*
- *"I think he's ready for discharge at this point. I'll go ahead and get the last of his orders placed. Is there anything else he needs before we get him out of here?"*

2. Information:

- a. DEFINITION CONDITION #1: *task oriented questions, answers, or directions.*
- b. EXAMPLE CONDITION #1:
 - *"Hey, Travis, would you please get his vitals before I go to lunch? We need to get them before I give him his forth bag of plasma"*
 - *"Crystal, will you witness for me?"*
 - *"Bump up his morphine to 5mg, and I'll write an order for Lovinox. Call me if you need anything else"*
 - *"Will you put in an order for more pain medication for Mrs. Smith?"*
 - *"I can't find 439's binder. Has anyone seen it?"*
 - *"Did you place that order for 420 yet?"*
 - *"Can you call down to the lab and request another tube? Thanks"*
 - *"We're going to need to get a psych counsel on 431"*
 - *"Will you come see Mrs Smith with me?"*
 - *"Do you have 437 today? I'm going to round on her in a few minutes. Would you like to come with?"*
- c. DEFINITION CONDITION #2: *In the case of working alone, information also includes computer charting/documentation - referring to or writing in the patient's medical record via patient binder, computer, and/or phone to include: progress notes, request forms, medication chart, care plans, discharge summaries, information retrieval, information search, etc ... Also includes signing patient charts.*
- d. EXAMPLES CONDITION #2: *A hospitalist acquainting him or herself with the patient's chart, record, and lab results before or after making that patient's round. Signing patient charts. An RN reviewing a patient's medication record to confirm 9:00 medications.*

3. Social:

- a. DEFINITION CONDITION #1: *Any social or personal activity or discussion that is **non work-related**, including personal phone calls,*
- b. EXAMPLES CONDITION #1:
 - *"Who made the brownies? Brownies in the kitchen!"*

- *“Did you end up winning those tickets to the Cornell game this weekend? Awesome! “*
 - *“When are your friends coming into town? What are you guys going to do this weekend”*
 - *“I think our kids go to the same school”*
 - *“Are you all dressing up for Halloween? Oh, good. What a great idea for a costume!”*
 - *“You’re in a good mood today. Why aren’t you always like this?”*
 - *“We could host the baby shower at my house, but it would have to be before the snow comes because it’s a heck of a drive.”*
 - *“Hey, do you want to go down to lunch pretty soon? I’m craving a bagel sandwich”*
- c. DEFINITION CONDITION #2: *coffee, bathroom, lunch & other personal breaks.*
- d. EXAMPLES CONDITION #2: *A RN taking their designate 30 minute lunch break in the cafeteria. A Hospitalist taking a bathroom break. An RN taking a break while eating lunch at the Nurse Station.*
4. Phone:
- a. DEFINITION CONDITION #1: *work-related dialogue occurring via phone either received or initiated. A hospitalist initiating a phone call to an outside physician. An RN initiating a phone call to the pharmacy. This includes time spent on hold, or waiting for call to be received.*
- b. EXAMPLES CONDITION #1:
- *“Hi, yeah, this is Dr. Smith calling from Cayuga Medical Center. Is Dr. Jones in today?”*
 - *“Hi, this is Dr. Smith. I’m returning a page”*
 - *“Hi, this is Mary from 4North. Can we get another tube up here?”*
- c. DEFINITION CONDITION #2: *work related patient dictation; this only includes phone calls for admitting and discharge dictation. RNs do not complete this task.*
- d. EXAMPLES CONDITION #2:
- *“This is Dr. Smith, S-M-I-T-H, calling to complete a discharge summary for patient first name John, J-O-H-N, last name Jones, J-O-N-E-S. Age, 43, etc...”*
5. Other:
- a. DEFINITION: *any other tasks or categories not covered above. Can include work-related discussion but not pertaining to patient care activities, but rather personal or work-related discussion that is **work***

related. To include venting about work-related experience, such as complaining or expressing frustration.

b. EXAMPLES:

- *“Did you go to that meeting the other day? Yeah, I was looking forward to the unique case presentations, as we’ve had some interesting patients come in over the past couple months”*
- *“This patient is driving me crazy. You get all the good patients, and I get all the bad ones. That’s not fair.”*
- *“She cracks me up. No wonder she’s got high cholesterol if the only thing she likes to eat for dinner is fried chicken. I mean I love fried chicken too, but not every night for dinner.”*

6. Patient Interaction:

- a. DEFINITION CONDITION #1:** *Any patient interaction occurring within the patient room during rounding activities or outside of the patient room, involving the patient and or patient representative – i.e.: family member or healthcare proxy. Patient interactions encompass the discussions had by Hospitalist and/or Registered Nurse with patients and patient representative. Patient interactions include – direct discussion and updates about status of condition, plan of action, elaboration, information sharing, and support on behalf of the Hospitalist and/or Registered Nurse. If this type of discussion occurs outside of the patient room with a family member, healthcare proxy, or patient, it is still considered a patient interaction, involving a “visitor”, at the location of interaction.*

b. EXAMPLES CONDITION #1:

- *To a coherent patient who is able to represent themselves during dual rounding: “Good morning Mr. Smith, we’re here to check in on you today. How are you feeling? How did you sleep last night? On a scale of one to ten how is your pain? Well, that’s good – it’s certainly better than yesterday. Did you eat your breakfast today? Was it good? Great. So we got the results of your lab tests, and your EKG showed that your heart is functioning well. So, your results are within the normal range, so that is good news. But, we are still going to need to take you over for a EEG this afternoon, and we’ll make sure that we get you all squared away before then. Do you have any questions or concerns? For the time being, we’re going to lower your dose of pain medication because your pain level is significantly better than yesterday, and we’ll make sure we continue the sleeping pills to help you sleep while you’re here. Is there anything else we can do for you? Ok good. I’ll be around if you need me.”*

- To a patient representative who is caring for a patient that is incoherent or unable to represent him/herself during dual rounding, *“Good morning everyone. Have you been here for long? Alright. How did he do with breakfast this morning? Good – glad to hear. So, we’ve/I’ve looked over his charts this morning, and he was stable through the night, so we/I would like to continue to pursue treatment. But we’re going to start lessening the dose, as this is generally what we like to do for people in his situation. I know that this is difficult for everyone, but is there anything else we should know about in the meantime?”*
- To a coherent patient who is able to represent themselves during individual rounding: *“Hi Mr. Smith. How are you feeling this morning? Was breakfast good? Glad to hear. We’ll, I’ve got good news for you, we’re going to get you out of here today, and I just wanted to check in with you one last time before I start your discharge paperwork. Is your daughter still here to take you home? Ok, good then. Well, you look great. I think we can have your things together by 2:00 o’clock – does that work for you? Okay, I’ll be back with your paperwork, so sit tight for now.”*
- c. DEFINITION CONDITION #2: *any patient encounter that does not involve interaction.*
- d. EXAMPLES CONDITION #2: *Time spent in patient room on non-interactive care activities like adjusting patients, listening to heartbeats or breathing, administering medications, waiting for patient to perform a task, and general patient “check ins” that can include time spent in patient room while patient is incoherent, sleeping, watching TV, or is simply not interacting.*

With Whom Categories

1. Patient
 - a. DEFINITION: *any person admitted into the hospital that is directly cared for by hospital staff*
2. RN
 - a. DEFINITION: *a hospital based registered nurse whose primary professional focus is on the general medical care of hospitalized patient to assess, plan, implement, and evaluate; often serving as patient advocates*
3. Case Manager/Discharge Planner

- a. *DEFINITION: hospital employee whose primary focus is on implementing and coordinating patient health care services in an effort to achieve patient rehabilitation and discharge*
- 4. Hospitalist/MD
 - a. *DEFINITION: a hospital-based physician, whose primary professional focus is on the general medical care of hospitalized patients to diagnose and treat disease or injury. Any non-hospitalist physician, specialist or surgeon, whose professional focus is on the general or specialized medical care of patients to diagnose, treat disease or injury, or perform surgical procedures. This includes CMC physician, surgeon, and specialist staff as well as outside primary care providers*
- 5. Unknown
 - a. *DEFINITION: any person who is not physically present during communicative interaction, therefore unknown, is unidentifiable, or does not fit into any of the “person” framework categories.*
- 6. Ward Clerk
 - a. *DEFINITION: any person who is responsible for performing clerical work at the nurse’s station or unit. They keep records on the patients and on the ward’s hospital staff, and may perform routine clerical and secretarial duties, acting much like a secretary for the ward.*
- 7. Allied Health Professional
 - a. *DEFINITION: hospital employees who occupy roles such as social worker, clergy, physical therapist, respiratory therapist, dietician, paramedic, clinical psychologist, electrocardiogram technician, health administrator, laboratory technician, pharmacist, public health officer, etc....*
- 8. Nurse Aide
 - a. *DEFINITION: any person who occupies the role of “Nurse Aide” or “Hospital Aide” who helps nurses care for patients by doing routine tasks like keeping patients comfortable, and tending to their basic needs, giving baths, and taking routine tests.*
- 9. Visitor
 - a. *DEFINITION: anyone accompanying a hospitalized patient such as a family member, close friend, or healthcare proxy.*

APPENDIX J

Hospitalist Interview Guide

❖ UNIT CULTURE:

- What is your role on the healthcare team?
 - Who do you see as being part of the core team?
 - Describe your role as it relates to other core team members.
 - Describe the characteristics of a “good” team member. (ie.- takes initiative, organized, willingness to speak up and challenge you in a positive way, etc...)
- Describe the unit culture on the 4th floor as it relates to trust-building between Hospitalists and Registered Nurses.
 - How does trust impact your working/professional relationship with Registered Nurses?
 - How do Registered Nurses earn your trust? (i.e. – offer innovative ideas about patient care, willingness to speak their mind, attitude?)
 - To what extent do you discuss patient care plans (ie - diagnoses and treatment decisions) by asking for their professional opinions or views, etc...)
- The social aspect of work can be important for trust building in the workplace. How do your social relationships with Registered Nurses affect your working relationship? (ie.- are you more comfortable, trusting so that decision making is more collaborative)
- Where in the hospital does this relationship-building happen? (ie – conference room, corridors, DDS, CNS, cafeteria, etc...)
- Describe the unit culture on the 4th floor as it relates to trust-building between Hospitalists and other Hospitalists.
 - How does trust impact your working/professional relationship with other Hospitalists?
 - How do other Hospitalists earn your trust? (i.e. – offer innovative ideas about patient care, willingness to speak their mind, attitude?)
 - To what extent do you discuss patient care plans (ie - diagnoses and treatment decisions) by asking for their professional opinions or views, etc...)
- The social aspect of work can be important for trust building in the workplace. How do your social relationships with Hospitalists affect your working relationship? (ie.- are you more comfortable, trusting so that decision making is more collaborative)

- Where does this relationship-building happen? (ie – corridors, MD lounge, DDS, CNS, cafeteria, etc...)
- ❖ PHYSICAL LAYOUT:
 - Does the physical location and layout of the DDS encourage interaction with RNs who are working at the CNS? In what ways does it work, and why? In what ways does it not work and why?
 - Hospitalists spend the most time at the DDS, and spend the most time communicating with fellow Hospitalists/MDs. As a result, it seems that there is a preference for Hospitalists to talk to other Hospitalists in the workplace. Is this so?
 - It seems that because you work in such close proximity at the DDS, it is easy to talk with them therefore; you tend to talk to those working at the DDS more often. Do you think this is true, and to what extent?
 - Does this affect patient care in any ways? (ie – only receiving limited views on patient care decisions, diagnoses, etc...)
- ❖ AVAILABLE INFORMATION & TECHNOLOGIES:
 - Hospitalists spend the most time working alone at the DDS. Describe the role of the patient chart and electronic medical records as it relates to the need for face-to-face communication with other members of the healthcare team.
- ❖ MORNING MEETINGS:
 - How do you prepare before a Morning Meeting?
 - What is the role of shift change briefings in preparation?
 - It appears as though rounds don't typically occur before Morning Meetings.
 - Why is this?
 - Are there any implications on your ability to accurately present patient cases with up to date information?
 - Morning Meetings typically last about 12 minutes from a Hospitalist's perspective. Is this sufficient time to cover approximately 12 patients on any given day?
 - I was surprised to see that Case Presentation interactions typically lasted approximately 20 seconds a piece, but they seemed to work and get the point across. Is that right? Overall, Hospitalists spend about 12 minutes in morning meetings. Could you explain how you get the relevant info you need in such a short amount of time?
 - If more time were available, would it be beneficial?
 - Hospitalists spend the most time collaborating with Case Managers during Morning Meetings and the least amount of time collaborating with the

Palliative Care MD and the Charge Nurse. This is interesting in light of the fact that Case Managers do not attend Rounds.

- Is it necessary to relay care plan decisions gained during Morning Meetings? If so, what modes of communication do you use to communicate patient care plan decisions made during Morning Meetings? Who needs to know this information, if anyone?
- From your perspective, do you think there is a better way of doing things when it comes to daily patient status updates?
 - If so, could this be implemented?
 - What are the barriers to doing things in a different way? (ie. - the organization, physical layout of space, or time, etc...)

❖ ROUNDING STRATEGIES

- Since the implementation of the dual rounding strategy, have you noticed a change in how you interact with nurses? (ie – is there a more detailed information exchange, is it more timely, is there more of a dialogue between you and the RN for discussing patient diagnosis and treatment – is it more of a give and take?)
- What are the advantages/disadvantages to dual rounding?
- What are the advantages/disadvantages to individually rounding?
- I found that during dual rounding, Hospitalists and RNs do not spend much time interacting with each other in front of the patient.
 - Why do you think this is so infrequent? (ie. working/personal relationships between the Hospitalist and RN, unit/personal norms and expectations, assumed role leadership, don't want to confuse the patient or make them more anxious, etc...)
 - What are the implications on patient care, if any?
 - What are the implications on perceptions of patient care, if any?

❖ PRE/POST ROUND DISCUSSION

- One of the interactions we were interested in understanding was the overall occurrence and nature of Pre and Post Round Discussion. That is, discussion occurring between the Hospitalist and RN right before or after a round occurred. Overall, Pre and Post Round discussion was infrequent.
 - Why do you think this doesn't happen very often? (i.e.: readily available technologies, unit norms/expectations, personal norms/expectations, not expected to touch base in-depth with RN before rounding, “do it on my own” mentality)
 - What are the implications of this in terms of building good working relationships and effective communication with the RN and patient care?

- If these discussions don't happen right before or after a round, do they happen later in the day? (i.e. – or does this information “funnel” into the computer, so that it is not necessary to express face-to-face?)
- When Pre/Post Round Discussion was observed, it mainly occurred while walking in the Corridor and at the CNS.
 - What are the implications on patient privacy, if any?
 - Is this means of “walking and talking” an efficient use of time? Does it work for you in terms of discussing patient diagnosis and treatment?
 - In what ways, if any, does the nature of conversations with nurses in the corridor differ in any ways from what happens if you meet in the DDS or CNS or elsewhere?

APPENDIX K

RN Interview Guide

❖ UNIT CULTURE:

- What is your role on the healthcare team?
 - Who do you see as being part of the core team?
 - Describe your role as it relates to other core team members.
 - Describe the characteristics of a “good” team member. (ie.- takes initiative, organized, willingness to speak up and challenge you in a positive way, etc...)
- Describe the unit culture on the 4th floor as it relates to trust-building between Registered Nurses and Hospitalists.
 - How does trust impact your working/professional relationship with Hospitalists?
 - How do Hospitalists earn your trust? (i.e. – offer innovative ideas about patient care, willingness to speak their mind, attitude?)
 - To what extent do you discuss patient care plans (ie - diagnoses and treatment decisions) by asking for their professional opinions or views, etc...)
- The social aspect of work can be important for trust building in the workplace. How do your social relationships with Hospitalists affect your working relationship? (ie.- are you more comfortable, trusting so that decision making is more collaborative)
- Where in the hospital does this relationship-building happen? (ie – conference room, corridors, DDS, CNS, cafeteria, etc...)
- Describe the unit culture on the 4th floor as it relates to trust-building between Registered Nurses and other Registered Nurses.
 - How does trust impact your working/professional relationship with other Registered Nurses?
 - How do other Registered Nurses earn your trust? (i.e. – offer innovative ideas about patient care, willingness to speak their mind, attitude?)
 - To what extent do you discuss patient care plans (ie - diagnoses and treatment decisions) by asking for their professional opinions or views, etc...)
- The social aspect of work can be important for trust building in the workplace. How do your social relationships with Registered Nurses affect your working relationship? (ie.- are you more comfortable, trusting so that decision making is more collaborative)

- Where does this relationship-building happen? (ie – corridors, break room, DDS, CNS, cafeteria, etc...)
- ❖ PHYSICAL LAYOUT:
 - Does the physical location and layout of the CNS encourage interaction with Hospitalists who are working at the DDS? In what ways does it work, and why? In what ways does it not work and why?
 - RNs spend the most time at the CNS, and spend the most time communicating with fellow RNs. As a result, it seems that there is a preference for Registered Nurses to talk to other Registered Nurses in the workplace. Is this so?
 - It seems that because you work in such close proximity at the CNS, it is easy to talk with them therefore; you tend to talk to those working at the CNS more often. Do you think this is true, and to what extent?
 - Does this affect patient care in any ways? (ie – only receiving limited views on patient care decisions, diagnoses, etc...)
 - I also saw that there is a preference for working at the CNS when charting and other computer activities. Why work at the CNS as opposed to the DNS – access to help, information, central location, close to patient room, close to the action?
 - Why work at the DNS as opposed to the CNS – noise levels, privacy, less distraction?
 - It seems like the DNS is the designated workspace for Nursing Aides. Is this true, and to what extent?
 - The Medication Room appears to be a place to discuss more non-patient related issues/topics. Discuss the social aspects of the Med Room, especially in light of the sensitive nature of preparing patient medications. Does restricted access affect this?
 - RN's don't seem to use the break room much. Why do you think this is?
 - The data suggests that RNs spend 14% of their time walking around. What about the physical layout helps or hinders efficiency?
- ❖ AVAILABLE INFORMATION & TECHNOLOGIES:
 - RNs spend the most time working alone at the CNS. Describe the role of the patient chart and electronic medical records as it relates to the need for face-to-face communication with other members of the healthcare team.
- ❖ ROUNDING STRATEGIES
 - Since the implementation of the dual rounding strategy, have you noticed a change in how you interact with nurses? (ie – is there a more detailed information exchange, is it more timely, is there more of a dialogue between you and the Hospitalist for discussing patient diagnosis and treatment – is it more of a give and take?)

- What are the advantages/disadvantages to dual rounding?
- What are the advantages/disadvantages to individually rounding?
- I found that during dual rounding, Hospitalists and RNs do not spend much time interacting with each other in front of the patient.
 - Why do you think this is so infrequent? (ie. working/personal relationships between the Hospitalist and RN, unit/personal norms and expectations, assumed role leadership, don't want to confuse the patient or make them more anxious, etc...)
 - What are the implications on patient care, if any?
 - What are the implications on perceptions of patient care, if any?
- RNs spend 10% more time in the patient room over the course of the day when compared to Hospitalists (27% vs. 18%). How does this relate to differences in working roles between Hospitalists and RNs?
 - Significant differences exist between RNs. What contributes to these differences?

❖ PRE/POST ROUND DISCUSSION

- One of the interactions we were interested in understanding was the overall occurrence and nature of Pre and Post Round Discussion. That is, discussion occurring between the Hospitalist and RN right before or after a round occurred. Overall, Pre and Post Round discussion was infrequent.
 - Why do you think this doesn't happen very often? (i.e.: readily available technologies, unit norms/expectations, personal norms/expectations, not expected to touch base in-depth with RN before rounding, "do it on my own" mentality)
 - What are the implications of this in terms of building good working relationships and effective communication with the RN and patient care?
 - If these discussions don't happen right before or after a round, do they happen later in the day? (i.e. – or does this information "funnel" into the computer, so that it is not necessary to express face-to-face?)
- When Pre/Post Round Discussion was observed, it mainly occurred while walking in the Corridor and at the CNS.
 - What are the implications on patient privacy, if any?
 - Is this means of "walking and talking" an efficient use of time? Does it work for you in terms of discussing patient diagnosis and treatment?
 - In what ways, if any, does the nature of conversations with nurses in the corridor differ in any ways from what happens if you meet in the DDS or CNS or elsewhere?

APPENDIX L



- Patient Rooms
- Corridor
- Nurse's Station Centralized
- Nurse's Station Decentralized
- Dr. Dictation Station
- Break / Locker Room
- Conference Room
- Activity Room
- Med Rooms
- Hospitalist Office
- Case Manager Desk

Patient Rooms



Corridor



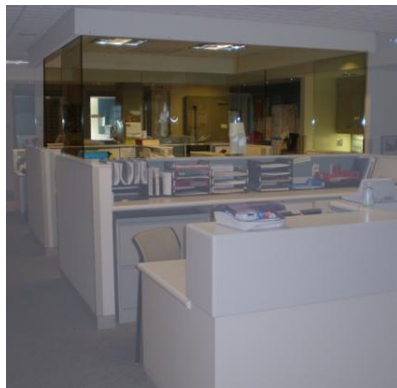
Nurse Station – Centralized



Nurse Station – Decentralized



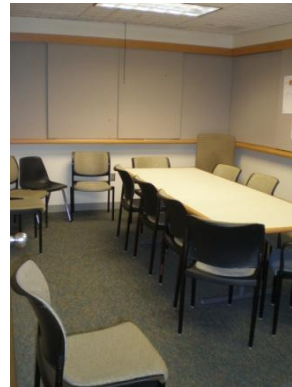
Dr. Pods



Break / Locker Room



Conference Room



Activity Room



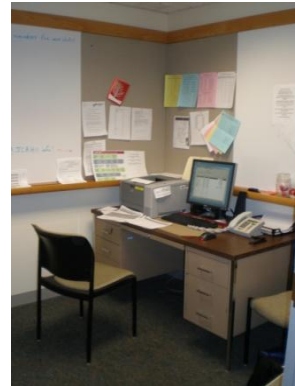
Med Room



Hospitalist Office - Primary



Hospitalist Office – Secondary



Case Manager Desk



FOOTNOTES

The researcher worked closely with Cornell's statistical consulting unit in properly normalizing the data set, choosing the appropriate tests and analyses to carry out, writing the correct statistical syntax for performing those particular tests and analyses, and further understanding and interpreting the results.

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