

Talking About Patients:
Nurses' Language Use During Hand-offs

by

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A dissertation submitted in partial fulfillment
of the requirements for the degree of
Doctor of Philosophy
(Nursing)
in The University of Michigan
2009

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Dedication

To my parents,

Charles W. and (Natalie) Jeanne Barthel,

who gave me a love of knowledge and a passion for learning,

and to my husband,

Bruce L. Ford,

who has given me unwavering love and support while I pursued that passion.

Acknowledgements

The hand-off data for this secondary analysis was collected as part of HIT Support for Safe Nursing Care, a study funded by the United States Agency for Healthcare Research and Quality, grant number R01 HS015054 (2004-2008). I am grateful to Dr. Gail Keenan and Dr. Elizabeth Yakel, the co-investigators on that study, for their willingness to share their data.

As I come to the end of this educational journey, I look back and recognize that I could not have made the trip, much less reached the destination, without the support of many people. Some of these people I have met along my way, and others have long been a part of my life.

Of the many faculty and staff members at the University of Michigan who have challenged and steered me, my committee members stand out. I had the privilege to meet Dick Redman at the beginning of my master's program in nursing. He guided me through the process of writing my master's thesis, and was willing to escort me through the labyrinth of the dissertation process as well. It was a pleasure and a privilege to work with him again. I have benefitted from Dick's knowledge of nursing and his experience as an educator, and I am grateful for his willingness to share that knowledge and experience.

John Swales, from the English Language Institute, graciously agreed to join us, even though he is "retired". John helped me to recognize the meaning behind the words in my hand-off sample. While I think I taught him a bit about nursing, I know he taught

me a lot about language, discourse, and communication. Deb Sampson joined my travel group later in the journey, and persuaded me to venture down paths that I had not considered. Her patience and persistence pushed me to explore unfamiliar territory, and her encouragement and sense of humor provided me with support just when I needed it.

Even though they are no longer at the University of Michigan, Ada Sue Hinshaw and Gail Keenan also helped me along this journey by asking the questions that helped me to stay on the right path.

As I traveled on toward my destination, those who have long been a part of my life supported my progress. My friends and colleagues with whom I worked were tolerant of the demands of this journey, and many of them were eager to hear what I was learning and thinking. Their questions helped me to learn to articulate my thoughts clearly, and I thank them for their friendship and support.

It was those that I have known the longest, though, who were impacted the most by my travels down this road. I have been "in school" for most of my marriage and my children's lives, and no matter what program I was in, or what age they were, my family was accepting of the demands. My decision to begin this leg of the journey created new routines and shifted responsibilities and roles within our household. My children, Eric and Rachel, adapted and adjusted to meet the demands of my itinerary, and I thank them.

It is my husband Bruce, though, who has been my most steadfast supporter. He recognized when I needed to take a break from the demands of the trip, and nudged me back to the road when I lingered too long at a rest stop. His belief in me encouraged me onward when I thought I could not go farther. His friendship and love are gifts that I treasure, and I look forward to sharing journeys down a different path with him.

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Glossary

- Collocation – words which appear in close proximity with each other repeatedly within a text.
- Concordance – a display of multiple occurrences of a given word within the context that surrounds it. The word is shown in the center of the display, with the context on each side of it.
- Corpus – literally a ‘body’ of text; the corpus may be made up of either written text or transcripts of spoken language.
- Ellipsis – the omission of words within a sentence; the missing words are understood from the context of the sentence.
- Filled pause – a hesitation in speech filled by a verbal expression such as *um*, *uh*, or *er*.
- Frequency – the number of times a word occurs in a corpus; sometimes called raw frequency.
- Genre – A type of communicative event, used to accomplish a specific purpose; for example, the hand-off genre's purpose is to transfer the responsibility for a patient's care from one nurse to another.
- Grammar – the structural characteristics of language within a corpus; includes sentences, phrases, and/or parts of speech.
- Hand-off – the transfer of role and responsibility from one nurse to another, often at the end of shift in a hospital between the off-going nurse and oncoming nurse.
- Keyword – a word that occurs with unexpected frequency in the hand-off corpus as compared to a reference corpus. Keywords may be positive (occurring more often than expected) or negative (occurring less often than expected).
- Lexis – all of the word forms used within a language; vocabulary.
- Metonymy – a form of metaphor in which a part of an entity is used to refer to the whole; for example, describing a patient as a body part, disease, or injury.

Move – a section within a genre that accomplishes the genre's communicative purpose; for example, Move 1 – Introducing the Patient contributes to the accomplishment of transferring responsibility for the patient's care by establishing the identity of the subject of the hand-off.

N-gram – a recurring sequence of words, where n is the number of words in the sequence; 3-grams are three word phrases that appear in the hand-off corpus.

Normalized frequency – an adjustment of raw frequency counts to a ratio to facilitate data comparisons of several discrete corpora containing differing word counts. (e.g. occurrences per 1,000 words).

Reference Corpora – corpora that are representative of general spoken English and used as the basis of comparison to the hand-off corpus; for this study, the British National Corpus of Spoken English (BNC) and the Michigan Corpus of Academic Spoken English (MICASE) are used as reference corpora.

Side sequence – an interchange between hand-off nurses that may be related to the hand-off, but does not contribute to the achievement of the hand-off goal of transferring patient information important to patient care and safety.

Strategy – a segment within a move that accomplishes the move's communicative purpose; for example, the patient's name is a strategy used by nurses to accomplish the move of Introduction to the Patient.

Utterance – a sequence of words that expresses a thought by either the off-going or oncoming nurse; may be a sentence, a phrase, or a word.

Chapter 1

Introduction

The transition of responsibility for patients from one healthcare provider to another is known as a hand-off. Hand-offs, formerly called report, are ubiquitous in nursing; they occur as patients move from unit to unit within a hospital or healthcare organization. Hand-offs also occur when the patient stays in one location but the nurses caring for him/her change. Nurses may refuse to accept responsibility for patients until they have received a report from the nurse who previously cared for the patient prior to the transition (Sutcliffe, Lewton, & Rosenthal, 2004). Little is known about the language that nurses use during this transition. The purpose of this study was to describe the structure nurses use to organize hand-offs, as well as the language used to present the content of the hand-offs. The findings illustrate what nurses say about patients in hand-offs and how they say it, identify strategies in hand-offs that support patient safety, indicate that there are opportunities for further enhancing patient safety during hand-offs, and identify areas for future inquiry.

According to the United States Agency for Healthcare Research and Quality (AHRQ), there were 39.2 million discharges from hospitals in the United States in 2005. The mean length of stay for patients during that year was 4.6 days (Levit, et al., 2007). Assuming that nurses caring for patients work 12 hour shifts, there would be just over 9

nursing hand-offs during a patient's stay; if the nurses work 8-hour shifts, there would be nearly 14 nursing hand-offs per patient. Calculating the number of nurse hand-offs times the number of hospital stays results in a range of 352.8 – 548.8 *million* end-of-shift hand-offs between nurses in the United States in 2005. (This range does not account for situations in which a nurse may care for a patient for less than an eight or 12-hour shift.) Hand-offs are frequent occurrences during patient stays; they are important communication points for both patients and nurses. The effectiveness of the communication that takes place during hand-offs may affect the quality of the patient's care and may contribute to the incidence of errors.

In 2000, the Institute of Medicine (IOM) published a groundbreaking report on errors in healthcare (Kohn, Corrigan, & Donaldson, 2000). According to this report, anywhere from 44,000 to 98,000 patients per year died in hospitals due to errors. Communication failures were identified as a significant contributing factor to these errors. Transitions from one healthcare provider to another (physician to physician, nurse to nurse, etc.) have been identified as a significant potential source of communication errors for hospitalized patients (Clancy, 2006; Solet, Norvell, Rutan, & Frankel, 2005); communication failures have been implicated as a contributing factor in as many as 91% of mishaps during inpatient hospital stays (Sutcliffe et al., 2004). Given the number of nursing hand-offs that take place in the United States alone, the potential for communication errors during hand-offs is great.

This potential for communication errors in hand-offs has been recognized not only by the Joint Commission in the United States (Arora & Johnson, 2006), but by international agencies as well. In 2007, the Joint Commission International (JCI) and the

World Health Organization (WHO) announced the “High 5s Project” to improve the safety of patients around the world. The “High 5s Project” lists five standard operating protocols to address significant patient safety issues; among them is the improvement of communication during patient hand-offs (World Health Organization (WHO), 2007).

In studies of hand-offs, nurse researchers have primarily focused on qualitative descriptions of the functions and/or rituals of hand-offs (Buus, 2006; Ekman & Segesten, 1995; Kerr, 2002; Lally, 1999; Manias & Street, 2000; Payne, Hardey, & Coleman, 2000; Philpin, 2006; Strange, 1996). These studies have explored what the hand-off process means to nurses in terms of social support (Lally), group cohesion (Strange), learning (Lally), and organization of their work (Ekman & Segesten; Strange). In contrast, relatively few nursing researchers have examined the content and/or structure of nursing hand-offs; for the most part, the identified studies compared information in hand-offs to information in patients’ medical records (Lamond, 2000; Sexton et al, 2004) and evaluated the effects of changing the structure of hand-offs (Dowding, 2001). The content of hand-offs is captured in the language used by nurses to communicate patient information, but the language of hand-offs has received little attention.

Regardless of the setting, structure or participants, language is the means used by nurses to transmit both spoken and written information about patients during hand-offs. The role of language in communication in both social and occupational settings has been explored by a number of philosophers and linguists (Bakhtin, 1986; Bhatia, 1997; Eckert & McConnell-Ginet, 2003; Hunter, 2001; Thompson, 2003). According to Thompson, communication and language are “basic building blocks of practice” (p. 1) in many human services professions, including nursing, yet there is little information about the

language that comprises one of these basic building blocks of nursing practice and patient care.

Research Questions

The aims of this study were to describe the linguistic structure of nursing hand-offs, to identify the language features used by nurses during hand-offs, to compare that language to general spoken English, and to identify the implications of nurses' language on patient safety. The specific questions to be answered were:

1. What are the structural components of nurses' hand-offs?
2. What are the language patterns, including both lexical and grammatical features, used by nurses during hand-offs?
3. How does the language that nurses use during hand-offs differ from general spoken American English?
4. How do the characteristics of nurses' language use in hand-offs differ based on the method used for the hand-off?
5. What strategies to enhance patient safety can be identified by analyzing the language used by nurses during hand-offs?

The questions were answered by carrying out a secondary analysis of transcripts of 43 end-of-shift hand-offs. These hand-offs were a portion of the data collected to evaluate the effects of health information technology (HIT) (Keenan, Yakel, & Marriott, 2006) on nurse care planning and communication.

Purpose and Significance of Study

The purpose of this study was to examine the genre of nurses' hand-offs, using genre and corpus analysis to identify their linguistic structure and content in order to

understand how nurses use language to transfer the responsibility for patient care. This description of the text of nursing hand-offs adds to the existing scholarship about hand-offs with specific information about the language patterns that nurses use to relay information about patients' conditions and care, and illustrates the degree to which nurses use language during the hand-off as a means of enhancing patient safety when transferring the responsibility for patient care. Conversely, the analysis also identified missed opportunities for enhancing patient safety during hand-offs.

Additionally, the use of corpus analysis in health care contexts has been limited to date, and has focused primarily on provider-patient interactions (Adolphs, Brown, Carter, Crawford & Sahota, 2004). This study contributes to the body of knowledge that is known as applied linguistics, by describing language use in an under-explored area. It also adds to nursing's body of knowledge by using an approach that has not previously been employed by nurse researchers to examine communication between providers during the hand-off.

Findings from this analysis describe the use of language by nurses during hand-offs to communicate patient information. These findings have implications for both nurses' education and for nursing practice; they will provide an assessment of the current state of nurses' use of language to communicate during hand-offs and will also identify potential interventions to improve nurses' communication strategies in patient hand-offs, including, but not limited to, teaching, learning and evaluation strategies.

Overview of Chapters

This paper presents the findings of a descriptive study that examined the structure and content of nurses' end-of-shift hand-offs. Chapter 2 provides a review of the

literature in hand-offs, language, genre theory, and corpus analysis. Chapter 3 explains the methods used to conduct the study. Chapter 4 presents the structure of nurses' end-of-shift hand-offs as revealed by a move analysis. Results of comparison of the method of hand-off (audio-taped vs. face-to-face) are presented in Chapter 5. The vocabulary and grammar of hand-offs are described in Chapter 6. Finally, Chapter 7 presents conclusions from the analyses, including a discussion of how strategies to enhance patient safety are demonstrated in the language that nurses use in this sample of hand-offs. Chapter 7 also includes implications for nursing practice and recommendations for future research in this area.

Chapter 2

Review of the Literature

Within work and organizational settings, language serves as a mode of communication, provides a representation of the world, and gives rise to identity for persons both as individuals and as members of professional groups (Hecht, 1993; Hunter, 2001; Joseph, 2004). Language also provides evidence of current disciplinary knowledge and provides a foundation on which to build future knowledge (Berkenkotter & Huckin, 1995; Bhatia, 1997). Analyses of nursing hand-offs to date have explored the conduct of hand-offs, the environment in which they occur, and the interpersonal interactions of participants. However, there has been little investigation of the use of language in hand-offs.

Nursing hand-offs, for the purpose of this study, are an example of a language genre. Genres include both spoken and written interactive utterances that are “defined functionally in terms of their social purpose” (Egins & Martin, 1997, p. 236). Genres are examples of how language is used to achieve occupationally and culturally established tasks; nurses use language to achieve the “transfer of role and responsibility from one person to another” (Solet et al., 2005), and to ensure continuity of patient care (Manias & Street, 2000). Support for the study was drawn from literature in hand-offs, language, genre, and corpus analysis.

Hand-offs

As already mentioned, hand-offs are defined as “the transfer of role and responsibility from one person to another in a physical or mental process” (Solet et al., 2005). Since the publication of the Institute of Medicine’s 2000 report (Kohn et al., 2000), and concurrent with the recommendations of the Joint Commission, the Joint Commission International (JCI), and the World Health Organization (WHO) (2007), information about hand-offs is increasingly prevalent in the literature. According to Cook, Render, and Woods (2000), complex organizations (such as health care organizations) generate gaps, or discontinuities in care, due to their complexity. One potential gap is the shift change, when hand-offs between nurses commonly occur, and which can result in a “loss of coherence in a plan of care” (p. 792). Cook et al. pointed out that those who work in complex organizations develop both formal and informal means of bridging these potential gaps. Hand-offs are a formal means of bridging the shift change gap.

Strategies for bridging the shift-change gap have been identified in a number of settings that are high-reliability organizations. By definition, high-reliability organizations are complex environments in which the consequences of error are high, but the rate of errors is very low (Baker, Day, & Salas, 2006). Examples of these high-reliability organizations include aviation, the National Aeronautics and Space Administration (NASA), and the nuclear power industry. Health care researchers have turned to these settings to identify strategies that might be applied in health care settings (Patterson, Roth, Woods, Chow and Gomes, 2004; Keenan et al., 2006).

Patterson et al. (2004) observed hand-offs at NASA, at Canadian nuclear power plants, at a railroad dispatch center in the United States, and at an ambulance dispatch center in Toronto. Twenty-one strategies were identified that workers in these settings used to accomplish several objectives during hand-offs. These objectives included (a) improving hand-off effectiveness; (b) improving hand-off efficiency; (c) increasing access to data; (d) improving coordination with others; (e) enabling error detection and recovery; and (f) delaying transfer of responsibility during critical activities. Strategies to accomplish these objectives included face-to-face verbal update with questioning; limiting interruptions; limiting the initiation of new actions during the hand-off; and review of historical data by the incoming staff prior to the hand-off (Patterson et al.). These strategies were commonly used in the hand-offs observed by the researchers.

Several of these strategies identified as improving hand-off effectiveness have been included in recommendations for standardizing hand-offs in health care (WHO, 2007; Sandlin, 2007), including face-to-face updates, allowing questions, and limiting interruptions. However, two specific recommendations for health care hand-offs, verbal read back of information and a standardized approach to hand-offs, were not observed in any of the settings in which Patterson et al. (2004) conducted observations.

Hand-offs involve both precision and risk; precision in that the hand-off must be accurate and consistent, and risk in that failure to carry out the hand-off can lead to errors. In spite of the importance of hand-offs to safe patient care, the practice and observation that are inherent in hand-offs in settings as diverse as aviation and athletics are not widely used in health-care hand-offs. In these settings, team members use simulation, video-taping, and debriefing as a means of improving performance.

However, there is a lack of formal attention to hand-offs in health-care provider training and education. Lack of education regarding the hand-off process is a barrier to effective hand-offs; simulation provides a means of overcoming this deficiency without placing patients at risk and is becoming more prevalent in health-care provider education (Clancy, 2006; Smith, Cronenwett, & Sherwood, 2007; Solet et al., 2005).

Nursing Hand-offs

Various methods are used to conduct hand-offs, including face-to-face verbal (where the off-going nurse speaks directly to the oncoming nurse(s) who are assuming the responsibility for his/her patients' care) and audio-recorded (where the off-going nurse(s) tape record their hand-off information and all oncoming nurses listen to the tape). A variation of the face-to-face hand-off is conducted at the patient's bedside, and may or may not include the patient and/or his/her family members in the discourse. As technology is adopted in hospitals, electronic reports and/or computer printouts may be increasingly used as adjuncts to or replacements for verbal hand-offs (Friesen, White, & Byers, 2008; Patterson, Roth & Render, 2005).

While audio-recorded hand-offs have been shown to be less time consuming than face-to-face hand-offs, a major weakness of this method is that oncoming nurses have little opportunity to ask questions or seek clarification regarding information on the tape from the off-going nurse (Friesen et al., 2008). This is a concern as regulating bodies such as the Joint Commission require that the opportunity to ask and answer questions be a part of the hand-off process. Also, face-to-face hand-off with questioning was among the strategies used to improve hand-off effectiveness and efficiency (Patterson et al., 2004).

Sixteen research studies were found to have examined nursing hand-offs (Behara et al., 2005; Buus, 2006; Ekman & Segesten, 1995; Hays, 2002; Hays & Weinert, 2006; Lally, 1999; Liukkonen, 1993; Keenan et al., 2006; Kerr, 2002; Manias & Street, 2000; McFetridge, Gillespie, Good, & Melby, 2007; Meißner et al., 2007; Payne et al., 2000; Philpin, 2006; Sexton et al., 2004; Strange, 1996). Geographic regions for the studies included Sweden (Ekman & Segesten), Denmark (Buus), Finland (Liukkonen), the United Kingdom (Lally; Kerr; Payne et al.; Philpin; Strange), Australia (Manias & Street; Sexton et al.; McFetridge et al.), and Europe (Meißner et al.). Only four (26%) of the studies examined hand-off practices in the United States (Behara et al.; Hays; Hays & Weinert; Keenan et al.), and three studies explored nurses' perceptions about hand-offs (Pillow, 2007; McFetridge et al., 2007; Meißner et al.).

The predominant approach to examining hand-offs has been ethnographic, using observation, interviews, and combinations of both. The ethnographic approach seeks to identify the cultural behavior, artifacts, and/or speech that nurses employ to accomplish the task of transferring responsibility for patient care (Mason, 2002; Polit & Beck, 2004). Although language is a primary component of the transmission of information about patients, the research has focused on the themes, functions, and/or rituals of hand-offs, largely to the exclusion of analysis of the language used in hand-offs. An overview of these qualitative research studies is presented in Table 2.1. The themes and functions of hand-offs identified in this literature included: education and enculturation; practices that enhance group cohesion; the exercise of power and/or control; ritual; and patient information transmission.

Table 2.1
 Summary of Qualitative Research Studies of Nurses' Hand-offs

Author	Hand-off	Methods	Sample	Setting	Findings
Behara et al. (2005)	End-of-shift	Observation; Analysis of audio-taped hand-offs and documentation.	Not identified	5 Emergency Departments in United States and Canada	Variation in hand-offs: participants/roles; locations. Discussion of expectations for future and plans. Nursing contributions focused on tasks.
Buus (2006)	End-of-shift	Ethnography: Applied Conversation Analysis of audio-taped hand-offs; Observation	6 Hand-offs	Inpatient Mental Health Unit in Denmark	Clinical knowledge not produced/distributed evenly – changed with nurse; Hand-off controlled by off-going nurses; No formal conventions for hand-off

Author	Hand-off	Methods	Sample	Setting	Findings
Ekman & Segesten (1995)	End-of-shift	Ethnography using –emic approach; Participant observation; Analysis of audio-taped hand-offs	10 Hand-offs	Inpatient medicine ward in Sweden	Range of ritualistic elements; Medical terminology; Highly retrospective; References to what physicians wanted
Hays (2002); Hays and Weinert (2006)	End-of-shift	Analysis of video-taped hand-offs for verbal and non-verbal communication patterns	12 Hand-offs; 17 RN's	Intensive Care Unit in United States	Inconsistent leader behaviors; low frequency of both verbal and non-verbal supportive communication
Keenan et al. (2006)	End-of-shift	Observation	Not reported	8 Inpatient units in 4 hospitals in United States	Limited incorporation of plan of care in hand-off; retrospective and task-focused.

Author	Hand-off	Methods	Sample	Setting	Findings
Kerr (2002)	End-of-shift	Observation; interviews	40 Hand-offs	2 inpatient pediatric units in United Kingdom	Identified 4 functions of hand-offs: Informational; Social; Organizational; Educational
Lally (1999)	End-of-shift	Observation	6 Hand-offs	Inpatient surgery ward in United Kingdom	Identified five themes (Nursing Process; Learning the Ropes; Them/Us; Model in Action; Foreword/Appendices) and three functions (2 social cohesion; 1 patient information)

Author	Hand-off	Methods	Sample	Setting	Findings
Liukkonen (1993)	End-of-shift	Content analysis of audio-taped hand-offs	All hand-offs for 4 week time period	2 long-term care of elderly units in Finland	Focus on physical condition of patients and tasks completed; nurse as subject of hand-off, patient as object
Manias and Street (2000)	End-of-shift	Critical ethnography using observation, interview	6 RNs	Critical Care Unit in Australia	Identified 4 themes of hand-offs: Exercise of Power and Control (questioning by oncoming nurse); Tyranny of Tidyness (patient and room appearance); Tyranny of Busyness (workload); Sense of Finality (need to complete work prior to hand-off)

Author	Hand-off	Methods	Sample	Setting	Findings
McFetridge et al. (2007)	Patient transfer	Interviews, focus groups, document review	16 nurses	Emergency Department/Intensive Care Unit in United Kingdom	Need for structure and framework for hand-offs; inconsistency in information included in hand-offs
Payne et al. (2000)	End-of-shift	Observation, interviews, analysis of audio-taped hand-offs and documentation	27 Hand-offs involving 34 nurses	5 Inpatient Acute Care of Elderly units in England	Order of presentation of information did not vary; use of jargon; short length of time; use of lay language

Author	Hand-off	Methods	Sample	Setting	Findings
Philpin (2006)	End-of-shift	Participant observation; interviews; analysis of documentation	15 nurses	Intensive Care Unit in United Kingdom	Identified 4 themes: Attentiveness; Representation of work (scrutiny by peers); Language (biomedical vocabulary, jargon, slang); Transition (transfer of power, control and responsibility to oncoming nurse)
Strange (1996)	End-of-shift	Participant observation	Not reported	Inpatient ward in United Kingdom	Identified 4 functions of hand-offs: Technical/ritual; Psychological; Social; Protective

Themes and Functions of Hand-offs

Education and Acculturation

Acculturation is the process of "adoption of new cultural patterns following contact between groups" (Calhoun, 2002); interactions between experienced nurses and novices during hand-offs facilitate the transition of new nurses to their professional role, including how to communicate with their peers about patients. Nursing hand-offs are a forum not only for assisting new nurses to adopt the communication practices of the established staff, but for socialization to the professional role, and proficiency in the use of language is a prerequisite to membership in the group (Wolf, 1988). Nurses use hand-offs to teach new staff and students about patient diagnoses, the hand-off procedure, and even pronunciation of unfamiliar terms (Kerr, 2002; Lally, 1999). Changes in behavior of nurses who did not comply with the group's expectations after reminders were given during hand-offs are evidence of the effectiveness of this function of hand-offs (Payne et al., 2000).

Practices to Enhance Group Cohesion

Hand-offs were also described as settings for enhancing team building and group cohesion (Kerr, 2002; Lally, 1999; Strange, 1996). These practices generally were carried out immediately prior to the transmission of patient information, as nurses gathered for the hand-off. In some cases these activities carried forward to the period of time immediately following the patient information transfer, prior to the nurses' start of their work, and included talk about patients' situations, talk about off-duty activities, and talk about co-workers (Lally, 1999); informal chat (Strange, 1996); and "light-hearted interactions and catching up among colleagues" (Kerr, 2002. p. 131). These interactions

served to relieve stress and provided a form of social and emotional support for members of the group.

The use of supportive behaviors during hand-offs was not consistent. (Supportive behaviors might include praise, concern, reassurance, or understanding, exhibited by verbal statements, non-verbal behavior, or both.) Hays (2002) identified that there was little supportive behavior exhibited by nurses during hand-offs. In an analysis of videotaped hand-offs, Hays noted only 11 occurrences of supportive behaviors during 162 hand-offs. Those few behaviors identified as supportive mostly consisted of non-verbal head nodding; “no verbal statements of praise, support, reassurance, or concern were observed in any of the interactions” (p. 6). Hays described procedures for gradually getting the subjects accustomed to working in front of a video camera; however, the extent to which video-taping might have influenced subjects’ behavior is not known.

Exercise of Power and/or Control

The exercise of power and/or control during hand-offs has been demonstrated in several ways. One method was for the nurse giving the report to keep the hand-off on track by discouraging questions or deviance from the accepted format or terms (Buus, 2006; Ekman & Segesten, 1995; Payne et al., 2000).

The use of power was most evident in discussions of task completion; Manias and Street (2000) and Philpin (2006) described scrutiny of completed (or uncompleted) work on the part of oncoming nurses. This scrutiny was a source of anxiety for off-going nurses. Philpin observed that oncoming nurses were generally supportive when this occurred, but Manias and Street noted that off-going nurses perceived this scrutiny, manifested in requests for additional information, as a critique of their work. Oncoming

nurses tended to focus on work that was left undone, rather than what had been accomplished for and with patients. This resulted in fear and anxiety for the nurses in this study; in fact, some expressed a sense of dread when they had to hand-off to particular staff nurses. Off-going nurses expressed guilt when work was not completed (regardless of the workload). This guilt was then exploited as a form of punishment and as a source of power by some nurses on the unit. Buus (2006) noted that nurses' actions during hand-offs changed depending on who was present. These changes were based on what certain nurses knew or did not know about the patients and/or their conditions.

Ekman and Segesten (1995) perceived that a significant demonstration of power was due to what they called the "deputed power of medical control;" nurses frequently referred to physicians and their orders during the course of hand-offs, which was seen as handing over that delegated power to the oncoming nurse. Frequent use of phrases beginning with "they," as well as a focus on medical procedures and results during hand-offs would be evidence of this assumption of power.

Ritual

Ritual sometimes carries negative connotations; it has been defined as carrying out tasks without giving logical thought (Philpin, 2006). However, an anthropological definition of ritual describes it as "patterned symbolic action that refers to the goals and values of a social group" (DeCraemer et al., 1976, as cited by Philpin, p. 87). The hand-off itself can be described as a ritual, but ritualistic nurse behaviors during the hand-off may be viewed as symbolic of values attached to patient care. For example, in some settings, before the off-going nurse even began to speak, the ongoing nurse read through written notes. Following this, the off-going nurse provided a thorough review of the

patient and the shift's events. Philpin labeled these rituals as attentiveness, and that is symbolic of the care and concern that nurses in this specific unit had for patients.

Other ritualistic behaviors during hand-offs included timing of arrival (the off-going nurse should not arrive too early), the transfer of narcotic keys from the off-going to the oncoming nurse; quiet attentiveness (asking questions was discouraged); a formal statement or signal that the hand-off is beginning or that the end of the report has been reached; departure of the off-going nurse; and assignment of patients by the oncoming charge nurse. These rituals provide for the development of group cohesion and offer a sense of psychological ease in terms of predictability for the beginning of the shift (Hays & Weinert, 2006; Lally, 1999; Strange, 1996).

Patient Information Transmission

Every reviewed study discussed continuity of care and transmission of information about patients as an important component of hand-offs. Hand-offs generally began with what could be considered "demographic" information about patients, including room/bed location, name, age, resuscitation status, and medical diagnosis (Ekman & Segesten, 1995; Payne et al., 2000).

In the literature, language use has generally been only broadly or partially described within the function of patient information transmission. To communicate information about patients, hospital based nurses used biophysical vocabulary and medical terminology, such as laboratory test reports and physical signs and symptoms, to the exclusion of psychosocial terms or descriptions of patients as members of a family unit or their emotional or psychological responses to their physical status (Behara et al., 2005; Ekman & Segesten, 1995; Hays & Weinert, 2006; Liukkonen, 1993; Payne et al.,

2000; Philpin, 2006). Researchers' conclusions were based on observations and not on detailed analysis such as frequencies of words, word patterns or grammar patterns of the language used.

Technical aspects of care, such as task completion, were also a predominant feature of patient information transmission in hand-offs (Ekman & Segesten, 1995; Hays & Weinert, 2006; Lally, 1999; Payne et al., 2000). Discussions of task completion were largely retrospective, in that they focused on the work that had been completed during the off-going nurse's shift, and did not discuss either goals for the oncoming nurse's shift or patient outcomes prospectively (Keenan et al., 2006). These findings suggest that nurses were focused on getting patients safely through the specific shift during which the nurse was caring for the patient, as opposed to the patient's entire hospital stay.

Nurses' Perceptions of Hand-offs

In the course of observations, researchers within and outside the United States identified rituals and practices that served to signal the beginning and end of hand-offs as well as the practices that occurred within the hand-off. However, when surveyed about their perceptions of hand-offs, nurses in Northern Ireland indicated that there was uncertainty about when the hand-off actually began, that expectations about assumption of care became blurred during hand-offs, and that there was inconsistency both in the personnel involved in hand-offs and in the structure of the information relayed during hand-offs. Nurses described feelings of lack of control of the hand-off process, waiting for someone to get back to them, and feeling that they were forgetting to include important information due to the lack of a structured hand-off format (McFetridge et al., 2007).

Nurses in ten European countries were surveyed about their satisfaction with the hand-off process as part of a larger survey about working conditions and retention (Meißner et al., 2007). Perceptions about hand-offs varied to some degree by country. In several countries (England, Poland and Slovakia), fewer than 25% of nurses indicated dissatisfaction, while in France 61% of respondents reported dissatisfaction with hand-offs. Reasons given for dissatisfaction by respondents from all ten countries included “too many disturbances,” “lack of time,” “insufficient information exchange,” “lack of space,” and “poor atmosphere” (Meißner et al., p. 538).

The surveys by McFetridge et al. (2007) and Meißner et al. (2007) reflect the perceptions of nurses in Europe and in Northern Ireland. Differing cultures and practice settings, including health care delivery systems and the role of nurses in those systems, may preclude the generalization of the findings of these surveys to nurses practicing in settings other than Europe and Northern Ireland.

In the United States, the Joint Commission conducted surveys of various groups of health care professionals, asking them to identify the most important item to be communicated during hand-offs (Pillow, 2007). The list of items from which respondents could select the most important information included diagnosis, current condition, recent changes in condition, current treatment, medications/allergies, code status/advance directives, abnormal test results, and discharge needs. Nurses who worked in various settings consistently identified “current condition” as their top choice; however, the percentage of respondents who made that selection varied from 28% to 47% of respondents, depending on the area in which they worked (e.g., medical-surgical units, critical care units, emergency departments). Only the top choice for each group of

respondents was reported; response percentages for other items were not given. This suggests that there is little agreement among nurses regarding what is the most important information to be communicated during hand-offs. If such disagreement does exist, it may result in inconsistency in the hand-off process; what one nurse thinks is important to include may not be a priority for others.

In an effort to gather more information about the perceptions of nurses in the United States, an Internet based survey of registered nurses, sponsored by the Center for American Nurses (American Nurses Association, 2007), was recently conducted to identify both nurses' perceptions of current hand-off processes and to identify areas of hand-offs that are seen as problematic by respondents. Results of the study are not yet available; the authors plan to use the results of this survey to identify educational needs and develop further research initiatives regarding hand-off practices.

Standardization of Hand-offs

The Joint Commission (Pillow, 2007) and the World Health Organization (WHO) (2007) have suggested the standardization of handoff communication as a goal to improve patient safety. While neither organization prescribes a specific framework for hand-offs, suggested frameworks all include a description of the patient's background, the provider's assessment of the current situation, and recommendations for next steps to be taken in the patient's care (Sandlin, 2007). Examples of these approaches, compiled from Pillow (2007) and Sandlin, (2007) are outlined in Table 2.2.

Of the hand-off approaches identified in Table 2.2, S-BAR is the most prominent in the medical, nursing, and patient safety literature (Ascano-Martin, 2008; Crum, 2006;

Table 2.2 Standardized Approaches to Hand-off Communication

Hand-off Approach	Components of Approach	Recommended Use of Approach
BSAP	B – Background; S – Situation; A – Assessment; P – Plan, Problems, Precautions, Pain	End-of-Shift; Patient Transfer
SEAM	S – Summary; EA – Every Active problem; M – Management plan	End-of-Shift; Patient Transfer
SHARED	S – Situation; H – History; A – Assessment; R – Request; E – Evaluate; D - Documents	Nurse-to-Physician Communication; End-of-Shift; Patient Transfer
IPASS	I – Introduction (of self); P – Patient; A – Assessment; S – Situation; the S – Safety Concerns; the; B – Background; A – Actions; T – Timing;	End-of-Shift; Patient Transfer
BATON	O – Ownership; N – Next	
SHARQ	S – Situation; H – History; A – Assessment; R – Recommendations; Q – Questions	End-of-Shift; Patient Transfer
S-BAR	S – Situation; B – Background; A – Assessment; R – Recommendations	Nurse-to-Physician Communication

Haig, Sutton, & Whittington, 2006; Leonard Graham, & Bonacum, 2004; Pillow, 2007; Sandlin, 2007). The S-BAR approach is predicated on the need for a shared mental model between practitioners (Leonard et al, 2004). Mental models are knowledge structures that allow individuals to "describe, explain, and predict events in their environment" (Mathieu, Goodwin, Heffner, Salas, & Cannon-Bowers, 2000, p. 274). Shared mental models are crucial to team functioning in situations where decisions must be made quickly, because they allow team members to predict the information needs and resource requirements of their teammates, allowing for decisions to be made rapidly and actions to be initiated quickly.

Physicians and nurses have differing communication styles, based on education, the hierarchical environment of hospitals, and power differences. Nurses' communication regarding patients tends to be broad and narrative-like, while physicians' communication is narrow and concise (Leonard et al., 2004). Gender, age, native speaker status, social or professional hierarchies, and ethnic background also contribute to these differing communication styles (Haig et al., 2006), but the S-BAR approach was developed primarily as a means to overcome differences in communication styles between nurses and physicians that could negatively impact patient care and safety.

A number of initiatives to improve patient safety, known as National Patient Safety Goals (NPSG), have been put forward by both The Joint Commission and WHO since 2003, including accurately identifying patients, improving communication between caregivers, improving medication safety, elimination of wrong-site surgery, reducing the risk of patient injury, and reducing the risk of infection (Pillow, 2007). Standardization of hand-offs is a specific approach to improving communication between caregivers;

however, the conduct of hand-offs has implications for achieving other patient safety goals as well. National Patient Safety Goals that are specifically related to hand-offs include patient identification, repeat-back of information, report of critical test results, and medication reconciliation (Pillow). Medication reconciliation is an NPSG that calls for a complete list of patient medications to be communicated “when a patient is ... transferred to another setting, service, (or) practitioner” (Pillow, p. 115).

Language

Language and communication are crucial in the context of work settings; they are “basic building blocks of practice” (Thompson, 2003, p. 1) in many human services professions, including nursing. Exploring nurses’ language use in patient hand-offs within the framework of language genres will provide insight into nurses’ use of language as a component of their practice.

Language functions in two primary ways; as a means of communication with others, and as a representation of the world or a means of categorizing things (Joseph, 2004). Both of these functions of language are important components of nurses’ hand-off of responsibility for patient care. Language is used to represent the nursing care that has been provided and the patient’s current state, and is then used to communicate that representation to the nurse who will be accepting the responsibility of caring for the patient.

According to Bakhtin, a 20th century Russian philosopher, “all the diverse areas of human activity involve the use of language” (1986, p. 60). In the 19th century, linguists and philosophers took the position that “language arises from man’s need to express himself, to objectify himself” (Bakhtin, p. 67), and this need for expression occurs in

many communal settings, including workplaces. Language is “a social practice in a social context” (Bjornsdottir, 1998, p. 348), and the social context of workplaces is “held together by communicative practices” (Sarangi & Roberts, 1999, p. 1), whether that communication is verbal, written, or the use of space.

Bakhtin’s (1986) exploration of the use of language as communication also touched on how interactions with others influence views of the self and of others, which in turn influence language choices. Thompson’s (2003) position that communication is a “process through which an individual’s identity is constituted” (p. 26) is supported by Bakhtin’s portrayal of the use of language in communication as an interactive process. The common factor is the process approach to language, the interaction between speaker and listener that forms an utterance and influences the choice of words and style.

The speaker has a multidimensional role in communicative events. While the speaker is delivering a message, he/she is acting in accordance with the anticipated response to that message, so that the background of the listener is a factor in how the speaker constructs the utterance. This activity on the part of the speaker influences the choice of words, the structure of the sentence, and the style of the utterance. The title, class, rank, wealth, social importance, age and the relative position of the speaker to the listener are all factors in formulation of the anticipated response (Bakhtin, 1986).

While Bakhtin (1986) did not specify gender as an influence on speakers' use of language, gender does influence how speakers use language in both social and occupational settings; discussions of gendered workplaces apply to language use in occupational settings. Workplaces and professions can be identified as "masculine" or "feminine;" however, this distinction is not based strictly on the gender composition of

the workforce (Holmes & Stubbe, 2003). The nature of the organization and its work, how people in the workplace interact with each other to accomplish the work of the organization, and the communication patterns used in the organization are important criteria in the categorization of gendered workplaces or professions.

In "feminine" workplaces, the members of the organization interact with each other frequently throughout the course of their workday, in formal meetings as well as informal problem solving sessions. Communication involves many (if not all) participants, and the emphasis is on face-to-face communication. The workplace has a formal hierarchy, but this is downplayed; managers tend to use consensus seeking approaches to decision-making, as opposed to handing down decisions "from above." The roles of workers may be negotiated depending on the needs of the situation, rather than assigned as tasks. Formal meetings tend not to follow strictly linear patterns of organization and decision-making (Holmes & Stubbe, 2003). Examples of such workplaces include hospital inpatient units, educational institutions, and social service agencies; feminine professions include nursing, social work, and teaching.

In "masculine" work settings, on the other hand, the level of mutual engagement is not high; there may be relatively long periods of time throughout the workday where team members do not need to communicate with each other. Talk is seen as a means to an end – when workers need information from a colleague, they act to get the information, and that is the extent of the interaction. There is a high motivation to complete tasks, outperform others, and meet production targets, and tasks are assigned as directives from a manager or supervisor. The group is emphasized over individuals by members of the team (Holmes & Stubbe, 2003). Typical masculine work settings and

professions include military branches, manufacturing facilities, police departments, management, and medicine.

The communication patterns that are established within these differing work settings may serve the members of the respective settings well as they function within their own work spheres. However, when the workers in a feminine setting, such as an inpatient hospital unit, are called upon to interact with those who work primarily in a masculine setting, such as medicine, to accomplish their work of caring for patients, there is a risk of ineffective communication. The communication patterns that members of the respective groups use to function successfully within their own spheres become a barrier to communicating effectively with colleagues who are accustomed to different styles of interaction. A patient need or problem that a nurse is trying to resolve can become obscured by the frustration of trying to make the physician understand the issue, while the physician waits impatiently for the nurse to "get to the point" (Haig et al., 2006; Hughes, 2008; Pillow, 2007). The S-BAR method was developed to overcome this mismatch in communication styles and create common ground between the spheres of nursing and medicine (Leonard et al, 2004).

In the mid-1970's, Lakoff (Lakoff & Bucholtz, 2004) discussed gendered language constructed by women and used to describe women. Characteristics of gendered language demonstrate tentativeness, uncertainty, and subservience on the part of women. Lakoff identified these language characteristics as the use of phonological features (e.g. rising intonation at the end of a declarative statement, turning it into a question); lexico-grammatical features such as tag questions, hedges (e.g. *I think*), discourse markers (e.g. *you know, like*); and evaluative adjectives such as *divine, cute,*

and *darling*. Lakoff argued that the use of these language features by women has served to keep them from participating fully in society, the workplace, and decision making in general.

More recent sociolinguistic research demonstrates that these language features may in fact be gender neutral (Fox Tree, 2006; Holmes, 1986; Nemati & Bayer, 2007), but that significant differences exist in how men and women use these features. For example, women use *you know* to indicate shared knowledge, while men use it to solicit reassurance about the validity of their proposition; women use *I think* to express confidence, while men use *I think* to soften the force of their proposition (Holmes).

Gender, however, interacts with the other characteristics of listeners to whom speakers address their remarks, including race, class, age, ethnicity, and relative position (Bakhtin, 1986; Eckert & McConnell-Ginet, 2003). The nursing workforce in the United States continues to be made of up of primarily women; 91.7% of registered nurses working in the United States are women, while 70% of physicians and surgeons are men (United States Department of Labor, 2008). The interaction of the masculine medical model (whether physicians are male or female) which is prevalent in hospital hierarchies with the predominantly female nursing workforce affects how nurses communicate with physicians, as well as with their nurse colleagues, and patients (Keddy, 1996; Leonard et al., 2004; Reed & Watson, 1994).

Language Genres and Discourse Communities

For the purpose of this study, nursing hand-offs were considered to be a language genre. The traditional understanding of genre is one in a literary context, and dates back to at least the time of Aristotle. In literary terms, genres are a “formal classification of

types of texts” (Devitt, 2000, p. 697), although the term is often also applied in the classification of other media such as film, theatre, art, and music. In a linguistic context, genre has been defined as “a class of communicative events, the members of which share some set of communicative purposes” (Swales, 1990, p. 58). The structure or format of these events is an important component of these communicative events, but genre also considers the language (text or words) of these events (Askehave & Swales, 2001; Devitt; Swales), as well as the category label – in this case, hand-off – in common use by those familiar with the genre. The “event” of hand-offs by nurses occurs several times daily. Hand-offs serve social, educational, and control functions for nurses, but their primary communicative purpose is to relay information about patients to the nurses who will be assuming their care.

Language genres can be seen as having two components: the language used by those participating in the communicative event, and the context within which that communicative event takes place. In this representation, there is a relationship between language and context; language can be seen as both influencing and being influenced by the context within which it occurs. Context includes such factors as the environment in which the language is used, the method used to communicate, and the roles and numbers of participants in the communicative event (Eggins & Martin, 1997).

Bakhtin (1986) explained speech genre from a philosophical point of view in the 1970’s. According to him, “each sphere in which language is used develops its own *relatively stable types*” (p. 60) of utterances that are used consistently and repeatedly; these utterances may be called speech genres. Speech genres occur in many different settings and have many purposes; they may be as mundane as everyday conversations

and retail transactions that occur as a matter of routines in people's lives, or as specific as military commands, business documents, and scientific reports.

The “end-users” of genres are described as a discourse community. Discourse communities are “sociorhetorical networks that form in order to work toward sets of common goals” (Swales, 1990, p. 9), and their use of genres helps them to accomplish those goals. Characteristics of discourse communities include common goals, mechanisms for communication within the community, and specialized terminology.

Genre strengthens bonds within the discourse community as well as excluding others from the community, and has organizational as well as professional constraints (Bhatia, 1997). Genres are the means that members of professional and/or academic communities use to communicate with each other. In order to preserve the generic integrity of the profession, the bonds within the genre or discourse community must be stronger than pressures for modification from outside the discourse community. It is the strength of these internal bonds that supports solidarity within professional communities and preserves their identity. Bhatia cites the resistance to the use of plain English in legislative contexts as an example of efforts by the professional legal community in Hong Kong to maintain its integrity. In Bhatia’s example, the use of language provides legitimacy and power for the members of the legislative community.

Language is used to reinforce bonds between nurses as Wolf (1988) observed:

"As nurses interacted, exchanging information during report, they used hospital-bound, nursing-specific language. The language kept the meaning of report somewhat secret and was intelligible only to those who were initiated into nursing life in the hospital." (p. 66).

The use of this "nursing-specific" language bars outsiders from the knowledge possessed by nurses. It also helps nurses to "express complex meanings without lengthy discussions" (Wolf, 1989, p. 79), which is one of the desirable effects of a shared mental model (Mathieu et al., 2000).

Language genres are dynamic constructs with two aspects (Bhatia, 1997). These aspects are generic integrity on one hand and a propensity for innovation on the other. Generic integrity is a product of the conventional features of a given genre, or those aspects that are consistently used by members of the discourse community. Knowledge of these conventions of the genre allows creativity (or innovation) in expression on the part of the participants in the discourse community, as long as the conventions of the genre are upheld. This characteristic is a source of power for the members of the community. Possession of genre knowledge allows participants to define and regulate the genre, grants them authority to innovate through the mixing and embedding of features from other genres to change the genre, and in some cases, allows them to create an entirely new genre. The implications of the dynamic nature of genres suggest that nurses may be resistant to efforts to standardize hand-offs, especially if nurses perceive that the current structure of hand-offs meets their needs. Conversely, if there is not strong generic integrity within the genre of nurses' hand-offs, the discourse community may be more responsive to changes imposed by outsiders such as regulatory agencies.

Although Hunter posits that the unique knowledge of a discipline is evident in the language of the discipline (2001), the representation of disciplinary knowledge in nursing is influenced by other disciplines. Nurses expect each other to "communicate about ... patients in the technical vocabularies of a variety of disciplines" (Zbilut, 1977. p. 341),

the most prevalent influence is that of medicine (Hyde et al., 2005; Irving et al., 2006; Keddy, 1996; Reed & Watson, 1994). This influence has its roots in nursing curricula that have been developed based on the medical model, a view that focuses on the signs and symptoms of physiologic disease, its treatment, and the goal of “cure” (Parse, 2001; Reed & Watson). The language of the medical model portrays “diseases as static entities rather than dynamic processes” (Fleischman, 2003, p. 490), and the persons who are ill are seen as constituting an environment in which disease occurs. For physicians, this view leads to emphasis on the disease itself, rather than how the disease affects the patient or the meaning of the disease to the patient and/or family. The result is that the disease itself is viewed as more important than the patient who has the disease (Fleischman; Hodgkin, 1985).

Discourse analyses of communication between patients and practitioners have demonstrated that nurses communicate differently with patients about their conditions than do physicians (Drass, 1988; Slade et al., 2008). In interactions with patients, physicians and physician assistants (PA) asked restrictive or “closed-ended” questions, and focused on the physical signs and symptoms of disease and the mechanism of treatment. This focus was displayed in the redirection of the patient to the specific question asked by the physician or PA, and/or giving direction to the patient in order to facilitate the gathering of additional data, as well as giving instructions for treatment and/or follow-up. In contrast, nurses and nurse practitioners (NP), in their interactions with patients, asked more open-ended questions and displayed acknowledgement and understanding of the patient’s experiences and the effects of illness and treatment on the patient. Nurses and NPs were more likely to follow up on comments such as “I feel like

I'm falling apart" (Drass, 1988; Slade et al., 2008) by asking probing questions to explore the root of these feelings.

While nurses talk to patients differently from physicians, when nurses communicate with others (either verbally or in written documentation) about patients, researchers concluded that nurses' language is dominated by physiologic signs and symptoms, body parts and bodily functions, tasks to be completed, and by pharmacologic interventions to induce sleep, treat pain, and/or change behavior (Bjornsdottir, 1998; Heartfield, 1996; Hyde et al., 2006; Irving, 2006).

Irving et al. (2006) speculated that this use of medical discourse by nurses is a means of identifying themselves as members of a select group of people who understand medical terminology and treatment. While this use of medical language may be an example of Bakhtin's (1986) proposition that speakers tailor the content of messages to the background, knowledge, or information needs of their listeners, it may also be evidence of nurses' use of language in attempts to be seen as legitimate members of the hospital hierarchy, which has been dominated by male medicine (Bhatia, 1997; Keddy, 1996; Ravotas & Berkenkotter, 1997).

According to Berkenkotter and Huckin (1995), "genres are intimately linked to a discipline's methodology" (p. 1) and this linkage implies that understanding is essential to one's professional success in the discipline. Understanding also allows members of the discourse community to manipulate the genre for particular purposes. This manipulation, based on understanding, is congruent with Bhatia's (1997) position that genre knowledge allows for creativity in expression, as well as Bakhtin's assertion that "genres must be fully mastered in order to be manipulated freely" (1986, p. 80).

Berkenkotter and Huckin went a step further by presenting the view that writers “acquire and strategically deploy genre knowledge as they participate in their ... profession’s knowledge-producing activities” (p. 3). While this view leads to the expectation that nurses’ language within hand-offs differs from general spoken English, the extent to which nurses’ language use during hand-offs differs from other disciplinary genres in health care settings, such as medicine, is less clear.

Genre Analysis

Discourse analysis is "the study of how sentences in spoken and written language form larger meaningful units such as paragraphs, conversations, interviews, etc." (Richards et al., 2002). Genre analysis is a form of discourse analysis (Candlin, 2002), the purpose of which is not only to describe how those meaningful units are formed, but why speakers use language in the ways that they do to form those units (Bhatia, 1993). Genre analysis has been used by linguists to explore the language used in a wide variety of settings, including research papers (Swales, 1990); academic speech (Simpson, 2004); job applications, business communication, and legislation (Bhatia); grant proposals (Connor & Upton, 2004); case presentations by medical residents (Atkinson, 1999; Erickson, 1999); discourse in veterinary medicine training (Schryer, 1993); operative reports (Pettinari, 1983); and radiologists’ reports (Yakel, 2001).

Findings from genre analysis have been widely used in teaching communication strategies, particularly for non-native speakers and writers (Bhatia, 1993; Lee & Swales, 2006; Simpson, 2004). Pettinari (1986), Yakel (2001), and Solet et al. (2007) reported that healthcare providers acknowledge that they have received little formal education or

training in dictating reports or hand-offs. Genre analysis has potential for forming a basis for developing such education for physicians, nurses, and other healthcare providers.

Genre analysis can be applied to analyze both the substance and form of organizational communication (Yates & Orlikowski, 1992), examining the motives, themes and topics for the communication. The use of language is captured in the form of organizational communication, which has three aspects. Two of these aspects focus on context within which the communication takes place, including structural features, such as an agenda for a meeting and the role of a chairperson; and the communication medium, such as written or face-to-face. The third aspect of the form of communication is a language or symbol system, including specialized vocabulary. The language aspect of form includes vocabulary or lexis (the words which are used), and grammatical features (use of various parts of speech, tense, etc).

Lexis

According to Sinclair (1991), “the lexis of a language is the set of all its word-forms” (p. 174). The lexicon of a language is the vocabulary and/or dictionary for the language, but it includes information about actual frequencies of use as well as frequency of use in relation to other words in the lexis. The lexis of a language provides a basis for determining the lexical or information density of a language, which is the proportion of lexical, or content, words to the total number of words in the text (Crawford, Johnson, Brown & Nolan, 1999; Hellesø, 2006). A higher number of content words results in a higher lexical density.

Lexis is a dynamic concept, in that it changes as technology and/or society change. In some cases, this might mean that new words are added, that words become

obsolete, or that the meaning(s) of word(s) change (Girard, 2007). Within the genre of nursing hand-offs, lexis includes the words and word patterns used by nurses during those hand-offs as well as words that may be shared with other disciplines, such as medicine.

Grammar

Grammar is a means of understanding the structural characteristics of language (Biber, Conrad, & Rippen, 1998). Studies of grammar often include examinations of morphology, or word structure; syntax, the way that words are used within sentences; and other properties of words, such as part of speech (nouns, adjectives, verbs, etc).

Grammar is commonly perceived as prescriptive, in that it is a set of rules to be followed for “correct” speech or writing. However, within linguistics and information science, grammar is a descriptive field of study, one that focuses on “how languages are structured and how human minds are working as they produce or process language” (Biber et al., 1998, p. 56). Grammar is an expression of the culture and context within which language is formed and used.

Grammar helps speakers and writers to harness the “enormous creative power of language” (Crystal, 1997, p. 89), allowing people to express infinite sets of sentences. There are several categories of grammatical expressions, each of which conveys a different type of meaning. For example, verbs can convey several types of meaning. *Aspect* conveys continuity or progress; *tense* conveys time, such as past, present or future; *mood* conveys actuality, possibility or uncertainty; and the *voice* of a verb conveys action, such as who acted, what was acted upon, or causality.

The fields of natural language processing and computational linguistics have developed along with the increased sophistication of electronic language applications,

and descriptive grammar is an important component of these fields. In these areas, the study of grammar has moved from a listing of principles to analysis of how those principles function in language as used in naturalistic settings. The results of language analyses are used in modeling electronic text processing and generation systems (Jurafsky & Martin, 2000). The field of text generation has implications for nursing communication as clinical information systems become more sophisticated as well as more widespread.

Genre analysis allows the researcher to move from simply describing the words and grammar of a genre to explaining the use of those words and grammar in complete texts or discourses. Within genre analysis, there are several levels of analysis. Linguistic analysis includes analysis of lexico-grammatical features, analysis of text patterning or textualization, and structural interpretation of the text-genre (Bhatia, 1993). These levels of analysis may be used separately or in combination with each other to describe the language used within the genre.

Analysis of Lexico-grammatical Features

Analysis of lexico-grammatical features is characterized as a surface level analysis, which focuses on the words in a text and how those words appear in sentence structures. Analysis at this level provides information about frequency of specific words or grammatical features such as tense, parts of speech, and sentence structure. While this analysis can provide useful information about the incidence of certain language features, it provides little insight into the communicative purpose of the use of those features. Analysis of lexico-grammatical features provides empirical evidence that may confirm or disprove hypotheses about how often a word or structure appears in a text (Bhatia, 1993).

Analysis of Text-Patterning or Textualization

Analysis at this level provides more insight into the language users' choices in lexico-grammatical features and the value placed on those features in communicating their message(s). This analysis can provide information on what the speaker assumes the listener knows (or does not know), as in scientific writing. It also reveals the use of language to influence, as demonstrated by the frequent use of adjectives in advertising. Analysis of text patterning provides a link between form and function in communication (Bhatia, 1993), allowing explanation of why speakers use frequent forms in a given text or genre.

Structural Interpretation of the Text-Genre

Structural interpretation allows for the identification of cognitive aspects of language use. It examines the organization of the message of a genre as well as revealing the preferences of the language users for how they organize that message. This organization is explicated by identifying a series of "moves" and "steps" or "strategies" in the texts of the genre. The identification of moves and steps in texts was initially developed by Swales (1990), and further described by Bhatia (1993, 2001) and Biber et al. (2007.) Bhatia described the move structure of a genre as a means of interpreting the regularities within the genre so as to identify the rationale for the genre.

Moves are "a section of a text that performs a specific communicative function" (Biber et al., 2007, p. 23). These moves "capture critical kinds of information selected by the speaker from his conceptual representation of the subject matter" (Tomlin, Forrest, Pu, & Kim, 1997, p. 75). Moves provide a cognitive structure and are the functional

means of accomplishing the purpose of the communication within the genre, as well as the criteria used to identify a genre (Bhatia, 1993, 2001).

Within the moves of a genre, speakers or writers also may employ a series of steps or strategies to accomplish the goal of the move. Steps are generally seen as sequential in nature, while strategies are less structured and may not appear within moves in a sequential fashion (Bhatia, 2001; Kwan, 2006). A variety of strategies may be used by speakers to accomplish the communicative purpose of a move(s) within a given speech genre; this range of options for communication contribute to the manipulation of the genre by practitioners (Bhatia, 2001). The contextual component of the genre of patient hand-offs has been described by nurse researchers, but nurses' use of moves and strategies to accomplish the goal of transmitting patient information in hand-offs has yet to be described. The results from lexico-grammatical and text-patterning analyses can shed light on how nurses use language in hand-offs and identify the moves and steps or strategies used to accomplish the communicative purpose of transmitting patient information.

Corpus Analysis

A corpus is a collection of linguistic data, such as written text or transcribed speech, or a combination of both (Adolphs, 2006). Corpus linguistics is a rather broad term that characterizes the linguistic analysis of these large bodies of text. Corpus linguistics is primarily a methodology rather than a branch of linguistics in the sense that discourse analysis, syntax, semantics or pragmatics are specific fields of study within linguistics. Corpus linguistic methods can, however, be utilized to carry out language analyses within any of these specific areas of linguistic study (McEnery & Wilson, 2001).

Linguists have utilized corpus-based techniques since the nineteenth century. Studies of children's language acquisition were aided by diaries composed by parents in the latter half of the nineteenth century, and studies of spelling conventions were conducted using large bodies of text in the late 1800's in Germany. In the early part of the twentieth century, corpora were developed by researchers in language pedagogy, language comparison, and syntax and semantics (McEnery & Wilson, 2001).

The use of corpus based techniques dramatically decreased in the middle of the twentieth century, largely due to the influence of the linguist Noam Chomsky. Chomsky, whose work was focused on the cognitive and intuitive processes that support language development and use, was highly critical of the empirical approach used to analyze corpora, and argued that the primary aim of linguists should be to examine language competence (internalized knowledge of language use) rather than language performance (external use of language, which can be influenced by a number of factors). Chomsky was extremely influential, and his arguments were so powerful that the use of corpus based methods in linguistic studies, with a few exceptions, virtually ceased in the 1950's as linguists focused on analysis of language competence (Adolphs, 2006; McEnery & Wilson, 2001; Sinclair, 1991).

However, in the 1980's, applications of corpus based techniques in linguistic study increased dramatically, largely due to the development and increasingly widespread availability of computers and software developed for language analysis. During this time period, linguists began to explore language in actual use. Sinclair was widely influential in this movement, using electronic analysis to identify language patterns in large bodies of text (corpora). This work allowed educators in English as a

second language to use "real-world" examples of language in use to their pupils, rather than "invented" sentences that learners would likely never encounter as they attempted to assimilate to a new culture (Stubbs, 2009). The ability to store data electronically has allowed the development of corpora of millions of words, in English as well as other languages (Biber et al., 1998; McEnery & Wilson, 2001).

As applied in genre analysis, corpus analysis is used to describe the lexical characteristics (such as word frequencies) of the language of a genre as represented in a body of text. The technique is also used to identify association patterns in texts, such as word combinations, collocations, and both lexical and grammatical distributions across the samples within a corpus. The results of these studies identify how discourse communities use language and can be applied in language teaching, studies in language variation, the study of ideology in language, and comparing and analyzing language varieties, such as professional language, dialects or versions of English (Adolphs, 2006; Biber et al., 1998; Sinclair, 1991).

A number of corpora of English and other languages are available in electronic form, ranging from the 1,000,000-word corpora developed in the 1960's to corpora that now exceed 500 million words (Adolphs, 2006). These very large corpora are usually designed to capture a wide range of examples of language use; they often include such genres as newspaper articles, research articles speeches, policy documents, and other types of non-fiction documents as well as various types of fiction from both written and spoken sources (Adolphs; McEnery & Wilson, 2001). These large corpora allow generalizations to be made about a language as a whole, and also allow for the analysis of genres within a single corpus. Corpora of spoken language are more difficult to compile,

due to the need for audio-recording and subsequent transcription of the recordings, but there are corpora that include general conversational English (Adolphs; McEnery & Wilson; Sinclair, 1991).

A corpus compiled to examine the genre of nursing hand-offs is, by definition, a specialized or special purpose corpus (Bowker & Pearson, 2002), restricted to the language of a particular subject field (nursing) within a specific context (end-of-shift) and professional group (hospital based nurses). As such, it cannot be used to describe English in general, but can be used to describe and define the language of a specific situation. The restriction of a corpus to a specific subject field, especially one that is verbal, adds to the challenges of compiling a corpus of significant size to be able to draw conclusions about language use within the field.

However, Bowker and Pearson (2002) pointed out that “bigger is not always better” (p. 46), especially when the purpose for the corpus is to examine specialized language. Bowker and Pearson proposed that when the goal of analysis is to develop knowledge about a particular genre, a corpus of 10,000 words may be more useful than a generalized corpus of ten or even one hundred times that size.

Language Analysis in Nursing

While there are examples of discourse analysis in the nursing literature, few are specifically genre analysis or use corpus analysis techniques. Studies using discourse analysis began appearing in the nursing literature in the 1990's. Buus (2005) and Traynor (2006) conducted meta-analyses to analyze the incidence and prevalence of discourse analysis as a methodology in nursing research.

Nurse researchers who chose to utilize discourse analysis as a research technique used a wide variety of approaches in their work. Buus (2005) found that 74 studies indexed in the CINAHL electronic database varied in topics and methodologies, that the studies emphasized functions of discourse rather than on the characteristics of discourse, and that the nursing discourses examined nursing's relationship to social practices, usually within religious organizations, and historical views in nursing textbooks. Fourteen of these studies focused on conversation or other verbal interactions, but none examined nursing hand-offs. Buus pointed out that close to half of the studies he examined did not identify the unit of analysis that was used; those that did identify units of analysis included narratives, construction of identity, metaphors, rules of language, and communication formats.

Buus (2005) was critical of the many approaches labeled as discourse analysis in his sample, suggesting that nurse researchers were not collaborating with expert discourse analysts. As a result, studies published in nursing literature as discourse analyses more closely resemble qualitative studies than discourse analyses. Buus recommended that nurse researchers who wish to utilize discourse analysis methods work with specialists in discourse analysis when conducting such studies. Buus also specifically recommended that future work include more linguistic and/or interactional analyses, which he suggested would be less theoretical and more representative of the “real world” in which nursing care is provided.

Traynor (2006) reviewed 24 reports of discourse analysis published over an eight-year period (1996-2004) in the *Journal of Advanced Nursing*, and also found a wide range of approaches. This examination placed the studies in a framework of for

discourse analysis developed by Taylor (2001, as cited by Traynor). This framework includes four models of discourse analysis, including: (a) identifying code, which examines language properties; (b) use and interaction, which includes conversation analysis; (c) interpretive repertoires, or analysis of discourse in occupational and social contexts; and (d) societal discursive practices, which focus on studying discourse and power. The papers examined nursing texts, historical documents, or transcriptions of interviews between nurses and patients or between the researcher and nurses. There were no studies of nursing hand-offs in the papers that Traynor reviewed.

Traynor (2006) concluded that studies by nurse researchers using discourse analysis were situated within the use and interaction, interpretive repertoire, and societal discursive practices models. As a result, the studies focused on the meaning of the text while ignoring the linguistic structure of the text. Traynor's findings illustrate the paucity of research in nursing that describes the use of language. Consistent with the views of Bhatia (1997) and of Berkenkotter and Huckin (1995), Traynor suggested that the structure of texts can shed light on how groups of professionals achieve and maintain status, on power relationships between the participants in the discourse, and on how and whether individuals resist power.

One study demonstrated the application of corpus analysis to nursing communication, and provided an example of how the use of corpus analysis can provide the structural data about nurses' language use that both Buus (2005) and Traynor (1996) viewed as lacking. In the United Kingdom, Crawford et al. (1999) analyzed nursing reports with the goal of quantitatively and stylistically characterizing the genre of written reports by nurses. Crawford et al. had nursing students and graduate nurses view a

videotape of a patient being interviewed by a psychiatrist, and then write a summary “report” of their observations. Although it is not clear whether the interview was an actual patient situation or a simulation in this study, the resulting documents were combined to produce a corpus, or body of text, of just over 5500 words. Crawford et al. examined written, not verbal, reports, but their study provides an example of how corpus analysis can be used to analyze nurses’ communication.

Crawford et al. (1999) analyzed the resulting corpus to produce a quantitative analysis of word usage, and compared it to existing corpora of the English language. The sample of nurses’ writing was only slightly more lexically dense than everyday spoken English, and less dense than most written texts. As already noted, lexical density is the proportion of lexical or content words to the total number of words in the text. The nurses did use slightly more lexical items, such as nouns, verbs, adjectives and adverbs, than were used in typical speech. General speech has a higher percentage of grammatical items, such as conjunctions, prepositions, articles and auxiliary verbs.

Modal auxiliaries are verb forms that express uncertainty or imprecision, and the nurse report corpus contained a high percentage of these, including *may*, *would*, *could*, *can*, and *can’t*. The use of these terms may indicate vacillation between decisiveness and indecisiveness on the part of the authors. This feature of language appears in the language of disempowered groups, and, according to Crawford et al. (1999), corresponds to the position of nurses within the hierarchy of the hospital. It can also indicate hedging, or an unwillingness to commit to a position that could be challenged; Crawford et al. characterize hedging as it appears in this corpus as “using language which says very little” (p. 335).

Nurses also displayed inconsistency in their selection of terms within their written reports. For example, each of the 26 participants in the study used one, two, or sometimes three different labels for the patient within their reports. Some used *man*, *patient*, *gentleman*, or *client* exclusively, but nearly half of the participants used more than one term in their report. This use of multiple terms to represent the same object was identified by Crawford et al. as possible tension between professional and lay descriptions of personhood. According to Crawford et al., it would be reasonable to expect more homogeneity within a group of professionals. Similarly, lay terms for *depressed*, such as *low* and/or *down*, were used throughout the corpus.

Crawford et al. concluded that nursing language is strongly rooted in everyday language, and even when technical terms appear, “they are deployed with a lack of precision” (p. 339). Crawford et al.’s work focused on lexico-grammatical analysis (a surface analysis, as described by Bhatia (1993), and, to a more limited degree, analysis of text-patterning, and is an example of the knowledge that can be gained by applying corpus analysis techniques to nurses’ language.

Conclusions

Hand-offs are a means of bridging the shift-change gap and transferring the responsibility for patient care from one nurse to another (Cook et al., 2000) in an effort to reduce the risk of errors in patient care. Hand-offs also serve a number of purposes for nurses, including: (a) education and acculturation; (b) enhancing group cohesion; (c) exercising power and control; (d) ritual; and (e) patient information transmission. There has been relatively little investigation of the language used by nurses to transfer the responsibility for patient care to a colleague.

The current focus on improving patient safety by standardizing hand-offs was generated by the 2000 Institute of Medicine (Kohn et al.) report on errors in health care in the United States, and a number of approaches have been put forth for standardizing hand-offs (Pillow, 2007; Sandlin, 2007). These approaches were developed to counteract the differences in communication styles and language use between nurses and physicians. the reality on the premise that nurses communicate differently than do physicians. These differences exist, in part, due to gendered workplaces, professions, and language. Physicians, educated and acculturated to the masculine profession of medicine, and nurses, similarly educated and acculturated to the feminine profession of medicine, do not view the world, patients, or each other in the same way (Holmes & Stubbe, 2003).

The most prevalent of the suggested approaches to standardizing hand-offs is the S-BAR method, which was originally developed to facilitate communication between nurses and physicians in the management of acute clinical situations (Durham & Alden, 2008; Guise & Lowe, 2006; Leonard et al., 2004). The basis for the development was to assist nurses and physicians to develop a shared mental model of patient situations, so as to reduce the need for dialogue and quickly respond to the patient situation (Mathieu et al., 2000). The end-of-shift hand-off is different from these acute situations in two ways: (a) it takes place between two members of the same profession – nurses; and (b) the hand-off is focused on a defined period of time, rather than a specific clinical event.

The S-BAR method has recently been recommended for use or implemented in a number of nursing settings as a framework for end-of-shift hand-offs (Crum, 2006; Haig et al., 2006; Sandlin, 2007); however, there is no evidence to suggest that S-BAR is a best

practice for end-of-shift hand-offs. Nurses use language to express complex problems without detailed explanations (Wolf, 1988), a result of shared mental models.

The role that language plays in both social and work settings is complex and multifaceted. Definitions of genre incorporate both the context in which communication occurs and the language that is used to accomplish the communicative transaction or event (Bhatia, 1997; Berkenkotter & Huckin, 1995; Swales, 1990; Yates & Orlikowski, 1992). Examinations of hand-offs to date have focused on the context within which hand-offs occur or the functions that hand-offs fulfill for nurses, to the exclusion of the language system used in the communication.

The concept of language within genre of end-of-shift hand-off includes both the lexis, or vocabulary, used by nurses and the grammar used to put the words of the hand-off together. Structural interpretation, using move analysis, will reveal the cognitive organizational structures that nurses use to achieve the transfer of responsibility for patient care. Lexico-grammatical and text-pattern analysis, using corpus analytic methods, will "fill in" those structures with details of the words that nurses use and the grammar that they use to put the words together (Bhatia, 1993; Biber et al., 2007). The use of move analysis to describe the structure of hand-offs, and corpus analysis to describe the language features that nurses use in the communicative event of the nursing hand-off will add to what is already known about hand-offs by providing empirical information about the language used by nurses to describe their work and the patients they have cared for. The research reported in this dissertation is an example of the types of research needed to provide insights into this knowledge gap.

A search of the United States Library of Medicine's PubMed database on the search term "nurse-physician communication" returned 82 citations; "nurse-nurse communication" returned only six. A search for "nurse-physician relations" returned 3047 results; only 16 citations were returned for "nurse-nurse relations". There is a substantial body of literature on nurse-physician relations and nurse-physician communication, but much less literature on nurse-nurse relations and nurse-nurse communication. This dissertation will contribute to filling that gap by describing the language use between nurses during end-of-shift hand-offs.

Chapter 3

Design and Method

This descriptive study focused on identifying the structural components of nurses' hand-offs, comparing audio-taped to face-to-face hand-off methods, describing the lexical and grammatical features used by nurses during hand-offs, comparing nurses' hand-offs to general spoken English, and identifying the presence or absence of patient safety mechanisms within nurses' end of shift hand-offs. The study was a secondary analysis of transcribed hand-offs collected for a previous study designed to examine the effects of health information technology (HIT) on nursing care and patient safety (Keenan et al., 2006).

Descriptive designs are used when “characteristics ... are either unknown or partially (incompletely) known” (Brink & Wood, 1998, p. 288). According to Polit and Beck (2004), the purpose of descriptive studies is “to observe, describe, and document aspects of a situation as it naturally occurs” (p. 192). Results from descriptive studies are often the starting point in a progression of knowledge expansion, which contribute to hypothesis generation and/or theory development. Previous research about hand-offs has not fully described the language used by nurses during the hand-off process. The descriptive design was appropriate for this study, in that it will identify the characteristics of the language used by nurses during hand-offs and potentially contribute to the design of interventions that enhance the hand-off process between nurses.

Human Subjects Protection

The original study for which the hand-off data was collected was approved by Institutional Review Boards (IRB) at the University of Michigan, the University of Illinois-Chicago, and each of the participating hospitals. For this secondary analysis, an exemption from IRB review was granted by the University of Michigan IRB-MED, which was the approving IRB for the original study, on July 7, 2008. This exemption was based on federal exemption Number 4 of the CFR 46.101.(b).

The 800 nurses who participated in the original study signed informed consent documents, and were assured of anonymity. All subjects were assigned an identification code for the original study; however, for the collection of the handoff data, there was no identification of either the off-going or the oncoming nurses by either name or identification code. During the transcription of the audio recordings, information that could be used to identify any individual (patients, family members nurses, or other providers) was changed to pseudonyms. References to hospitals, room numbers, units, and other locations (cities or neighborhoods) were also changed to pseudonyms.

The files to be used for data analysis were stored on a password protected electronic data storage device. A second copy of the files was stored on a separate password protected device as a back-up in case of device failure or file corruption. The password was known only to the principal investigator for the secondary analysis.

Settings

The original study for which the hand-off data was collected was a three-year study conducted from 2004 – 2008 and aimed to evaluate the effectiveness of an electronic care planning application in supporting nursing care and the use of

standardized nursing terminology (Keenan, Tschannen, and Wesley, 2008). The hand-offs were collected from April to June of 2007. The study was conducted on eight separate nursing units in four different healthcare organizations in one state in the Midwestern United States. All of the settings were acute care hospitals. One was a university medical center, located in a metropolitan area and the other three included 2 large tertiary care hospitals in urban settings and 1 small community acute-care hospital in a suburban area. Characteristics of the hospitals and units are shown in Table 3.1.

Table 3.1 Study Settings

Hospital Code	Hospital Size and Type	Unit Code	Unit Size and Type
A	74 Bed Community Hospital	1	22 Bed Medical/Surgical
		2	42 Bed Progressive Medical/Surgical
B	529 Bed Teaching Tertiary Care Hospital	1	42 Bed Gerontology
		3	10 Bed Intensive Care
		2	23 Bed Gerontology
C	968 Bed Teaching Tertiary Care Hospital	1	22 Bed Progressive Medical/Surgical
		2	23 Bed Gerontology
D	550 Bed Academic Medical Center	1	32 Bed Neurology/Neurosurgery
		2	60 Bed Cardiac/Vascular/Thoracic Surgery

Data Collection

Hand-offs were recorded on each of the eight study units, at the end of all shifts. On some units, the nurses worked twelve-hour shifts; on these units hand-offs were recorded at the end of a day shift (7:00 a.m. to 7:00 p.m.) and at the end of a night shift (7:00 p.m. to 7:00 a.m.). On units where nurses worked eight-hour shifts, hand-offs were recorded at the end of day (7:00 a.m. to 3:00 p.m.), evening (3:00 p.m. to 11:00 p.m.), and night (11:00 p.m. to 7:00 a.m.) shifts. Both face-to-face hand-offs and audio-taped hand-offs were included in the recordings. A total of 43 patient hand-offs, given by 14 different nurses, were recorded.

A convenience sample of participants was obtained when the researchers went to the units to gather the hand-off data; participants who had agreed to participate in the study by signing an informed consent were selected based on their availability (presence on the unit that day) and their willingness to allow the recording. Participants in the study always had the option to decline to participate in any of the data collection activities. Because of the anonymity of the speakers, demographic information about the nurses who participated in the handoffs is not available. Therefore, it is not possible to assess differences in age, race, gender, educational preparation or years of nursing experience of the speakers.

The data for this study was a corpus, or body of text, that was compiled from transcriptions from all 43 patient hand-offs. The total size of the corpus is approximately 21,000 words. A research assistant affiliated with the original study transcribed the audio recordings into text. Due to the sometimes poor quality of the audio recordings, derived largely from the fact that they were obtained naturalistically in busy hospital settings,

some of the words were unintelligible. To attempt to resolve missing words, the audio recordings were forwarded to experienced transcriptionists from both the University of Michigan English Language Institute and the University of Illinois-Chicago; they were unable to resolve the missing words.

The transcriptions were originally compiled in the Microsoft Word® program; the document formatting features within Word® are not compatible with corpus analysis software programs, so the Word® files were converted to plain text files. The abbreviations and spelling conventions used in the transcriptions were consistent with those used for the Michigan Corpus of Academic Spoken English (MICASE) (University of Michigan English Language Institute, n.d.) with one exception. Instead of speakers being numbered as S1, S2, etc., speakers were identified as Oncoming Nurse (OCN) and Off-going Nurse (OGN). The MICASE transcription conventions are found in Appendix A.

Individual files for each of the 43 transcripts were created. The individual electronic files of the transcripts were also compiled electronically into a single large file containing the entire corpus. Each file name signified the hand-off number (001 – 043), location (Hospital A, B, C, D; Unit 1, 2, 3); patient (Patient 1, 2, 3, etc), and nurse (Nurse 1, 2, 3, etc.).

Data Analysis

Three separate analyses were carried out: a qualitative moves analysis to identify the organizational structure of the hand-offs; a quantitative comparison of the face-to-face hand-offs to the audio-taped hand-offs; and a corpus analysis to identify the lexicogrammatical features and text patterns used in hand-offs.

Move Analysis

A sample of 11 of the 43 hand-offs (25%) was randomly selected to determine the move structure for the hand-offs. The structural components, or moves and strategies, of the hand-offs in this sample were identified based on careful reading and re-reading of the hand-off transcriptions. The initial review of the sample resulted in a four-move model. Move 1, Introducing the Patient, contained eight strategies; Move 2, Relating the Events of the Shift, contained six strategies; Move 3, Looking Ahead, contained three strategies; and Move 4, Wrapping Up, contained five strategies. The frequency of occurrence of each of the moves and strategies was calculated; any element that was present in fewer than 50% of the hand-offs in the sample was deleted from the model. The selection of 50% as a cut-off was somewhat arbitrary; however, since the model was developed based on only 25% of the total number of hand-offs, a conservative cut-off point was selected so as to avoid omitting potentially key elements that might be revealed in the application of the model to the entire set of hand-offs. Since these moves occurred in less than 100% of the sample, the percentage of occurrence for each strategy in these moves was calculated based on the number of hand-offs in which the move appeared. Version 1 of the model is shown in Table 3.2.

After eliminating elements that were not present in at least 50% of the sample hand-offs, the sample was re-read, and the model was revised accordingly. The four-move structure was retained, but the strategies within each of the moves were reallocated, and in some cases, strategies were eliminated from the model. Table 3.3 displays Version 2 of the model.

Table 3.2 Version 1 of Hand-off Structure Model

Move	Strategy	Percentage
1 – Introducing the patient		100%
	1.1 – Room Number	82%
	1.2 – Patient Name	91%
	1.3 – Patient Age	36%
	1.4 – Physician/Service	55%
	1.5 – Reason for Admission	91%
	1.6 – Inquiry regarding oncoming nurse’s knowledge of patient	27%
	1.7 – Truncating Information	9%
	1.8 – Review of medical history	27%
2 – Reporting current status		100%
	2.1– Reviewing orders	100%
	2.2 – Reporting patient performance/results	82%
	2.3 – Reporting observations	91%
	2.4 – Sharing interventions	91%
	2.5– OCN Clarification	64%
	2.6 – OCN Affirmation	45%
3 – Looking ahead		64%
	3.1 – Planned activities	86%
	3.2 – Readiness for planned activities	71%
	3.3 – Giving instruction	43%

Table 3.2 continued

4 – Wrapping up	82%
4.1 – Concluding statement	44%
4.2 – Soliciting questions	89%
4.3 – Oncoming nurse question	33%
4.4 – Offgoing nurse providing answers	33%
4.5 – Oncoming nurse accepts patient	44%

Table 3.3 Version 2 of Hand-off Structure Model

Move	Strategy	Percentage
1 – Introducing the patient	1.1 – Room Number	82%
	1.2 – Patient Name	91%
	1.3 – Physician/Service	55%
	1.4 – Reason for Admission	100%
2 – Relating the shift's events	2.1 – Reviewing orders	100%
	2.2 – Reporting patient performance/results	91%
	2.3 – Reporting observations	91%
	2.4 – Sharing interventions	100%
	2.5 – Oncoming nurse clarification/questioning	64%
	2.6 – Offgoing nurse response	55%
	2.7 – Oncoming nurse affirmation	55%
3 – Looking ahead	3.1 – Planned activities	88%
	3.2 – Readiness for planned activities	50%
4 – Wrapping up	4.1 – Soliciting questions	88%

Following the development of the revised model, 4 of the 32 (12%) hand-offs that were not used in the development of the model were selected and independently evaluated by two raters to determine inter-rater reliability for the model. One rater was the principal investigator of this study; the second was an expert in genre analysis. The two raters then compared their applications of the model to the selected sample of hand-offs. The two raters identified a total of 90 moves and strategies within the four hand-offs, and agreed on the labeling of 85 of the 90 elements.

Cohen's *kappa*, which measures nominal scale agreement between two raters, was used to measure inter-rater reliability. While agreement between two raters could be calculated by simply counting the number of times that the two raters agreed, using this as a measure of agreement between the two raters would not account for any agreements that occurred simply by chance (Banerjee, et al., 1999). For this evaluation, Cohen's *kappa* was calculated to be .93 ($p = .000$). After discussion, the two raters agreed on the identification of the five remaining elements; recalculation of Cohen's *kappa* resulted in a value of .99 ($p = .000$). Values of *kappa* greater than .75 are generally interpreted to mean that there is "excellent agreement beyond chance" between two independent raters (Banerjee et al., 1999, p. 6); Biber et al. (2006) conclude that a finding of .80 or greater is an acceptable value for inter-rater reliability. The results of the inter-rater reliability for Version 2 of the model indicate that the model is a usable framework for the sample of nurses' hand-offs available for this study.

During the course of reading and re-reading the hand-offs to develop the model, the use of linguistic and discoursal features that were not part of the structure of the hand-off, but did occur in the hand-offs, was identified. The linguistic features were

metonymy and ellipsis; side-sequences, which are discursal features were also noted. These features occurred with some frequency in the hand-offs, and are discussed with findings from the move analysis in Chapter 4.

Comparison of Hand-off Methods

Descriptive statistics of the hand-offs were compiled using the SPSS software package. The corpus was divided into two sub-corpora to compare the hand-off communication based on the method used for handing off. One sub-corpus was made up of face-to-face handoffs, and the second included those handoffs that were audio-taped by the off-going nurse. The two methods were compared to determine if there were differences in elapsed time and word counts. The mean times and word counts were compared using the t-test statistic for independent samples; the presence of other linguistic features, including metonymy, ellipsis, side-sequences, and use of filled pauses in the two hand-off methods, was evaluated using the chi-square test. Chi-square compares the observed frequencies of an attribute to the expected frequencies for that attribute in two groups to determine if those frequencies are significant or the result of chance (Polit & Beck, 2004). The results of these comparisons of hand-off methods are discussed in Chapter 5.

Corpus Analysis

Word Frequencies

As a starting point for identifying the language used by nurses during hand-offs, the entire corpus was analyzed using the AntConc software application (Anthony, 2005). AntConc generates word frequency lists, as well as concordances that display how words from the frequency list are used in the context of a sentence. Word frequencies provide a

“set of hints or clues to the nature of the text” (Sinclair, 1991, p. 31). Frequency lists that result from analyses of texts provide a starting point for further analysis of the text, and allow for the exploration of other features in text, including collocations, the use of words in the context of sentences, and keyword analysis.

Collocations

Selected words were identified using the word frequency results and AntConc was used to identify their collocations. Collocation is defined by Sinclair as “the occurrence of two or more words within a short space of each other in a text” (1991. p. 170). In many cases, word groups (two or more words) mean something different from the meaning of the individual words in the phrase, and identifying these collocations provides additional insight into the use of language by the speakers. Collocation identification also provides information about the grammatical patterns used by speakers. As Sinclair points out, collocations that occur infrequently or unexpectedly are of as much (or more) interest as those that occur frequently throughout a body of text.

Phrase-Frame Analysis

The entire corpus of nearly 21,000 words was also analyzed using the kfNgram software application (Fletcher, 2007). The kfNgram software identifies repeating sequences of words within a corpus. N-gram is “understood as a sequence of ... n words, where n is any positive integer” (Fletcher, Description, ¶ 1). The output from the KfNgram analysis displays the n-grams, or word sequences, that repeat within the corpus. The kfNgram software also identifies phrase-frames, which are groups of n-grams that are “identical but for a single word” (Fletcher, Description, ¶ 1). N-grams discover the

text-patterns in the corpus by identifying recurring phrases used by the speakers (Bhatia, 1993; Sinclair, 2004).

The n-gram search was conducted for three-grams, or recurrent instances of three word sequences within the corpus. Three-grams were chosen as a starting point because two word sequences, or bi-grams, would be likely to result in a very long list of pairs of words that occur frequently and are expected (such as *blood pressure*), whereas three-grams are not as frequent and provide more manageable results (personal communication, U. Römer, June 12, 2008).

Concordance

The entire corpus, the individual hand-off files, and the face-to-face and audio-taped hand-offs were then analyzed in further detail using the concordancer tool within AntConc (Anthony, 2005). Findings from the kfNgram search and the word frequency list were then used to generate additional searches in AntConc to identify the language patterns used by nurses during hand-offs.

The output from a concordance analysis identifies the use of frequently appearing words in the context in which they are used. This context can be the entire sentence, or a set number of words to the left or to the right of the identified word. Concordance listing provides additional information about the use of frequently appearing words as parts of speech or in collocation with other words or parts of speech, and contributes to interpretation of the meaning of the text.

Keyword Analysis

Word frequencies serve as the basis for comparing bodies of text to determine their similarities and/or differences. A key word is a “word which occurs with unusual

frequency in a given text”(Scott, 1997, p. 236). The identification of words that occur with unusual frequency in a corpus is based on a comparison between that corpus and a reference corpus. The results of this comparison allow for conclusions to be drawn about how the corpus under examination differs from the reference corpus of general spoken English, if it differs at all.

A keyword search was conducted using WordSmith Tools (Scott, 1997) to determine how the corpus of hand-offs differed from general spoken English. This software generates a keyword list that displays a list of words that appear with unexpectedly high or low frequency in the hand-off corpus as compared to a reference corpus of spoken English. Statistical significance is reported by WordSmith Tools as the results of a log-likelihood analysis.

The reference corpus used for the keyword analysis was the British National Corpus (BNC) of spoken English, which contains approximately ten million words (British National Corpus, 2005). The BNC was chosen as a reference corpus because it contains a large number of words of spoken English and because of its availability and access at the University of Michigan’s English Language Institute. Although the hand-off corpus was compiled in the United States, and the speakers used American English, Scott and Tribble (2006) have demonstrated that keyword identification is a robust process, regardless of which reference corpus is used.

Although keyword identification is a robust process, there are differences between British and American English in word usage and in transcription conventions (e.g. American "um" vs. British "erm"). When keywords were identified that might have been affected by these differences, a keyword analysis comparing the hand-off corpus to the

MICASE corpus was used to resolve discrepancies (University of Michigan, n.d.). The MICASE corpus comprises 1.8 million words of academic speech (e.g. lectures, discussion sections, lab sections, student presentations) from an American university. Like the hand-off corpus, it is a specialized corpus, so may not represent general spoken American English, but it does use American English spelling conventions. The keyword searches were conducted and interpreted with the assistance of corpus analysis experts at the University of Michigan's English Language Institute. Findings from the corpus analysis are discussed in Chapter 6.

Chapter 4

Move Analysis

As noted in Chapter 3, a four-move structure was identified for the hand-offs in this sample. In addition to the four major moves, there were two linguistic structures that occurred in hand-offs that were not part of the move and strategy structure. These features included the use of metonymy (a form of metaphor in which a part of an entity is used to refer to the whole) and ellipses (missing words, or “shorthand”), and are discussed following the discussion of the move structure. The use of side-sequences was also noted and is discussed.

Moves are the means by which the communicative purposes of the hand-off are achieved (Biber, et al. 2007); in addition to accomplishing the purposes of the communication, moves can also be used to label or identify the communicative events of the hand-off (Bhatia, 1993; 2001). Each move may consist of a range of strategies that can be seen as embodying the range of options available to the speaker or writer to accomplish the move(s) (Bhatia, 1993). The communicative purpose of nurses’ end-of-shift hand-offs is to transfer the responsibility for patient care from the off-going nurse (OGN) to the oncoming nurse (OCN). The four major moves used by nurses to achieve this purpose during hand-offs were: 1.) Introducing the Patient; 2.) Relating the Shift’s Events; 3.) Looking Ahead; and 4.) Wrapping Up. The four moves within nurses’ hand-offs are discussed with illustrative examples in this chapter. The number and

percentage of hand-offs in which each move appeared is shown in Table 4.1.

Table 4.1
Number and Percentage of Hand-offs in Which Moves Appeared

Move	Total Occurrences	Percentage
1 – Introducing the Patient	43	100
2 – Relating the Shift’s Events	43	100
3 – Looking Ahead	26	60.5
4 – Wrapping Up	30	69.8

Not all moves appeared in every hand-off; however, for the entire sample, the percentage of hand-offs in which every move appeared was above the threshold of 50% used to develop the move structure. Moves 1 and 2 appeared in every hand-off in the sample, providing linguistic evidence that the focus of nurses’ hand-offs is on the immediate past (the previous shift) and not on looking ahead to the future.

Each move consisted of one to several strategies used to accomplish the intent of the move within the genre. As was the case with the moves, not every strategy occurred in every hand-off; several strategies did not occur in even 50% of the hand-offs. The number and percentage of hand-offs in which each strategy appeared is shown in Table 4.2.

Table 4.2
 Occurrences and Percentage of Hand-offs in Which Strategies Appeared (All Hand-offs)

Strategy	Occurrences	Percent
1.1 – Room Number	34	79.1
1.2 – Patient Name	41	95.3
1.3 – Physician or Service	22	51.2
1.4 – Reason for Admission	42	97.6
2.1 – Reviewing Orders	43	100
2.2 – Reporting Patient Performance/Results	43	100
2.3 – Reporting Observations	41	95.3
2.4 – Sharing Interventions	38	88.4
2.5 – OCN Clarification	20	46.5
2.6 – OGN Response	20	46.5
2.7 – OCN Affirmation	11	25.6
3.1 – Planned Activities	24	55.8
3.2 – Readiness for Planned Activities	10	23.3
4.1 – Soliciting Questions	30	69.7

An additional calculation was made for the strategies in Moves 3 and 4; since these moves occurred in less than 100% of the sample, the percentage of occurrence for each strategy in these moves was calculated based on the number of hand-offs in which the move appeared. These percentages are displayed in Table 4.3, suggesting that nurses' projections for patients are focused on informing the oncoming nurse of activities such as tests, procedures and discharge. There is less emphasis on the completion of steps to prepare the patient for those activities. During the wrap-up of the hand-offs, an invitation to question the off-going nurse occurred in little more than half of the hand-offs.

Table 4.3
Occurrence of Strategies 3.1, 3.2, and 4.1 When Moves 3 and 4 Were Present

Strategy	Hand-offs in which move present	Hand-offs in which strategy present	Percentage
Strategy 3.1 – Planned Activities	26	24	92.3
Strategy 3.2 – Readiness for Planned Activities	26	10	38.5
Strategy 4.1 – Soliciting Questions	30	17	56.7

Move 1 – Introducing the Patient

Some form of introduction to the patient occurred in all 43 of the hand-offs in this sample. Introduction to the patient supports the achievement of the communicative purpose of the hand-off by establishing the identity of the patient that the participants in

the hand-off were discussing. Four strategies were commonly used, in varying degrees of frequency, to accomplish this move. These strategies include 1.) Strategy 1.1 – Room Number; Strategy 1.2 – Patient Name; Strategy 1.3 – Physician or Service; and 4.) Strategy 1.4 – Reason for Admission.

Strategy 1.1 – Room Number

The first strategy used to introduce patients was often an announcement of the room and/or bed number that the patient was assigned to on the hospital unit. This occurred in 79.1% of the hand-offs; when it did occur, it was consistently seen as the first strategy within the move. The identification of the patient's room number places the patient within the geographical space of the nursing unit. While room number is not considered to be a reliable criterion for patient identification, nurses' patient assignments are usually identified and organized by room and/or bed numbers. Beginning the hand-off with the patient's room number placed the patient within the context of the nurse's assigned patient group. Examples of the use of this strategy include:

- (1) "And then one-forty-nine. Right?" (Hand-off 015)
- (2) "And thirty-one-fifty-one, is..." (Hand-off 030)

Strategy 1.2 – Patient Name

A statement of the patient's name was included in Move 1 in 41 of the 43 hand-offs (95.1%). Patient name is considered to be a safe and reliable criterion for patient identification (JCI, 2008). Although some form of the patient's name was included in the hand-offs, there was a lack of consistency in how the name was stated; in some cases, the patient's full first and last name were stated; in others, the patient's surname preceded by

the salutation “mister” or “missus” was used. In still others, only the patient’s surname or first name was communicated, as shown in the examples below:

(3) “Um. Patricia Jones ...” (Hand-off 002)

(4) “Elizabeth.” (Hand-off 015)

(5) “Mister Petersen.” (Hand-off 032)

(6) “... is Sorenson.” (Hand-off 038)

Strategy 1.3 – Physician or Service

The name of the patient’s physician or the medical service that was responsible for the management of the patient’s medical diagnosis was noted in just over half of the hand-offs. This inclusion of the patient's physician is important to nurses; in previous studies, only 42% of nurses were able to identify the physician responsible for the patient's care (Friesen, et al., 2008). Nurses have identified the inability to identify who to call for a patient issue as a contributing factor to delayed or ineffective communication (McKnight, Stetson, Bakken, Curran & Cimino, 2002). The use of this strategy by off-going nurses, as shown in the examples below, provided the nurse assuming responsibility for the patient's care with the information needed to contact a physician should the need arise.

(7) “He’s I-P Service” (Hand-off 001)

(8) “Eighty-six of Slater” (Hand-off 015)

(9) “He is a fifty-two year old of Doctor Harrison's.” (Hand-off 030)

Strategy 1.4 – Reason for Admission

The reason that the patient was in the hospital was the most frequently appearing strategy utilized within Move 1. It occurred in all of the hand-offs but one; however, like

the patient name, the reason for admission took a number of forms. In some cases, it was only a statement of a procedure that the patient had undergone; in others, it was a medical diagnosis. There were also instances in which the reason for admission was stated along with other medical diagnoses that the patient had, even if those were not the reason for admission, as in Example 12.

(10) “She came in with abdominal pain, dehydration, fever.” (Hand-off 014)

(11) “She came in with rectal bleeding.” (Hand-off 024)

(12) “...in with pneumonia, non-insulin dependent diabetes” (Hand-off 038)

The Oxford English Dictionary (1989) defines introduction as “the formal presentation of one person to another” (§ 5a); an alternate definition of the word is “the action or process of leading to or preparing the way for something” (§ 2). The opening move of nurses’ hand-offs fulfills both of these functions of an introduction; the off-going nurse presents the patient to the oncoming nurse, and is also preparing to present additional specific information about the patient’s situation or condition during the time that the off-going nurse cared for the patient. Examples of Move 1 and its associated strategies are shown. The strategies are labeled by strategy number in square brackets.

(13) “Um. [1.2] Patricia Jones is um uh – I don’t know how old she is. She’s a fifty-five year old (xx), post-op day twelve now [1.4] for a T-H-E.” (Hand-off 002)

(14) “And then [1.1] one-forty-nine. Right? [1.2] Elizabeth. Eighty-six [1.3] of Slater comes from home with her daughter. In for (xx) [1.4] the pneumonia, anemia, acute renal failure. History of hypertension and breast cancer.” (Hand-off 015)

(15) “[1.1] Carol Myerson patient of [1.3] Doctor Thompson. [1.4] She is coming in with a UTI dehydration and pneumonia.” (Hand-off 019)

(16) “And [1.1] thirty-one-fifty-one, is [1.2] Mister Wolf. He is a fifty-two year old of [1.3] Doctor Harrison’s. He was admitted back on the twenty-fifth of May [1.4] for congestive heart failure.” (Hand-off 030)

Examples 14 and 16 show the use of all four Move 1 strategies in sequential order, although in example 14, only the patient’s first name is used, and in example 16, only the patient’s last name is used, preceded by the salutation “mister”. Examples 14, 15, and 16 link the patient to the physician by the word “of” as noted in the discussion of Strategy 1.3 above.

As has been shown, within the introduction to the patient, very little, if any, information was included about the patient other than his/her name and the medical diagnosis or surgical procedure for which the patient was admitted to the hospital. No information about the patient’s occupation, education, or status within a family or social unit was routinely included, although in example 14, the patient’s living arrangements were noted, suggesting that during the hand-off, nurses were focused on the patient within the context of the hospital setting..

Move 2 – Relating the Shift’s Events

From the introduction to the patient, the off-going nurse transitions to a recounting of events and occurrences that took place while he/she was caring for the patient. Although the discourse of Move 2 of the hand-off was dominated by the off-going nurse, it was typically the most interactive of the moves in hand-offs conducted face-to-face. Strategies used by the off-going nurse to achieve the goal of relating what

had taken place during his/her shift include: 1.) Reviewing Orders; 2.) Reporting Patient Performance/Results; 3.) Reporting Observations and 4.) Sharing Interventions. In some cases, the oncoming nurse applied her own strategies to elicit additional information; these strategies included Oncoming Nurse Clarification and Oncoming Nurse Affirmation. As was found in Move 1, not every hand-off included every one of these strategies within Move 2.

Strategy 2.1 – Reviewing Orders

A predominant strategy used within Move 2 was that of reviewing orders. Reviewing Orders was the only Move 2 strategy that appeared in every hand-off in the sample. These orders were most often orders for diet, activity, medications, and tests or treatments that were specifically ordered for the patient by a physician. However, this move might also include orders placed by a nurse such as re-positioning/turning, providing assistance in moving around the room or the unit, skin care products (such as specific types of wound dressings), removal/reinsertion of intravenous (IV) catheters, and monitoring of vital signs. Examples include:

- (17) “...Umm she’s a full code. She’s on clear liquids right now...” (Hand-off 003)
- (18) “Uh, I believe they took her off her Lamictal and decreased her Topamax still” (Hand-off 006)
- (19) “He gets his neuro checks every four hours. Doctor Myers wants his blood pressure done every four hours.” (Hand-off 029)
- (20) “and he’s up with one assist.” (Hand-off 039)

There is some ambiguity present in the off-going nurse's review of orders, in that it is not clear whether the orders being reviewed are orders that have been in place for some time, or if the orders were instituted during the off-going nurse's completed shift. For example, in some hand-offs, the off-going nurse relates the patient's resuscitation, or "code," status as either "full code" or "DNR" (do not resuscitate). It is not clear whether these code orders were continued from previous shifts, or perhaps from the patient's admission, or if some discussion took place during the off-going nurse's shift to prompt a change in the patient's code status. This is also true of medication orders that are relayed; in some hand-offs, the off-going nurse specifies that a new administration of medication has been initiated during her shift, but in others, she simply states that the patient is "on" a given medication.

Variation in the types of orders that are related during the hand-off also contribute to this ambiguity; there is no apparent standard for which orders are verbally relayed to the oncoming nurse during the hand-off. In some hand-offs, orders for diet, activity, lab work, and medications, or some combination of these, are relayed, while in other hand-offs, these orders are not verbally noted. It may be that the oncoming nurse is presumed to have gotten this information from another source, such as the patient's medical record.

Strategy 2.2 – Reporting Patient Performance/Results

The off-going nurse utilized this strategy to relay information about the patient's response to treatments or activity, the patient's "performance" of required activities (such as ambulating or coughing), the results of testing, and/or the patient's response to treatments. The reporting of this information sometimes, but not always, immediately followed an occurrence of Strategy 2.1 – Reviewing Orders. For example, if the off-

going nurse reported that the patient was on oxygen (Strategy 2.1), the nurse might follow that with a report of the patient's oxygen saturation level. Examples of the use of this strategy include:

- (21) "... her potassium was uh three point four at like two o'clock..." (Hand-off 005)
- (22) "He did eat pretty well tonight." (Hand-off 007)
- (23) "... and she gets very, very dyspneic ..." (Hand-off 031)
- (24) "... I gave him two Vicodin this afternoon at about five-fifteen. And then he was still complaining of pain..." (Hand-off 037)

In Example 21, the nurse reports specific lab results; however, in Example 22, the information given is more vague when the nurse states that the patient ate "pretty well." The same is true in Example 23, with the use of the descriptor "very, very" to describe the patient's shortness of breath. In Example 24, the report of the patient results ("he was still complaining of pain") immediately follows the nurse's report that she gave him pain medication.

While this information has the potential to be used as a "baseline" or starting point for the oncoming nurse's management of the patient's care during his/her shift, this potential was not explored during the hand-offs in the form of a discussion between the nurse who just finished caring for the patient and the nurse who was about to assume the patient's care. The information was relayed by the off-going nurse, and it was left to the oncoming nurse as to how to interpret it, how to carry out further assessment of the patient, related to the information, or whether the information requires further follow-up.

The reporting of patient performance or results was not only used to follow up on the review of orders, but was also used by the off-going nurse to evaluate the effectiveness of interventions that she shared with the oncoming nurse, as will be seen in the discussion of Strategy 2.4 – Sharing Interventions.

Strategy 2.3 - Reporting Observations

The off-going nurse frequently reported observations or assessment findings that were noted during the time that the nurse was caring for the patient. This strategy differs from Strategy 2.2 – Reporting Patient Performance/Results in that this information was not linked to an order or care activity. The information relayed using this strategy included observations of some physical finding (such as lung sounds, bowel sounds, wound condition, or pain) or observations of behavior or affective findings, as displayed in Examples 25 through 27.

(25) “... she’s got a peck flap that comes from here to here and it’s all stapled.”
(Hand-off 009)

(26) “ And she was kind of upset about that.” (Hand-off 015)

(27) “His lungs are clear. His abdomen is soft. No edema.” (Hand-off 029)

Example 27 displays the off-going nurse’s reporting of normal or “negative” assessment findings, and is not indicative of a problem that the patient is experiencing. It may be that the off-going nurse is relaying to the on-coming nurse that she did carry out her duties in assessing the patient, but did not identify any abnormal findings. As was the case in the use of Strategy 2.1 – Reviewing Orders, there was variation between hand-offs in the type of observations that were shared.

Strategy 2.4 – Sharing Interventions

In 38 of the 43 hand-offs, the off-going nurse reported specific interventions that she had applied in caring for the patient. For this study, these reports were classified as interventions when the nurse could determine when or whether they were done. For example, the administration of pain medication was based on a physician order, but the nurse had discretion to decide if it was appropriate to give, and so the report that a pain medication was administered was classified as Sharing Intervention rather than Reviewing Orders.

Strategy 2.4 – Sharing Interventions was used to give the oncoming nurse a sense of what had been done for the patient, and in many cases, when it had been done. This was especially true when discussing medications ordered for comfort, such as relief of pain or nausea. The sharing of this information on the part of the off-going nurse then gave the oncoming nurse an idea of when the patient might experience this discomfort again (when the medication's duration of action has passed) and when the patient can have additional medication. These points were not usually explicitly stated; it was up to the oncoming nurse to draw these conclusions. When this strategy was used, it was usually seen as a simple statement that the off-going nurse "did" something. In some cases, the off-going nurse then used Strategy 2.2 – Reporting Patient Performance/Results, to relate the effectiveness of the intervention in providing comfort or relief to the patient. However, there was not always a discussion of why an intervention was done, or what effect it had.

(28) “I just gave her twelve milligrams of Zofran at seven, or six-fifty or something like that. And then I gave her twelve point five of Phenergan at five-thirty.” (Hand-off 009)

In this example, the off-going nurse relays that she gave two different medications to treat nausea, but she does not discuss the patient’s nausea or the effectiveness of the medications being used to treat nausea. The oncoming nurse could interpret this to mean that the first medication was not effective in relieving the patient's nausea, and that this problem requires ongoing monitoring and further treatment if it does not resolve.

(29) “We’re keeping her feet elevated, pretty swollen.” (Hand-off 015)

In Example 29 the nurse indicates that the patient’s feet are elevated because they are swollen, but does not discuss the effectiveness of elevating the feet in reducing the swelling.

Example 30, however, shows the intervention used by the nurse (reinforcing a tube with tape) and the effectiveness of that action in keeping the tube in place, although the conclusion that the action was effective is not supported with objective data.

(30) “...we just reinforced it with tape and it’s been fine.” (Hand-off 027)

Strategy 2.5 – Oncoming Nurse Clarification

Hand-offs were dominated by the off-going nurse’s transmission of information. There were times, however, when the oncoming nurse used Strategy 2.5 to seek clarification. When this strategy was employed by the oncoming nurse, it took the form of asking a question or making a comment to verify information or understanding. In some cases, the oncoming nurse applied this strategy when she wanted more information than the off-going nurse was sharing. Unfortunately, many of the utterances by the

oncoming nurse were not recoverable from the audio recordings; these occurrences were identified in the transcripts as missing words (xx). However, while the exact words used by the oncoming nurse were not available, it is sometimes clear from the off-going nurse's subsequent response that a question was raised by the oncoming nurse. This strategy was applied at various points in the hand-off; usually, the off-going nurse did not solicit without questions from the off-going nurse; the oncoming nurse applied this strategy at the point in time that she felt that she needed information, rather than waiting until the off-going nurse concluded her report.

(31) OGN: "Um, he's a turn q two. D-N-R, D-N-I. Takes liquid through one of those little syringes (xx)."

OCN: "He's N-P-O after midnight?" (Hand-off 007)

In this example, the off-going nurse (OGN) had already given the information that the patient was scheduled for a procedure under sedation, and has moved on to review other orders. The oncoming nurse (OCN) breaks in to ask about the patient's preparation for the procedure, perhaps prompted by the off-going nurse's discussion of how the patient takes liquid by mouth.

In a similar example (32), the off-going nurse is describing the patient's wound drains, and an unusual arrangement of the drains and drainage collection devices. The oncoming nurse interrupts to clarify her understanding of how the drains are arranged based on the ambiguity of the off-going nurse's description:

(32) OGN: "... she's got J-P's times three to bulb suction. She's got two coming out of her neck and then she's got two coming out of her side that are going to one bulb."

OCN: “All four of them are going to one?” (Hand-off 009)

Strategy 2.6 – Off-going Nurse Response and Strategy 2.7 – Oncoming Nurse

Affirmation

When the oncoming nurse applied the strategy of clarifying information, the off-going nurse responded to answer the oncoming nurse’s question. While this strategy was sometimes a simple “yes” or “no,” more often, the off-going nurse gave additional information to help the oncoming nurse understand the situation that was being questioned. For example, in the case of hand-off 009, illustrated in Example 32 and continued in Example 33, the off-going nurse responded with additional detail about the patient’s drains that assisted the oncoming nurse to understand the configuration of the drains and drainage collection devices, as shown here (strategy numbers shown in square brackets):

(33) OGN: [2.6] “No. So two, one, she’s got two, two (xx) coming out with, there are two bulbs there. Then she’s got four, like two sites down here to one bulb.”

OCN: “Okay.”

OGN: “So she’s got four sites altogether but only three bulbs.”

OCN: [2.7] “Oh, okay”

When the question raised by the oncoming nurse had been resolved to her understanding and satisfaction, the oncoming nurse used Strategy 2.7 to affirm her understanding and the resolution of the question. Once the oncoming nurse confirmed understanding, the off-going nurse then moved back to other strategies within Move 2, such as reviewing orders or reporting observations.

In Example 33, the utterance “okay” was used by the oncoming nurse as Strategy 2.7 – Oncoming Nurse Affirmation; the more common use of “okay” by the oncoming nurse was as a back-channel. Back-channels refer to utterances by the listener which signify that he/she is attentive and engaged in the conversation (Condon, 2001; Erickson & Shultz, 1982). Other verbal back-channel communications include the use of “mm-hmm” and “yeah”, both of which were used in these hand-offs. Duncan (1972) posits that back-channel communications are used by the listener to decline an opportunity to speak; it may be that the oncoming nurse received some sort of signal, such as a pause or a change in inflection, from the off-going nurse that the off-going nurse is willing to yield a “turn” in the dialogue to the on-coming nurse for questions or comments. Having no question or comment, the on-coming nurse used the back-channel to signal the off-going nurse to continue.

Strategies 2.1 through 2.4 can be effectively used together to provide a summary of what was ordered or done for the patient and the patient’s response to the order or intervention, as shown in Example (34), an example of Move 2 from an audio-taped hand-off. In this example, the off-going nurse uses a “balance” of the various strategies, including Strategies 2.1 – Reviewing Orders (27.3%), Strategy 2.2 – Reporting Patient Performance/Results (31.8%), Strategy 2.3 – Reporting Observations (9.1%), and Strategy 2.4 – Sharing Interventions (27.3%).

(34) “On her admission, [2.2] her I-N-R was two point three, and to correct it [2.4] we gave her two units of fresh frozen plasma, and [2.2] now her I-N-R is one point six. On admission, [2.2] her hemoglobin was eight point oh [2.1] she gets two units of packed red blood cells and [2.4] we’re on her first unit.

[2.1] You are to do a C-B-C one hour post-transfusion and then call the doctor with the results. [2.4] Her first unit of packed red blood cells was begun at sixteen hundred and [2.1] she will be N-P-O for a scope in the morning. We are also working on [2.1] oxygen therapy. On arrival [2.2] her pulse ox on room air was eighty-eight percent, so [2.4] we put her on [2.1] two liters of oh two and [2.2] she's now pulse oxing ninety-two percent. We are also working with her [2.4] vital signs monitoring, because on arrival [2.3] her blood pressure was eighty over fifty, heart rate a hundred and twenty, ah respers was twenty-eight. Now [2.2], her blood pressure's ninety-six over fifty-four with a heart rate of a hundred and respers are twenty. We are also working with activity intolerance due to the hypotension, and [2.1] we're going to be giving her fluid management. We've given her [2.4] point nine at seventy-five c-c's an hour after the blood transfusion is complete. For her self-care, [2.4] we have her on bed rest using the bedpan until the hypotension is corrected, and [2.2] the patient is able to request the bedpan since [2.3] she is alert and oriented times three". (Hand-off 004).

Example 34 is from an audio-taped hand-off, so there is no interaction or opportunity for the oncoming nurse to ask questions. The more typical presentation of Move 2 is shown in Example 34, in which the nurse simply provided a verbal "listing" of the tasks that are ordered or the activities that were done, with limited evaluation of how the patient responded to those orders or activities. In this case, just over half of the Move 2 strategies used by the off-going nurse were Strategy 2.1 – Relating Orders (55.6% of strategies used). Strategies are illustrated by the numbers in square brackets.

(35) “[2.1] She is a D-N-R, (xx) that. She has (xx) [2.1] going at seventy five ... and then [2.3] she obviously is not voiding. (xx) dialysis. [2.3] Um she didn’t have a stool for us at all. She is normal sinus on tele. [2.1] Um, she’s on Novolog. She gets um (xx) q four. [2.2] She was one-thirty last sugar. She’s [2.1] heplocked uh left forearm, it’s a twenty-two gauge. And then she’s got (xx) in her right upper arm. [2.1] They D-C’ed her Vas-Cath. [2.3] She just has a dressing over that right um (xx) I-J site.” (Hand-off 027)

The communicative purpose of Move 2 is to relate the events that took place during the shift that they were caring for the patient. Within this move, the off-going nurse sometimes relays events or activities that took place before her shift began, as shown in the examples below:

(36) “she also uh got Oxy I-R ordered yesterday for pain.” (Hand-off 014 – night shift)

(37) “... they said during the night she was on six liters...” (Hand-off 019 – day shift)

(38) “... they did hold his Norvasc this morning secondary to a lower blood pressure.” (Hand-off 038- evening shift)

These references to previous shifts may be an attempt to promote continuity of care similar to the use of Strategy 2.4 – Sharing Interventions. The mention of activities from previous shifts provides the oncoming nurse with information on which to base her actions, but do not explicitly spell out what those actions might be. In Example 35, the off-going nurse is telling the oncoming nurse that the patient has been started on a new medication for pain. This information might prompt the oncoming nurse to assess the

patient to determine if pain relief has been improved, and also to monitor for side effects of a new medication. However, the off-going nurse does not specifically direct the oncoming nurse to take either of these actions. References to previous shifts within Move 2 – Relating the Shift’s Events may also be an indicator that nurses perceive that the period of time for which they have responsibility for the patient’s care begins with the hand-off that they receive as the oncoming nurse.

Move 3 – Looking Ahead

Off-going nurses discussed planned activities for the patient in 73% of the hand-offs in the sample. While Move 2 was focused retrospectively, on what had already happened to the patient during the prior shift, Move 3 had a prospective focus, in that the purpose of the move was to communicate patient care events that were planned to occur. Two strategies were used by nurses to relate this information: they included Strategy 3.1, Planned Activities, and Strategy 3.2, Readiness for Planned Activities.

Strategy 3.1 – Planned Activities

Nurses used Strategy 3.1 to relay information to oncoming nurses about procedures and/or tests that the patient was scheduled to undergo. These procedures included surgical procedures; invasive and/or non-invasive diagnostic procedures such as x-ray or endoscopic examinations; the application or insertion of devices that would be used in the ongoing treatment of the patient’s condition, such as peripherally inserted central catheters; analysis of blood or body fluids; and/or planned discharge from the hospital. In general, these activities were identified as occurring within the 24 hours following the hand-off, but not farther into the future than that.

(39) “... the M-R-I is scheduled for tomorrow...” (Hand-off 007)

(40) “She’s supposedly going home today...” (Hand-off 010)

(41) “... the plan is to scope her in the morning (Hand-off 021)

Strategy 3.2 – Readiness for Planned Activities

Strategy 3.2 was used by nurses to identify actions that needed to occur to prepare the patient for a planned activity, actions that had already been completed in preparation for that activity, or both of these purposes. This strategy was never used unless Strategy 3.1 – Planned Activities had been used (although there were instances when Strategy 3.1 was used, but Strategy 3.2 was not used). Examples including the application of both strategies are shown, with strategies identified in brackets.

(42) “[3.1] ... she’s supposedly going home today, however, her potassium is three point four. [3.2] So she needs, um, I hung, she needs forty milliequivalents of potassium, I hung twenty already.” (Hand-off 010)

(43) “[3.1] She’s supposed to have a lumbar puncture today. I don’t know of the time for that yet [3.2] but the consent and checklist is done for that.” (Hand-off 013)

An important consideration in preparing patients for invasive procedure is the completion of pre-procedure steps to avoid wrong-site surgery; in (43), the off-going nurse includes some of the required information, such as the status of the consent (although it is not clear if the patient actually signed the consent). The mention of the checklist seems to imply that other steps of the Universal Protocol (Joint Commission, 2008) have been completed in this case. However, this information was not consistently included in Strategy 3.2.

Move 4 – Wrapping Up

The off-going nurse used Move 4 to signal the conclusion of her remarks about the patient. This move was most often accomplished with a simple concluding statement by the off-going nurse. However, off-going nurses did sometimes use Strategy 4.1 – Solicitation of Questions within the move of Wrapping Up, either in conjunction with their concluding remarks or as a substitute for them. This strategy was not a statement, but a question posed by the off-going nurse to the oncoming nurse. Examples of Move 4 with and without the use of Strategy 4.1 – Solicitation of Questions are shown.

- (44) “[4] Other than that that’s really about it. [4.1] Do you have any questions on him?” (Hand-off 007)
- (45) “[4.1] Any questions on her?” (Hand-off 013)
- (46) “[4] But, that’s it.” (Hand-off 017)

When the oncoming nurse did have questions, the hand-off switched back to Move 2, using the strategies 2.5 – Oncoming Nurse Clarification and 2.6 – Off-going Nurse Response until the oncoming nurse’s questions were answered to her satisfaction, as shown here.

- (47) OGN: “[4.1] So, any questions?”
OCN: “[2.5] Any pain?”
OGN: “[2.6] Nope. Nothing for pain. Nope, he’s (xx). Nothing?”
OCN: “[2.5] How about his I-V?”
OGN: “[2.6] um (xx)”
OCN: “[2.5] Patent?”
OGN: “[2.6] Yep”

OCN: “[2.5] No change?”

OGN: “[2.6] Nope, it’s patent and so um flushed it out about one-thirty, I
guess twelve-thirty for his um”

OCN: “[2.5] So (xx) then?”

OGN: “[2.6] No I just heplocked it ...”

OCN: “[2.7] Oh. Okay.”

OGN: (xx)

OCN: “[4] All right then.” (Hand-off 008)

Although Move 4 – Wrapping Up was generally applied by the off-going nurse to signal that she had finished her report, in this case, the oncoming nurse applied Move 4 when her questions had been answered to her satisfaction. It should be noted that this kind of extended exchange is relatively rare within this sample of nurses’ hand-offs; the clarification generally consisted of one question and response.

In some hand-offs, there was not a clear statement of conclusion. This was particularly true of the audio-taped hand-offs, although it was also evident in some of the face-to-face hand-offs. When the off-going nurse was providing hand-offs on a series of patients, the signal that the hand-off was concluded was the beginning of the subsequent hand-off, as shown below. (Example 48 is from two face-to-face hand-offs; Example 49 is from two audio-taped hand-offs.)

(48) “I guess a lot of the kids are coming in from California today, so.” (Hand-off

014) “And then one-forty-nine.” (Hand-off 015)

(49) “... and we’ve got it off now to see if she (xx) room air.” (Hand-off 028)

“And thirty-one-forty-eight is Mr. Packer...” (Hand-off 029)

Other Features in Hand-offs

During the reading and re-reading of the transcripts, two linguistic features were noted that were not part of the move and strategy structure of the hand-offs. These features included ellipsis and synecdoche. Side-sequences, a discursial feature that is evident in breaks in the flow of the hand-offs, were also noted.

Ellipsis

Ellipsis is defined as the “omission of part of a sentence ... where the missing element is understood from the context” (Crystal, p. 426). The use of ellipsis is widespread in natural language (McShane, 2005), and was also present in nurses’ hand-offs.

Some form of ellipsis was identified in 36 of the 43 hand-offs (83%) in this sample. The types of ellipsis were identified as parts of speech (pronoun; pronoun/verb; verb; noun; preposition; or conjunction) or as a label (unit of time; unit of measure; age or title). The number and percentage of hand-offs in which each type of ellipsis was found are shown in Table 4.4.

Most commonly, the ellipsis omitted the subject pronoun either alone or in combination with the auxiliary verb *be/is* at the beginning of a sentence. This ellipsis occurred 30 times in 39.5% of the hand-offs. Examples of this type of ellipsis are shown below (omitted words shown in parentheses):

- (35) “(She) had a seizure...” (Hand-off 006)
- (36) “(She is) alert and oriented” (Hand-off 013)
- (37) “(He is in) sinus rhythm” (Hand-off 023)
- (38) “(She is) afebrile” (Hand-off 043)

Table 4.4
 Number and Percentage of Hand-offs in Which Various Types of Ellipsis Occurred

Type of Ellipsis	Number of Handoffs in Which Ellipsis Appeared	Percentage of Handoffs in Which Ellipsis Appeared
Pronoun	5	11.6
Pronoun/Verb	14	32.6
Verb	3	7.0
Noun	15	34.9
Preposition	2	4.7
Conjunction	3	7.0
Unit of Time	6	14.0
Unit of Measure	11	25.6
Age	6	14.0
Title	2	4.7

These forms of ellipsis are common in conversation, and are not difficult to interpret (Biber et al., 1999; Huddleston & Pullum, 2002). Because the patient has already been introduced at the onset of the hand-off, it is reasonable to conclude that both the off-going nurse and the oncoming nurse are aware that the missing pronoun is referring to the patient.

The omission of nouns was nearly as common as the omission of the pronoun or pronoun/verb combinations (30 occurrences in 34.9% of the hand-offs). The nouns that were omitted were often the names of devices, treatments (such as intravenous fluids or oxygen), or patient condition, and are indicative of expertise in the care of patients and shared knowledge between the speaker and the listener. Again, in the examples shown, the omitted words are inserted in parentheses.

(39) "... we had to bump her up yesterday to five liters (of oxygen) nasal cannula" (Hand-off 014)

(40) "left heel is slightly red, stage one (pressure ulcer)." (Hand-off 015)

(41) "...two plus pitting (edema) from her knees to her toes. (Hand-off 036)

In these instances, the context surrounding the omission as well as the nurse's knowledge of the commonly used descriptors for the condition under discussion serve as signals for interpretation of the utterance even with words omitted. In Example 39, "liters" is the unit of measure for oxygen delivery, and "nasal cannula" is a device used to deliver oxygen to the patient. These words prior to and after the omission provide signals to the oncoming nurse that the off-going nurse is discussing oxygen. Similarly, in Example 41, the commonly accepted description of a pressure ulcer is a stage numbered from one to four, and the prior notation by the off-going nurse that the heel is red cues the oncoming

nurse that the patient has a pressure ulcer, even though the off-going nurse does not call it by that name. Example 41 is a similar example; the accepted description of edema, or swelling, is along a continuum from none to three plus, and the lower legs is a common location for such swelling to occur. The use of these forms of ellipsis constitutes an assumption on her part that the oncoming nurse possesses knowledge of these descriptors.

Units of measure also appeared as ellipsis in the hand-offs. These took the form of dosages of drugs or units of time, as shown in the examples below:

(42) “his blood sugars are q six (hours).” (Hand-off 011)

(43) “She has D five normal saline going at a hundred (milliliters per hour)”
(Hand-off 013)

(44) “I gave her forty (milliequivalents) of p.o. K-C-I” (Hand-off 036)

In Example 42, the reference to a test along with the use of “q”, (an abbreviation for the Latin term *quaque*, meaning “every”), provide cues that the omitted word is “hours.”

Although the omission could be any unit of time, including minutes or days, the standard assessment of patients’ blood sugar levels occur four to six times daily. Similarly, the rate of administration for intravenous fluids is ordered in milliliters per hour, so the off-going nurses does not specifically state that in Example 43. In Example 44, the discussion of the administration of potassium chloride, which is measured in milliequivalents, provides the oncoming nurse the necessary signals to interpret the amount of the drug that was given. These examples of ellipsis again display the assumption on the part of the oncoming nurse that the off-going nurse has the knowledge

to interpret the omission correctly, and that the off-going nurse will question the statement if she does not understand the utterance.

Even though words are omitted from the nurses' discourse in hand-offs, the context of the utterance can provide sufficient information for the nurse listener to recognize inaccuracies or insufficient information. In the following passage from one of the hand-offs, the off-going nurse uses ellipsis, but the oncoming nurse questions the off-going nurse when there is insufficient information provided for her to understand the meaning of the discussion:

(45) OGN: "Her bottom looks pretty red anyway. So I put a Duoderm..."

OCN: "Is it open at all?"

OGN: "She's got a plus two on her bottom, yeah."

OCN: "(xx)"

OGN: "Yes, plus two, so like (xx). I'm sorry."

OCN: "That's okay."

OGN: "(xx) stage two on her bottom..." (Hand-off 026)

In this passage, the oncoming nurse asks if the patient's skin is open to get more information about the patient's skin condition. The off-going nurse replies that it is open, which would characterize a Stage 2 pressure ulcer. As seen in Example 45 the off-going nurse omits the phrase "pressure ulcer," but uses the words "plus two" to describe the ulcer. Although the oncoming nurse's words were shown as missing words in the transcript, she seems to be questioning the off-going nurse's use of the term "plus two"; the off-going nurse repeats the term, but then recognizes her error in using the term to describe a pressure ulcer. She apologizes and corrects the terminology.

Ellipsis is a form of shorthand; speakers use ellipsis to save time and words. However, ellipsis can put additional burden on the listener, as he/she has to work to determine the meaning of an utterance that lacks lexical signals as to its meaning (Merchant, 2001). Effective communication when ellipsis is used is a result of shared knowledge, which is the knowledge that both parties to the discourse have in common. Each of the parties to the discourse assumes that the other person has that knowledge. Shared knowledge is based on common cultural background and experiences as well as common professional backgrounds (Allen, 1995; Richards et al., 2002). However, assumptions on the part of the off-going nurse that what she is saying is being understood accurately pose a risk if the oncoming nurse is hesitant to question a more experienced colleague or admit that she lacks knowledge.

Metonymy

Metonymy is a figure of speech, the use of language in a non-literal sense. The most basic definition of metonymy is the act of substituting a part, property or attribute of something (or someone) for the name of the thing (or person) (Oxford English Dictionary, 1989). A more comprehensive definition suggests that metonymy is more than a simple substitution, but is a cognitive process "in which one conceptual entity, the vehicle, provides mental access to another conceptual entity, the target, within the same idealized cognitive model" (Radden and Kövecses, 1999, p. 21). Within this sample of hand-offs, the target was generally the patient, and nurse used a variety of vehicles to refer to the patient.

Within their hand-offs, nurses used vehicles such as observed data, the patient's disease or medical diagnosis, and/or ordered tests or treatments as vehicles to refer to the

target entity, the patient. The use of metonymy was noted in 18 of the 43 hand-offs (41.9%). Examples of this practice are shown below:

(46) “Um he is sinus rhythm on the ... monitor.” (Hand-off 001)

(47) “...she’s renal failure...” (Hand-off 024)

(48) “He is accu-checks (xx) at bedtime.” (Hand-off 037)

It might be argued that constructions such as these are merely a form of “shorthand” used by the nurse as a form of economy of words and/or time. In Example 46 above, a shorthand version of the information that the patient is exhibiting sinus rhythm on a cardiac monitor might be a simple statement such as “sinus rhythm,” which would be a use of ellipsis to relay that the patient’s cardiac rhythm was normal. In example 46, the patient is characterized as his cardiac rhythm,. This displays the view of patients as vessels of disease that is common in medicine but has been critiqued by both linguists and nurse scholars (Fleischman, 2003; Keddy, 1996; Parse, 2001; Reed & Watson, 1994).

Side Sequences

Side sequences are breaks in the course of the discourse that are not a part of the communicative purpose of the genre, but may be related to it. These breaks are used to emphasize or clarify a point; once that emphasis has been made or clarification accomplished, the discourse returns to its established course (Jefferson, 1972; Richards et al., 2003). Side-sequences appeared in 16 of the 43 hand-offs (37.2%), and were often used by off-going nurses to explain or justify some action (or lack of action), to clarify understanding about a policy or standard, or to elicit support from a peer. Examples of side-sequences found in the hand-offs are shown below:

(49) OGN: “Just water, I don’t know. I’ve never had a T-H-E patient (xx), so I had a lot to learn”

OCN: “Oh, I wouldn’t guess” (Hand-off 002)

In Example 49, the off-going nurse responds to a question from the oncoming nurse, then adds that she had not previously cared for a patient who had undergone a transhiatal esophagectomy (abbreviated as T-H-E), as if to explain why part of her previous response is “I don’t know.” The oncoming nurse provides reassurance, and the off-going nurse resumes Move 2 – Relating the Shift’s Events.

(50) OGN: “... and she’s on that continuous pulse ox. You know we have that new protocol now. Um she ran a slight temp...” (Hand-off 009)

In example 50, the off-going nurse inserts a side-sequence to refer the oncoming nurse to the policy that dictates the use of continuous pulse ox. The off-going nurse then returns to the events of the shift.

(51) OGN: “I think all the admit stuff is done”

OCN: “Okay”

OGN: “I had to do it in pieces because she was here for like an hour and then went to hemo for three hours and then got back”

OCN: “Oh, yeah”

OGN: “So it was kind of a pain”

OCN: “That always happens (xx). Um and then she just gets (xx)?”

(Hand-off 024)

The off-going nurse in Example 51 uses a side-sequence to introduce the possibility that some work may be incomplete, and provides information to explain why she cannot say

with certainty that the admission work is complete. The oncoming nurse commiserates with the off-going nurse briefly, as if to acknowledge that she has experienced similar situations, but then redirects the off-going nurse to the purpose of the hand-off by going back to the structure of the hand-off.

Discussion

While there are specific and identifiable strategies used by the off-going nurse to relate patient information and to transfer the responsibility for patients' care to an oncoming nurse, these strategies are, as Bhatia (2001) pointed out, "options" available to the speaker to accomplish the communicative purpose of each move, and are used as such. Within the genre of end-of-shift hand-offs, nurses do use these strategies as options, and not as a sequential means of relating what happened during the course of the nurse's shift. For example, while Strategy 2.1 – Reviewing Orders, is sometimes followed by Strategy 2.2 – Reporting Patient Performance/Results, the two strategies do not always appear in that sequence, and in many cases, there is little report of patients' response to orders or interventions. While there is an identifiable overall move structure that makes up the genre of nurses' hand-offs, patterns of the use of strategies within each of the four moves are less clear.

There is a recognizable structure to the hand-offs in this sample, but the results must be interpreted with some caution due to the relatively small sample size and the homogeneity of the units on which the hand-offs were recorded. The majority of the hand-offs (41 of 43) were recorded on inpatient medical-surgical units; only two were recorded on inpatient intensive care units. Also, all of the hospitals were located in a single state in the Midwestern United States. While the hand-offs might be typical of this

region, it cannot be concluded that the hand-offs in this sample are typical of those in other areas. It appears that the individual off-going nurses who are giving the hand-offs have a pattern that they use to provide patient information, but it is difficult to generalize this due to the small number of nurses whose hand-offs were analyzed for this study.

As a means of increasing the effectiveness of hand-offs and reducing the risk of miscommunication, Patterson et al. (2004) recommend that information provided during hand-offs be presented in a consistent order, as a means of helping the listener to frame the update. However, they did not find that this was the case in the high-reliability organizations that they analyzed, and the variability of the appearance of moves and strategies within this sample of hand-offs suggest that this strategy was not applied by off-going nurses at the end of their shifts.

The less frequent use of Move 3 – Looking Ahead by nurses within the hand-offs may represent a risk to patients in that the oncoming nurse may not be made aware of upcoming care activities or plans for the patient. This lack of information may result in delays in treatment if preliminary work to prepare the patient for the activity or treatment is not completed in a timely manner, or important safety checks, such as confirming surgical sites, are omitted because it was assumed that they had been completed. An identified strategy for improving hand-off communication in high-reliability organizations is the discussion of anticipated changes or contingency plans (Patterson et al., 2004); these discussions could be incorporated into Move 3.

There was a clear concluding statement in only 69% of the hand-offs in this sample; when it was absent, the cue that a hand-off for a given patient was concluded was the initiation of Move 1 – Introducing the Patient for the next patient. The inclusion of

Move 4 – Wrapping Up not only provides the oncoming nurse the opportunity to ask questions, but also provides a verbal cue that a new patient is about to be discussed, so as to shift her attention to a new topic. The inclusion of Move 4, then, would support the strategy of unambiguous transfers of responsibility (Patterson et al., 2004).

The use of ellipsis as shorthand and metonymy as reference within the hand-offs suggests that nurses rely on shared knowledge and idealized cognitive models for effective communication during the hand-off process (Radden & Kövecses, 1999). Nurses with varying levels of clinical experience may not share the same perceptions of patient situations (Benner, Tanner, & Chesla, 1992). The use of these language features as a means of economy by off-going nurses may present risks of communication errors when oncoming nurses do not share the same cognitive model. The implications of these language patterns used during the hand-off process will be further explored in Chapter 7.

Chapter 5

Description of Corpus and Comparison of Hand-off Methods

The entire corpus (all hand-offs) as well as each of the sub-corpora (face-to-face hand-offs and audio-taped hand-offs) were described and compared in terms of time per hand-off and words per hand-off. In addition, the corpus and its sub-corpora were analyzed for the presence of the structural moves and linguistic and discoursal features described in Chapter 4.

As mentioned in Chapter 3, the corpus of transcriptions of nurses' hand-offs contained 20,996 words in 43 individual hand-offs. There were two methods used for hand-offs in this sample; 27 of the 43 hand-offs were conducted face-to-face. The remaining 16 hand-offs were accomplished by the off-going nurse(s) audio-taping the hand-off; the oncoming nurse(s) then listened to the audio tape outside the presence of the off-going nurse. Table 5.1 displays the mean and range of times in minutes for all hand-offs, the face-to-face hand-offs, and the audio-taped hand-offs.

Table 5.1 Mean Times of Hand-offs in Minutes

	n	Range	Mean	Std. Dev.
All	43	1.15 - 10.05	3.34	2.23
Face-to-Face	27	1.67 - 10.05	4.23	2.38
Taped	16	1.15 - 2.97	1.84	0.59

It is difficult to evaluate the amount of time that it takes to accomplish a hand-off of any type; while several sources (Friesen et al., 2008; Hughes & Clancy, 2007; Strople & Ottani, 2006) point out that an advantage of audio-taped hand-offs is that they take less time than face-to-face hand-offs, there are no clear conclusions about how long either method takes. When time of hand-offs was reported in the literature, it was generally reported as the aggregate time that it took for off-going nurses to hand-off a group of patients, and not as the time for individual patient hand-offs. This aggregate time ranged from 10 to 61 minutes, but it was not clear how many patients were discussed in hand-offs (Benson, Rippin-Sisler, Jabusch, & Keast, 2007; Payne et al., 2000; Strople & Ottani). In one study, it was reported that bedside handover (a face-to-face method) took approximately 15 minutes for a single patient in an intensive care unit (Philpin, 2006); at the other extreme, Payne et al. observed that the hand-off for a group of 20 to 30 patients in an elderly care center took 20 minutes.

The time distribution for this sample of hand-offs was positively skewed, indicating that most of the hand-offs were shorter than the mean time of 4.23 minutes; 26 of the 43 hand-offs were 2.5 minutes or shorter, while only three of the hand-offs were longer than 6.67 minutes. The relatively short time taken to describe what took place during an 8 or 12 hour shift might be seen as a source of concern in the sense that information is so condensed that the oncoming nurse may not have had sufficient information to assume the responsibility of the patient's care, and would have to search out additional information after the hand-off. Alternatively, the short time might be an indication that the off-going nurse used an efficient process for summarizing the patient's status and care needs. A judgment regarding whether there was insufficient information

or an efficient process cannot be made on the basis of time alone; the off-going nurse's perceptions about the amount and quality of the information she received in the hand-off might have proved helpful in determining this, but was not available for these hand-offs.

In another method of describing the hand-offs, word counts were determined. Given the differences in time duration for the two methods of hand-off in this sample, it is not surprising that the mean word count was greater for the face-to-face hand-offs than it was for the audio-taped hand-offs. The word counts for all, face-to-face, and audio-taped hand-offs are shown in Table 5.2.

Table 5.2 Word Counts in Hand-offs

	n	Range	Mean	Std. Dev.
All	43	157 – 1648	486.44	353.82
Face-to-Face	27	192 - 1648	614.78	390.61
Taped	16	157 - 426	269.88	79.89

As shown in Tables 5.1 and 5.2, there were significant differences between the audio-taped and the face-to-face hand-offs in both elapsed time and number of words in the hand-offs. The face-to-face hand-offs contained significantly more words than audio-taped hand-offs and, accordingly, the elapsed time for face-to-face hand-offs was significantly longer than the audio-taped hand-offs. These values, along with the results of the t-test for significance between means are displayed in Table 5.3.

Table 5.3 Comparison of Means for Time and Word Count by Method of Hand-off

	Mean Face to Face	Mean Taped	t	df	Significance (p = .05)
Time (in minutes)	4.23	1.84	3.919	41	.000
Word Count	614.78	269.88	3.473	41	.001

Moves and Strategies

As already noted, the type of information transmitted during the hand-off is as important, if not more so, than the time and number of words used in the hand-off. The move structure for the hand-offs identified the strategies used by nurses to achieve the communicative purpose of the hand-off, and the presence of these moves provides some insight into the communicative practices of nurses during the hand-off. While Move 1 – Introducing the Patient and Move 2 – Relating the Shift’s Events, appeared in every hand-off in the sample, Move 3 – Looking Ahead and Move 4 – Wrapping Up, did not appear in every hand-off. The occurrences of all moves are shown in Table 5.4.

Table 5.4 Number and Percentage of Hand-offs in Which Moves Appeared

Move	Number	Percentage
1 – Introducing the Patient	43	100
2 – Relating the Shift’s Events	43	100
3 – Looking Ahead	26	60.5
4 – Wrapping Up	30	69.8

There were no significant differences in the use of Move 3 – Looking Ahead or Move 4 based on method of hand-off. It is not clear what prompted nurses to include these moves in some hand-offs but not in others, but, as Table 5.5 displays, the method used for hand-off did not affect that inclusion.

Table 5.5 Use of Moves 3 and 4 by Method of Hand-off

Move	Face-to-Face	Audio-taped	X^2	df	Sig. (p =.05)
	Hand-offs Containing Move	Hand-offs Containing Move			
3 – Looking Ahead	14	12	2.252	1	.133
4. – Wrapping Up	20	10	.638	1	.424

Other Features in Hand-offs

During the process of identifying the moves and strategies used by nurses during hand-offs, the use of ellipsis, metonymy, and side sequences was identified. All of these features were used more frequently during face-to-face hand-offs than in audio-taped hand-offs; occurrences of these features are displayed in Table 5.6. The use of these features was significantly more likely to occur in face-to-face hand-offs than in audio-taped hand-offs; the results of Chi-square analysis for each are shown in Tables 5.7 and 5.8.

Table 5.6 Occurrences of Ellipsis, Metonymy, and Side Sequence in Hand-offs

Hand-off Method	n	Ellipsis	Metonymy	Side Sequence
All	43	35	18	14
Face-to-Face	27	25	16	13
Audio-taped	16	10	2	1

Table 5.7 Use of Ellipsis by Method of Hand-off

Hand-off Method	n	Frequency	χ^2	df	Sig ($p = .05$)
Face-to-Face	27	25	6.008	1	.014
Audio-taped	16	10			

Table 5.8 Use of Metonymy by Method of Hand-off

Hand-off Method	n	Frequency	χ^2	df	Sig ($p = .05$)
Face-to-Face	27	16	9.026	1	.003
Audio-taped	16	2			

Nurses who used the audio-taped method for hand-offs used significantly fewer episodes of ellipsis, or omitted words, than did nurses who used the face-to-face method for hand-offs. The use of less ellipsis may be a reflection of nurses' desire to be clearly understood in the absence of the immediate feedback that could occur in a face-to-face discourse. The off-going nurse might not be sure of the identity of the oncoming nurse to whom she was handing off. As discussed previously, effective communication when ellipsis is used is dependent on shared knowledge, which exists when both parties know what the other knows (Allen, 1995). If the off-coming nurse is not sure of who will be receiving the information, she cannot be sure of what the oncoming nurse knows, so will not assume the risk of being misunderstood.

Nurses who transferred the responsibility for patient care using the audio-taped method also used significantly fewer instances of metonymy than did nurses who used the face-to-face method. It is probable that nurses who were audio-taping their hand-offs felt that the process was more formal than the face-to-face method. The face-to-face method could be perceived by nurses as a conversation between colleagues in which more informal language might be permissible.

Side Sequences

The two groups of hand-offs were also examined for the use of side-sequences, or interchanges that may be related to the hand-off, but are not a part of the communicative purpose of it. There were more occurrences of side-sequences in face-to-face hand-offs than in audio-taped hand-offs, and this difference was significant, as shown in Table 5.9.

Table 5.9 Use of Side Sequence by Method of Hand-off

Hand-off Method	n	Frequency	X^2	df	Sig ($p = .05$)
Face-to-Face	27	13	8.032	1	.005
Audio-taped	16	1			

When hand-offs were audio-taped, there were significantly fewer uses of side-sequences in the hand-offs than in hand-offs conducted using the face-to-face method. The use of side-sequences is a discorsal feature (a feature of the back and forth of conversations), so it would be unlikely for it to occur in an audio-taped report. Because the communication in audio-taped hand-offs was asynchronous – that is, the off-going nurse recorded the information in isolation from her colleague(s) – there was no participant in the discourse. The one occurrence of a side-sequence in the audio-taped hand-offs was actually an exchange between two oncoming nurses who were listening to the audio tape, and not between an off-going and on-coming nurse.

Filled Pauses

Filled pauses, indicated in the transcripts of the hand-offs as *um* or *uh*, are primarily used by speakers to indicate that they are not finished speaking while they search for their next word. This is a consequence of the "online" or "on-the-fly" nature of conversation, when the "need to keep talking threatens to run ahead of mental planning, and the planning needs to catch up." (Biber et al., 1999, p. 1048).

Filled pauses appeared in both the audio-taped and face-to-face hand-offs, although there were some hand-offs using both methods in which no filled pauses

occurred. The mean number of filled pauses for all hand-offs as well as for audio-taped and face-to-face hand-offs is shown in Table 5.10.

Table 5.10 Occurrences of Filled Pauses by Method of Hand-off

Method of Hand-off	n	Range	Mean	Std. Dev.
All	43	0 – 60	13.49	12.98
Face-to-Face	27	0 – 60	17.96	14.42
Taped	16	0 – 12	5.94	3.80

While there were filled pauses present in both face-to-face and audio-taped hand-offs, the mean number of filled pauses was significantly higher in face-to-face hand-offs than in audio-taped hand-offs, as shown in Table 5.11

Table 5.11 Comparison of Means for Filled Pauses in Face-to-Face and Audio-Taped Hand-offs

	Mean	Mean	t	df	Significance (p = .05)
	Face to	Audio-			
	Face	Taped			
Filled Pauses	17.96	5.94	3.26	41	.002

The occurrence of fewer filled pauses in audio-taped hand-offs may be another reflection of the asynchronous nature of the communication; without another person present for the discourse, there are no listener responses that might distract the speaker from online or "on-the-fly" planning for what they intend to say.

Oncoming Nurse Utterances

There was at least one utterance by the oncoming nurse in each of the 27 face-to-face hand-offs; in the audio-taped hand-offs, the only utterance attributed to the oncoming nurse(s) occurred as a side-sequence between the two oncoming nurses listening to the audio-tape, and did not involve the off-going nurse. The mean number of utterances by oncoming nurses for each of the hand-off methods is shown in Table 5.12.

Table 5.12 Oncoming Nurse Utterances in Hand-offs

Method of Hand-off	n	Range	Mean	Std. Dev.
All	43	1 – 37	8.37	10.09
Face-to-Face	27	1– 60	13.22	9.93
Taped	16	0 – 3	.19	.75

There were more utterances by oncoming nurses in the course of face-to-face hand-offs; the mean number of utterances in face-to-face hand-offs is significantly greater than 0, as shown in Table 5.13

Table 5.13 Comparison of Mean Number of Oncoming Nurse Utterances to Chance

Oncoming Nurse Utterance	Mean Occurrences in Face-to-Face Hand-offs	t	df	Significance (p = .05)
	13.22	6.92	26	.000

When nurses conduct hand-offs using the face-to-face method, the likelihood that they will take the opportunity to actively participate in the discourse about the patient is

significantly greater than chance alone. As demonstrated in Chapter 4, the nature of that participation is varied; it may be backchannel communication or the application of a specific strategy to gain more information than the off-going nurse is communicating.

Discussion

Within the large corpus made up of 43 hand-offs, there were two sub-corpora, one of 26 face-to-face hand-offs and comprised of 17 audio-taped hand-offs. While the method of delivery by the off-going nurse differed for these two sub-corpora, the use of moves by the off-going nurse to achieve the communicative purpose of the hand-off did not differ by method. Two of the four moves (Move 1.0 – Introducing the Patient and Move 2.0 – Relating the Shift’s Events) identified for the genre of hand-offs appeared in every hand-off, regardless of method. The remaining two moves – Move 3.0 – Looking Ahead and Move 4.0 – Wrapping Up – did not appear in every hand-off, but there was no significant difference in the use of these moves by method of hand-off. This finding can be seen as validation of the move structure of the hand-offs in that the move structure is applied by nurses regardless of the means of communication.

There are, however, differences in the use of linguistic features based on the method of hand-off. The less frequent use of metonymy by nurses using the audio-taped method for hand-off may be a reflection of the more “official” status of an audio-taped recording, as opposed to the less formal nature of an exchange between colleagues that is “gone” as soon as it is over. Effective communication using metonymy is dependent on a shared frame of reference, or idealized cognitive model (Kövecses & Radden, 1999); lack of certainty on the off-going nurse's part regarding who her listener would be and whether they shared a cognitive model may have resulted in the use of more specific

language. Likewise, the less frequent use of ellipsis, or omitted words, may be a reflection of a goal on the part of the off-going nurse's desire to be as clear as possible to an unknown listener.

The use of side-sequences in audio-taped hand-offs was virtually non-existent. Only the off-going nurse was present, talking to a tape recorder, so there was no other participant in the hand-off. Side-sequences are a feature of discourse, not language or grammar structure (Jefferson, 1972; Richards et al., 2003), so the lack of another in the discourse of audio-taped hand-offs may have led to a decreased use of them.

Off-going nurses who used the face-to-face method of hand-offs also displayed more frequent use of filled pauses, which is not unexpected given the similarities of hand-offs to conversation (Biber et al., 1999). The less frequent use of filled pauses in audio-taped hand-offs may also be an indication that nurses who used the audio-tape method for hand-offs prepared differently for taped hand-offs than for face-to-face, perhaps by "rehearsing" either formally or informally what they intended to say during the hand-off.

The finding that oncoming nurses contributed to the discourse of hand-offs – even to the small extent found - using the face-to-face method indicates that they were active participants in the hand-off process, and were not simply passive recipients of data or information. Even if the oncoming nurse's participation was limited to backchannel communications, this was an indication that the information that the off-going nurse shared was understood and accepted (Biber et al., 1999).

A previously identified advantage of audio-taped hand-offs is that they take less time than face-to-face hand-offs (Friesen et al., 2008; O'Connell & Penney, 2001), and

this was true of the hand-offs in this sample as well. Patterson et al. (2005) found that there was variability in the application of strategies used for effective hand-offs (Patterson et al., 2004) in audio-taped hand-offs; however, the results of this analysis indicate that in this sample, nurses using the audio-taped method of hand-off used the same moves to accomplish the goals of patient information transmission as nurses who used the face-to-face method.

Differences in the use of linguistic features such as ellipsis and metonymy that were identified in this sample of hand-offs have not previously been identified in the literature. The lower frequency of use of these forms of "shorthand" by nurses using the audio-taped hand-offs, and may be a reflection of nurses' attempts to be clear and unambiguous in their communication to unseen colleagues. The implications of these findings for future research are further discussed in Chapter 7.

Chapter 6

Corpus Analysis

To further describe the language that nurses use in hand-offs, the entire corpus was analyzed to identify: (a) Frequently appearing words; (b) keywords resulting from comparison of the hand-off corpus to a corpus of general spoken English; (c) frequently used three word phrases; and (d) how these frequently appearing words and phrases were used in the context of sentences within the hand-offs. Findings from each of these analyses, along with illustrative examples and discussion, are presented in this chapter. Throughout this chapter, the feminine forms of pronouns (e.g. she, her) are used to refer to the nurses participating in the hand-offs. Comparisons to frequencies of words and grammar in general spoken English were based on the information in the *Longman Grammar of Spoken and Written English* (Biber et al., 1999), which presents findings from an analysis of a 40 million word corpus containing texts of both spoken and written English.

Frequently Appearing Words

Analysis of the corpus to determine the most frequently appearing words within the corpus was carried out using AntConc, a freeware corpus analysis software package (Anthony, 2005). The word frequency analysis resulted in a list of 3212 words that appeared in the corpus, with the number of appearances for each word indicated in the results. As is typical of word frequency lists, a relatively small number of words

appeared with high frequency and a high number of words occurred with very low frequency (Scott & Tribble, 2006). In the corpus of hand-offs, the word *and* was the most frequently occurring word; it appeared 709 times. The next most frequent word, *she*, appeared 580 times. (Words that were missing from the transcriptions due to poor quality of the hand-off recording process are designated as (xx) and appeared 643 times.) The overall distribution of word frequency in the hand-off corpus was similar to that found in general English texts; of the 3212 different words that appeared in the corpus, 1805, or 56.2%, of them appeared only once in the entire corpus. It is typical for about half of the word types in a given corpus to appear only once (Scott & Tribble; Sinclair, 1991). The top 20 words from the hand-off corpus are shown in Table 6.1.

Table 6.1 Twenty Most Frequent in Words in Hand-off Corpus

Rank	Frequency	Word	Rank	Frequency	Word
1	709	and	11	259	on
2	643	(xx)	12	254	he
3	580	she	13	254	she's
4	512	um	14	246	was
5	492	the	15	231	is
6	467	a	16	226	in
7	426	her	17	217	that
8	424	I	18	214	so
9	349	to	19	194	they
10	272	of	20	181	it

In text, there are three types of words: lexical words, function words, and inserts. Lexical words carry the meaning in a text; they comprise nouns, verbs, adjectives, and adverbs. Function words, on the other hand, serve to “bind” the text together, showing the relationships between lexical words and/or providing clues as to how to interpret the lexical words within a text. Function words include determiners, pronouns, auxiliaries, and prepositions. Inserts include interjections, such as *yeah*, *mm-hmm*, *ugh*, and *bye* (Biber et al., 1999).

The top end of the frequency list by itself was fairly unremarkable; the 20 most frequent words in the corpus were function words, including determiners (e.g. *and*, *the*, *a*, *an*), prepositions (e.g. *in*, *for*, *at*) and pronouns (e.g. *she*, *he*, *I*, *they*). This was not an unexpected finding; indeed, it is a typical finding for nearly all corpora. Biber et al. (1999) estimate that the occurrence of function words in conversational English is as high as 44% - nearly half of the total words. Of these function words in conversation, pronouns are the most frequently appearing function word. Since the hand-off is a spoken interaction, the appearance of pronouns in the list of most frequently appearing words in the hand-off corpus was not surprising.

In an effort to uncover more of the lexical words within the hand-off corpus, the list of 20 most frequent words in the corpus was identified as stop words, and the AntConc analysis was repeated. A stop word list excludes the words in that list from analysis; it does not remove them from the corpus, but the software ignores them for the purpose of compiling a frequency list (Bowker & Pearson, 2002). The top 20 most frequently appearing words in the corpus after application of the stop words are shown in Table 6.2.

Table 6.2 Twenty Most Frequent Words in Hand-off Corpus After Application of Stop Word List

Rank	Frequency	Word	Rank	Frequency	Word
1	246	was	11	132	at
2	231	is	12	131	got
3	175	for	13	120	his
4	160	but	14	116	has
5	154	with	15	115	have
6	144	had	16	105	one
7	137	like	17	95	up
8	137	you	18	93	then
9	135	he's	19	91	been
10	133	just	20	88	know

The results of word frequency analysis after application of the stop word list still contained a number of pronouns and prepositions, but contained more lexical words in the form of verbs and adverbs than the results prior to application of the stop word list. However, it should be noted here that no nouns – which typically indicate the content of the text – have yet to appear. To attempt to gain more insight into the vocabulary used by nurses during hand-offs, a keyword analysis was conducted.

Keywords

Keywords are words which occur "with unusual frequency in a given text" (Scott, 1997, p. 236) as compared to a reference text. The process for identifying keywords

essentially ignores the words that appear frequently in both the target corpus (in this case, the hand-off corpus) and the reference corpus, and highlights those words that appear with more or less frequency in the target corpus than would be expected based on the frequency of appearance in the reference corpus (Bowker & Pearson, 2002; Scott; Scott & Tribble, 2006). For this analysis, the hand-off corpus was compared to the British National Corpus (BNC) of spoken English (an American English equivalent to the BNC is not yet so easily available), and to the Michigan Corpus of Academic Spoken English (MICASE).

Keyword analysis is reported in terms of words that appear more frequently than expected in the target corpus than in the reference corpus as well as those that appear less frequently in the target corpus than in the reference corpus. Words that appeared more frequently than expected in the target corpus are designated as positively key; words that appear less frequently in the target corpus than would be expected are labeled as negatively key (Scott & Tribble, 2006).

Two hundred thirty six words were identified by the keyword analysis as positively key, or appearing more frequently than would be expected in the target corpus. Only 32 words were identified as negatively key. In comparison to the word frequency analysis, the keyword analysis identified more lexical words from the hand-off corpus, including nouns and adjectives as well as verbs and adverbs. The full results of the keyword analyses are shown in Appendices B (BNC) and C (MICASE).

Based on the keyword findings, three word classes were further explored: (a) Pronouns, which substitute for nouns in text and were identified as occurring with high frequency as well as unexpected low frequency, and the verbs associated with them;

(b) Nouns, which provide information about the "things" that nurses discuss in hand-offs; and (c) Modals, which express "concepts such as ability, permission, necessity, and obligation" (Biber et al., 1999, p. 73). Insert words, such as *um* and *uh*, were also examined, as were words classified as hedges, or expressions of uncertainty.

Pronouns and Associated Verbs

Pronouns were identified as frequently appearing words in the frequency lists taken from the hand-off corpus alone; pronouns are the most frequently appearing function words in conversational English (Biber et al., 1999). Keyword analysis essentially "ignores" those words that have similar frequency of appearance in both the test corpus and a reference corpus; pronouns appeared with even higher frequency in the hand-off corpus than in conversational English. This demonstrates that the hand-off was not a typical personal conversation, but rather was a report or accounting of the patients' status. The pronouns that appeared as keywords are displayed in Table 6.3.

Table 6.3 Key Pronouns in Hand-off Corpus

Rank	Positive Keyword	Rank	Negative Keyword
3	her	243	I've
4	she	244	them
5	she's	252	my
13	he's	257	we
16	his	262	your
35	he	269	you
232	him		

The positively key pronouns, which appeared more frequently than expected, were all third-person pronouns, used to refer to *a person who was not participating in the discourse*. In the case of these hand-offs, this person was the patient. First-person and second-person pronouns (both singular and plural forms), which refer to the speaker and/or the addressee, were identified as negatively key, meaning that they occurred less often than expected. During the course of the hand-off, the focus of the discussion was on the patient, and not on the nurses participating in the hand-off.

Pronouns are reference words; they are used as a substitute for noun phrases and are a means of economy for the speaker (Biber et al., 1999). Pronouns are used in two situations: (a) when the entity being referred to is identifiable in the context of the discourse; and (b) when the speaker cannot or does not wish to specify the entity more exactly. In the hand-off corpus, pronouns were used primarily to refer to the patient, who was identified at the beginning of the discourse. The participants in the hand-off appeared to understand that the person identified by the pronoun was the patient.

Several feminine pronouns appeared in the most positively key words of the hand-off corpus. In general spoken English, occurrences of the masculine form of pronouns outnumber the feminine; this is attributed to the conventional use of masculine forms in English when the gender of the referent is unknown or not relevant (Biber et al., 1999). The appearance of *her*, *she*, and *she's* as the most positively key in the list of keywords was due to the fact that the 26 of the 43 patients discussed in this sample of hand-offs were women.

The appearance of the third person accusative *her* as the most positively key pronoun in the hand-off corpus is also of interest. The accusative form of a pronoun was

used within sentences as the object of a verb (e.g. "I gave *her* Tylenol") or as the complement of a preposition (e.g. "... edema from *her* knees to *her* toes"). This contrasts with the use of pronouns in all forms of general English (conversation, fiction, news, and academic prose); in these genres, the nominative (subject) form of pronouns (e.g. *she*, *he*, *I*) is used more frequently than the accusative (object) (Biber et al., 1999). The appearance of the accusative pronouns *her* and *him* in the keyword list suggests that the patients who were the subjects of the hand-offs were being discussed in systemic or functional terms, i.e. as the beneficiaries of actions. The words that appear in proximity to *her* and *him* reveal more about the use of these pronouns.

While the most frequent overall collocations with *her* and *him* included prepositions (e.g. *to*, *on*, *for*) and conjunctions (e.g. *with*, *and*), it is the verbs that provide information about the kinds of actions that patients are the recipients of. Auxiliary verbs (e.g. *be*, *is/was*, *have/has/had*), which appear with another verb, appeared in the hand-off corpus with *her* and *him*. However, it is the lexical verbs that provide information about the actions of which patients are beneficiaries. Lexical verbs are those verbs that "denote actions, processes, or states and serve to establish the relationship between the participants in an action, process or state" (Biber et al., 1999, p. 63). There were 13 lexical verbs that occurred at least three times with either *her* or *him* in the hand-off corpus. When these verbs appeared, the nurse was generally describing what she had done to, for, or with the patient. The frequencies for each of those verbs are shown in Table 6.4.

Table 6.4 Lexical Verbs Occurring Three or More Times with *her/him* in the Hand-off Corpus

Rank	Frequency	Word
1	29	gave
2	10	giving
3	10	give
4	6	got
5	5	told
6	5	put
7	4	took
8	4	saw
9	4	changed
10	3	want
11	3	takes
12	3	know
13	3	checked

The most frequent lexical verbs that occurred with *her* or *him* were some form of the verb *give*. The past tense *gave* was the most frequent of these; the concordance for *give/gave/giving* is shown in Figure 6.1. In most cases (81%), a form of *give* was used to inform the oncoming nurse that the patient had or had not been given medication; in lines 1, 15, 35, 36, and 40 of the concordance, *give* was negated by the use of *couldn't* or *didn't* to communicate that the patient did not receive medication. The next most frequent focus of the verb *give* in the concordance was food or fluids (10%). Other objects that were discussed as given by the off-going nurse included blood and information such as telephone numbers.

The other verbs that appeared with *her* and *him* also showed the patient as the recipient of some action by the nurse or another member of the health care team. In some cases, that action was communication, as when the verb *told* was used; in others, the off-going nurse was relating an event that had already occurred, as when *checked*, *changed* and *saw* were used. Examining the concordance (shown in Figure 6.2) revealed again that pronouns were not used exclusively in reference to the patient; in lines 32 and 37, *her* is used to refer to physicians given information or direction.

Figure 6.1 Give/giving/gave Concordance from Hand-off Corpus

1 but she was completely fine for me. Um, I didn't give her anything for pain. She has I-V um Zosyn, (x
2 s right now. She's been fine all night and then I gave her, she asked for tea cause her throat was kind
3 it. So she said, 'can I have some hot tea?' So I gave her hot tea and like she vomited it it back up.
4 nything like that. Um she had a chem stick. Umm I gave her Tylenol last at two A-M, six hundred fifty m
5 , her I-N-R was two point three, to correct it we gave her two units of fresh frozen plasma and now her
6 nce due to the hypotension, and we're going to be giving her fluid management, we've given her point ni
7 three point seven so she's got a sliding scale I gave her twenty milliequivalents right now. Umm she d
8 e's on - she was on a versed drip so the T-E-E we gave her twenty five of Fentanyl. And she ended up g
9 e um milligram of um versed an hour. He ended up giving her like um another one point five before the
10 (xx) she was kind of fighting it so that's why we gave her (xx) milligrams. But you know then after the
11 ixty-seven over thirty-six. So we ended up giving giving her a two-fifty bolus. And then while we were
12 And then while we were at lunch Audrey so nicely gave point one of um romazicon. But the versed drip
13 alled once. Melissa, right. Umm, we did want to give her some Lasix today. And they were giving her
14 want to give her some Lasix today. And they were giving her pain meds all night long, um all yesterday
15 e you know with that drop in pressure we couldn't give her Lasix. So um Michaels is the doctor and she
16 t in there last night about elev - one-thirty and gave him some chicken noodle soup and that's the last
17 had a temp for me, no sm no small fever. I just gave her um twelve milligrams of Zofran at seven, or
18 , or six-fifty or something like that. And then I gave her twelve point five of Phenergan at five-thirt
19 ve point five of Phenergan at five-thirty. Then I gave her Tylenol six-fifty last at midnight. She's go
20 ow myasthenia gravis people take Mestinon. Um, I gave her I-V-I-G. I gave her two bottles of that and
21 people take Mestinon. Um, I gave her I-V-I-G. I gave her two bottles of that and she goes she gets th
22 for a maintenance dose. <OCN>: Okay <OGN>: so I gave her that and it ended around like twelve-thirty
23 o hopefully they send twenty more. You'll have to give that twenty and then she's a stat basic, when th
24 antibiotics. It starts with an 'E' so I have to give that today. I don't know if she is getting it (x
25 k of his of his throat so this morning at five I gave him a red robinson I cut it so he can suction a
26 e gets Dilaudid and Darvocet. I've been trying to give her more of the Darvocet and keep it in her syst
27 doesn't need the that Dilaudid quite as much. I gave her last Darvocet I gave her like probably six-f
28 laudid quite as much. I gave her last Darvocet I gave her like probably six-forty-five. I gave her two
29 rvocet I gave her like probably six-forty-five. I gave her two of them. She can have one to two. And
30 . She can have one to two. And then last time I gave her Dilaudid was prob - I think it was right bef
31 , so around midnight. And she gets one, I've been giving her the full milligram. She's been getting up
32 ets that three twenty-five of Tylenol, so. I just gave her that at six, and her liver enzymes were also
33 re also all pretty high yesterday. So like um I'm giving her (xx) for that. And then she's also on- she
34 riented three like during the day, but. Um, I did give her an Ambien last night, just to help her sleep

Figure 6.1 Give/giving/gave Concordance from Hand-off Corpus (continued)

35 pasta, and rice. Because she they didn't want to give her any vegetables. So I I think that's probably
36 LAUGH>. It's three-twenty-five. I didn't have to give her any last night but she had gotten some like
37 slow <OCN>: Titrate <OGN>: yeah. So I've been giving him, I both times I gave him Phenergan right a
38 N>: yeah. So I've been giving him, I both times I gave him Phenergan right afterwards with it <OCN>:
39 every four hours so <OCN>: Okay <OGN>: if you give the Dilaudid more often you can't do that. But
40 iented. He was N-P-O after midnight. And I didn't give him his Prevacid of course I'll chart before I g
41 er her. Her potassium was three point two, nights gave her forty and, um, I just looked at the new resu
42 t. And uh, her blood sugar was two oh eight and I gave her three units uh after she ate the food becaus
43 ix hours. Um her potassium was three point four I gave her forty milliequivalents. And she had an H and
44 his blood pressure. <OCN>: Cool. <OGN>: And, I gave him Vicodin twice, at noon and at six o'clock. A
45 idn't want to take them right away because I just gave him potassium um then he set them on his table a
46 he gets Vicodin as well for his pain. And I just gave him one. He gets one every six. ... And he had one
47 N>: Oh, okay. <OGN>: Six point four. They also gave her Kayexalate downstairs. <P: 05> She's she mov
48 fran ordered and she has Phenergan ordered, and I gave her Phenergan today <OCN>: Mm-hmm <OGN>: um a
49 ilaudid drip. And I'm thinking okay, no. And so I gave her one milligram she can have one to two millig
50 ams every three. <OCN>: Mm-hmm <OGN>: So I was giving her one milligram and she was falling asleep (
51 so sure about that. <OCN>: So you've just been giving one (xx) <OGN>: (xx) yeah, I've been giving o
52 been giving one (xx) <OGN>: (xx) yeah, I've been giving one. Cause she she actually did tell me one, s
53 So that's it, she's been pretty good about it. I gave her her last dose about quarter to six. <OCN>:
54 d then she can also get morphine. And I have been giving her um both throughout the day for her back pa
55 ep. Yeah she's been appropriate. You can actually give her morphine like every hour or two (xx) <OCN>:
56 n. And she has a medical (xx) named Shirley. Um I gave her (xx)'s number. They want to kinda coordinate
57 lock. She requested it already for eleven so I'll give her that. Her HANDS are Acute Pain and, they're
58 (xx) thing. Her (xx) really (xx) pain, and we're giving her uh five milligrams of Morphine, and she ju
59 e just got some. Like ten (xx) ten to ten. And we gave her Valium at that time and she's requesting a s
60 o P-O. Um and her HANDS is Acute Pain. And we're giving her the P-O, um Dilaudid. And Impaired Physica
61 n. Her potassium though is two point eight. Uh, I gave her forty of P-O (xx) K-C-L. Um she threw up. (
62 mp, ninety-nine point zero. And she was achy so I gave her some Tylenol at the beginning of the shift,
63 is feet up tonight. He's going to sleep so. Um, I gave him a sleeping pill. He is accu checks (xx) at b
64 re only to use that for breakthrough pain. And, I gave him two Vicodin ... this afternoon at about five-f
65 was still complaining of pain, so at six-thirty I gave him zero point five milligrams of I-V Dilaudid,
66 pressure's been okay. Even when we scoped her. We gave her a hundred of Fentanyl and four of Versed, an
67 ntained her blood pressure the whole time. I did give her a liter bolus during her scope. And ... she di
68 first unit right? <OGN>: Yeah. <OCN>: So you gave two <OGN><OVERLAP>: I gave <OCN>: out of the f

Figure 6.2 Concordance for Verbs Appearing with *her/him* in Hand-off Corpus

1 m two-forty-one <REFERENCE TO PATIENT ONE> I just changed her (xx), she had come in with dehydration, a
2 And um they should be adding vancomycin on. They changed her antibiotics around a little bit. Um took
3 She's not getting anything though there and they changed her I-V meds to P-O. Um and her HANDS is Ac
4 the antibiotics. Uh, also did a swallow study and changed her to pur pureed thin liquid diet. And you
5 . Um he's incontinent of urine. We checked him we checked him around six-thirty and he's fine he he's d
6 and really high temps when she came in. Um, they checked her blood cultures times two. Lot of lot of
7 ion. Um, they think (xx) or something. They checked her for (xx) and they checked her for mono t
8 mething. They they checked her for (xx) and they checked her for mono today, that was all negative. U
9 ty well tonight. Um he's incontinent of urine. We checked him we checked him around six-thirty and he's
10 they transferred her over here because after they got her back to bed and hooked up her N-G she had qu
11 d so, they just said transfuse her before we even got her hemoglobin. Her initial hemoglobin upon adm
12 x). Um, her HANDS is Impaired Gas Exchange. We've got her on N-M-Ts (xx) N-M-Ts. Um her I-V's also on a
13 t her up sitting up she was eighty-three? So they got her up and walked her to the bathroom. And what d
14 was laying in bed she was one-oh-eight, when they got her up sitting up she was eighty-three? So they g
15 the commode. She did pretty well for us when we got her up. White blood count was nineteen yesterday
16 l (xx). She's got um pulmonary edema <SU-m>: I know her (xx) <BACKGROUND NOISE - ANOTHER CONVERSATIO
17 No temperature. Any questions? <OGN>: Do you know him at all? <OCN>: (xx) <OGN>: Um, he came
18 you can tell in the edema. In her um feet um you know her hands and stuff and of course her hands are
19 uh Sally and I think she says her name (xx), you know her husband (xx). <OCN>: (xx)? <OGN>: Yeah. Sh
20 <OCN>: Okay <New tape> <OGN>: But they they oh put her on morphine? <OCN>: Uh-huh? <LAUGH> <OGN
21 N>: Nope she's on three liters since (xx) up. We put her on that when we scoped her, and um, she did d
22 se ox on room air was eighty-eight percent, so we put her on two liters of oh two and she's now pulse o
23 around a little bit. Um took her off the Keflex put her on um (xx) And then um (xx) actually (xx). S
24 . She's having a lot of fluid, so that's why they they put her on um (xx). And then doctor um Morse X just w
25 or her. So the same doctor that (xx) came by and saw her and decided that she needed an a Dilaudid dr
26 d after he saw her like old B-N-P issues after he saw her he wanted um the fluids restarted. So I did
27 ese are all in. Then he came around, and after he saw her like old B-N-P issues after he saw her he wa
28 th her? <OGN>: Yeah, (xx) q two. He came up and saw her right before she went down for her ultrasound
29 she's not sensitive to her Mestinon (xx) and she takes her own Mestinon. You know myasthenia gravis p
30 turned. She is on a dysphagia strict diet but she takes her pills just fine whole. She swallows them f

Figure 6.2 Concordance for Verbs Appearing with *her/him* in Hand-off Corpus (continued)

31 . And they plan sub-acute rehab to an E-C-F. She takes her pills whole just fine. Um, there are some
32 rdered a MUGA test for him. He refused to go. I told her about that and then his labs came back. His
33 n I cut it so he can suction a little bit. But I told him not to touch (xx) cause I believe he had som
34 at three and ah, she is to finish that. She she I told her she gets half cup every no a cup every half
35 kept asking if his mom was put to bed... and then I told him that he's in the hospital and that his mom's
36 Yup. Yup. And she's steady on her feet. I just eh told her to make sure you put your call light on and
37 J. The doc just um said the x-ray was clear. Um I told her to put an order in. And she said the abdomi
38 s like a two. And it's just an aching. And I just told her you know after the Lidocaine starts wearing
39 just saying she doesn't feel right. You know? I took her blood pressure it's still like in the one fo
40 ve he's gonna spend the night. Uh, I believe they took her off her Lamictal and decreased her Topamax s
41 changed her antibiotics around a little bit. Um took her off the Keflex put her on um (xx) And then
42 r midnight. She started the Go-Lytely prep. They took her to hemo an extra time today cause her labs w
43 >: Oh, okay. <OGN>: Thirty-two is the rate they want her to go (xx). She's got a P-G-J, that (xx).
44 TO SILENCE ALARM> <OGN>: Um, okay and then they want her fluids run at a hundred and fifty, but, I do
45 you might want to check with them to see if they want her to get four units. She's already gotten two,

As was the case with *give/giving/gave*, the majority of the actions described by the other lexical verbs referred to medications. Of the 42 instances of lexical verbs other than *give/giving/gave*, 12 (29%) of them were in a discussion of medication. Verbs discussing patients' medications included *changed*, *put*, *took*, and *takes*, underscoring the important role that nurses play in medication administration and management for hospitalized patients.

The first thirty lines of the concordances for the third-person pronouns *she* and *he* are shown in Figures 6.3 and 6.4. In the concordances for the pronoun *she* and *he*, the pronouns were used to refer to the patient who was the subject of the hand-off discussion. As already demonstrated in the move analysis of the hand-offs, nurses consistently provided an introduction to the patient, using some form of the patient's name.

For the most part, it was apparent that the pronoun was used to refer to the patient. However, in some cases, another person, such as a family member or another member of the healthcare team, was introduced into the discussion, and a pronoun was also used to refer to that person. Again, the pronoun was used to refer to the patient, although there were times when the pronoun referred to another person, as is seen in the portion of the *he* concordance (Figure 6.3). In these examples, the pronoun *he* was used to refer to a person other than the patient; in some cases, it appeared to be a physician, as in lines 3, 16, and 17 ("he signed", "after he saw her"); in line 23, *he* was used to refer to the patient's father.

The verbs that appeared with the pronouns *she* and *he* were all in the past or present tense, underscoring the findings from the move analysis of the hand-offs that the focus of the hand-off was on the past or present, and not looking forward into the future.

Figure 6.3 Portion of *she* Concordance from Hand-off Corpus

1 ab box down there. Um ...there's (xx) blood um (xx) she (xx) do anything with um (xx) generous, supposed
 2 looks pretty red anyway. So I put a Duoderm (xx) she (xx) Duoderm <OCN>: Is it open at all? <OCN>:
 3 om that um that I could tell I mean you know (xx) she does get iron. Um (xx) that. And her hemoglobin t
 4 r for mono today, that was all negative. Um (xx) she had um some exposure to like (xx). So she's been
 5 y I-V-P ... and I ordered it forty with lido. (xx) she has been crying about it, it's hurting her. (xx).
 6 that she's on. So nothing for pain for her (xx) she is alert and oriented (xx). She's ready to, hit t
 7 r forty of P-0 (xx) K-C-L. Um she threw up. (xx) she threw it all back up. So I called the doctor back
 8 ah she took most of her pills and (xx) down. (xx) She took in twenty-one hundred (xx) earlier. Um, she
 9 the um scope and she dropped her pressure. (xx) she was kind of fighting it so that's why we gave her
 10 you sick at? And she was like 'I don't know' (xx) She writes really well (xx) and then finally when I g
 11 EFERENCE TO PATIENT ONE> I just changed her (xx), she had come in with dehydration, and I, deleted that
 12 t needs to be complete (xx) activities that (xx). She could do out patient prep (xx) <OCN>: Yeah (xx)
 13 endent. Um, she is on, she's on two liters (xx). She gets hemodialysis normally Tuesday Thursday Satur
 14 m, she, has a Foley in. She's having pretty (xx). She had a couple loose stools this morning. They orde
 15 no code. Has history of that uh gastric uh (xx). She has um normal saline going at one twenty-five thr
 16 <OCN>: Yeah, (xx) <OCN>: Julie Levinson (xx). She has a history of cerebral palsy. She came in with
 17 any blood in that in the urine or in stool (xx). She hasn't had any bleeding (xx). Um even she went se
 18 have been negative that we know of. ... Um, (xx). She is a full code. Um, she gets up and she (xx) to m
 19 -E was today? <OCN>: Yes so you should be (xx). She just has peripheral access so I'm a little bit wo
 20 tions. Um kinda like a little shaky but not (xx). She just kinda gets a little worked up a little bit I
 21 and, this is th the third time we have been (xx). She probably didn't keep it in the past but. I asked
 22 e cramps. The rest she had the rest she had (xx). She said um (xx). <OCN>: What was her hemoglobin?
 23 (xx) <OCN>: And she- she didn't take the (xx). She takes them at night, it's a um, (xx) develop (xx)
 24 d (xx) off then. She's like a minus two on (xx). She was a minus five er minus four for the day. <O
 25 <OCN>: Oh, okay. <OCN>: Um her (xx) thyroid , she had a thyroidectomy, lumbar lami, um, history of
 26 <OCN>: She's N-P-O? <OCN>: Well, she's not - she doesn't have any tube feeds going but you know (x
 27 s right now. Umm she did get a T-E-E. She's on - she was on a versed drip so the T-E-E we gave her twe
 28 have that. Last bowel was on the twenty-second . She had just a little smear this morning. She is, I'
 29 been terribly bad. It works pretty good. Um ... she refused lab draws this morning and then they didn
 30 he left for hemo. <OCN>: Okay. <P: 06> <OCN>: She also has um, point nine, going at fifty. <OCN>:

Figure 6.4 Portion of *he* Concordance from Hand-off Corpus

1 t rough. I asked him why he didn't do it and (xx) he didn't know where they had put the (xx) (xx) alo
2 r extremity cool leg. He's had it for (xx). (xx) he has a history of diabetes and (xx). Recently he h
3 H> <OCN>: Oh I wouldn't guess (xx) <OGN>: (xx) He signed for the (xx) so one hundred. She has a lef
4 enty-third of April. He's had a um partial (xx). He has no incision. But he's very, very depressed.
5 ime too. <OCN>: Okay <OGN>: Um, general (xx). He still seems forgetful to me. Um lungs sounded ok
6 occus and staph. So. <OCN>: Okay <OGN>: (xx). He was very upset when I came on because, I think Sh
7 iequivalents. And she had an H and P. And he ah - he asked me to put another one in for (xx) <OCN>:
8 w? <OGN>: No, it's not Matthew. He had a wife - he had a baby <OCN>: <LAUGH> <OGN>: The wife had a
9 it, what am I saying <OCN>: services. <OGN>: He has multiple muh - myeloma and he came in for a r
10 actually produce anything. <OCN>: Okay <OGN>: He has that Foley in now which you know will go. Whi
11 re you?" and he said "I'm eighty-eight". <OCN1>: He must mean his wife <OGN>: (xx) "is your mother s
12 d over with and then I believe that (xx) <OCN>: He off his chem sticks too (xx)? <OGN>: He's off c
13 dn't think about it' <OCN>: Ohh (xx). <OGN>: He was just going on and on about that; I felt so ba
14 O> is D-Ced <OCN>: Oh, tele (xx) <OGN>: It's a- he told me it's to (xx) last night but he doesn't wa
15 I-S-P is q six and he was last drawn at five A-M. He should be due at one. No I'm sorry at (xx). <P:
16 these are all in. Then he came around, and after he saw her like old B-N-P issues after he saw her he
17 and after he saw her like old B-N-P issues after he saw her he wanted um the fluids restarted. So I
18 residuals after each void. At eight-thirty after he voided his scan was one-sixty-eight c-cs. His on
19 t ninety-two and ninety-four percent on room air. He had a chest x-ray done. The possibility will be f
20 ot here. I asked him if his mom was still alive. He said he thought so and I said "well how old are y
21 s wife <OGN>: (xx) "is your mother still alive?" He said "yeah she's ninety-one." But I think he's ta
22 rty milliequivalents. And she had an H and P. And he ah - he asked me to put another one in for (xx)
23 he is you know, real nice. She also has a dad and he called and I know she has a daughter, Melissa? I
24 ices. <OGN>: He has multiple muh - myeloma and he came in for a resection. And they think his neck
25 bility. He does get up with one, and a walker and he did ambulate in the hallway tonight and we did do
26 and H-S, his blood sugar was one ninety-nine. And he got two units. Um, they're waiting for a PICC. It
27 So he was kind of I think a little neglected and he had asked for pain meds but then I didn't get in
28 I just gave him one. He gets one every six. ... And he had one this morning before (xx) hemo (xx) down t
29 asically he had a um his gall bladder removed and he has a intra-abdominal abscess, and yesterday they
30 m zero point five milligrams of I-V Dilaudid, and he has been fine ever since. So, he's in there, he'

This focus on the past or present is also demonstrated by the use of stative verbs, such as *is/was*, *has*, *have*, and *had*, which describe a condition or "state of affairs," as opposed to dynamic verbs, which express activity or processes (Richards et al., 2002, p. 511).

Negatively key pronouns were all first-person and second-person pronouns. First-person pronouns refer to the speaker, while second-person pronouns refer to the addressee (Biber et al., 1999). In the hand-off corpus, these forms of pronouns were found to occur less frequently than expected based on comparison to the reference corpus.

The first-person singular pronoun *I* is fairly unambiguous; it is used by speakers to refer to themselves (Biber et al., 1999). The first-person plural pronoun *we*, on the other hand, is often vague: it can be used to refer to the persons present during the discourse (the speaker and the addressee), but it is also often used to refer to the speaker and "some other person or persons" (Biber et al., p. 329). Examination of the concordance for *we*, the first thirty lines of which are shown in Figure 6.5, illustrated that the use of *we* by the off-going nurse in the hand-off corpus fell into the latter category.

Within the hand-off corpus, the off-going nurse used *we* to refer to activities or tasks that would not be likely to require more than one person to accomplish, such as setting oxygen administration rates (shown in line 4 of the concordance) or changing a bag of intravenous solution (as in line 22). In other uses of *we*, it appeared that the nurse saw herself as a member of a team caring for the patient and providing a therapeutic intervention for the patient, as in line 2 ("we gave her two units of fresh frozen plasma").

The nurse likely administered the plasma, but the order for the plasma would have been issued by a physician; in this case, *we* could be interpreted to mean that the nurse saw herself as collaborating with the physician to get the patient a needed treatment. An example of the use of *we* to refer to the speaker and the addressee is seen in line 28 of the concordance; in this case, the off-going nurse is reminding the oncoming nurse of a new rule or policy for the use of a device.

The ten most frequent collocations with *we* that occurred in the hand-off corpus are shown in Table 6.5. As was the case with *she* and *he*, *we* appeared most commonly followed by a verb (e.g. *have*, *are*, *scoped*, *gave*), and the verbs were in the past or present tense.

Figure 6.5 Portion of we Concordance from Hand-off Corpus

1 tient comes here with deficient fluid volume, and we are tr - working this blood loss severity. On her
2 ion, her I-N-R was two point three, to correct it we gave her two units of fresh frozen plasma and now
3 nd she will be N-P-O for a scope in the morning. We are also working on oxygen therapy. On arrival,
4 pulse ox on room air was eighty-eight percent, so we put her on two liters of oh two and she's now pul
5 wo and she's now pulse oxing ninety-two percent. We also are working with her vital signs monitoring,
6 heart rate of a hundred and respers are twenty. We are also working with activity intolerance due to
7 lood transfusion is complete. For her self-care, we have her on bed rest using the bedpan until the h
8 tubated about twenty-two hundred last night. And we had her on a versed drip but I don't know if she
9 to one huundred point - one oh one axillary so we did actually sent off more blood cultures today a
10 hink yesterday and uh sent off a sputum and urine we already know has (xx) in it and we are treating t
11 utum and urine we already know has (xx) in it and we are treating treating it. Um, let's see. Oh, she
12 She's on - she was on a versed drip so the T-E-E we gave her twenty five of Fentanyl. And she ended
13 . (xx) she was kind of fighting it so that's why we gave her (xx) milligrams. But you know then after
14 ixty-nine over er sixty-seven over thirty-six. So we ended up giving giving her a two-fifty bolus. And
15 ving giving her a two-fifty bolus. And then while we were at lunch Audrey so nicely gave point one of
16 I think she called once. Melissa, right. Umm, we did want to give her some Lasix today. And they
17 er hands are real tight (xx) sarcoidosis. Um, but we you know with that drop in pressure we couldn't g
18 s. Um, but we you know with that drop in pressure we couldn't give her Lasix. So um Michaels is the d
19 nt now and - which is what she started out at but we had her at a hundred percent for the um T-E-E and
20 eaning today because um you know I didn't see how we could shut off her versed (xx) vent (xx). See wh
21 kay. <OCN>: Okay. Thank you. <OGN>: You know, we had -- so her (xx) you know a hundred units an h
22 x) you know a hundred units an hour of heparin so we changed the buh - we took the bag down and put up
23 units an hour of heparin so we changed the buh - we took the bag down and put up a new bag and new tu
24 ke the P-T-T is like sixty two point seven. Then we know it's not the heparin (xx). <OCN>: (xx) <O
25 xx) <OGN>: No, um, but if it is the heparin then we need to send that bag down to the pharmacy <OCN
26 retty well tonight. Um he's incontinent of urine. We checked him we checked him around six-thirty and
27 ght. Um he's incontinent of urine. We checked him we checked him around six-thirty and he's fine he he
28 y and she's on that continuous pulse ox. You know we have that new protocol now. Um she ran a slight
29 g if she could leave by Friday and they said well we can't guarantee anything, so. <OCN>: Okay <OGN
30 with P-V-Cs. She does all sorts of funky things. We had to bump her up yesterday to five liters, nasa

Table 6.5 Top Ten Collocations with *we* in Hand-off Corpus

Frequency	Frequency Left	Frequency Right	Word
10	10	0	and
6	6	0	when
6	6	0	so
6	0	6	have
6	0	6	are
5	0	5	scoped
5	0	5	gave
5	0	5	did
4	0	4	just
4	0	4	had

The most negatively key word in the hand-off corpus was the second person pronoun *you*, demonstrating that *you* appeared much less often in the hand-off corpus than would be expected as compared to the spoken English corpus. Like *we*, *you* is somewhat ambiguous in use; it is not always clear to whom *you* is referring. It may be used as a singular form, referring to the addressee, or in the plural, to refer to a group of people (Biber et al., 1999). In the hand-off corpus, *you* appeared to be used as the singular form by both the off-going nurse and the oncoming nurse. A portion of the concordance for *you* from the hand-off corpus is shown in Figure 6.5.

Given that hand-offs are a transfer of responsibility for patients' care from one provider to another, it might be expected that *you* would appear in the form of recommendations from the off-going nurse to the oncoming nurse, as in "you need to" or "you should" take some form of action. However, this was not the case in this corpus. As is evident in the concordance, the pronoun *you* was often seen with the verb *know*, and this was borne out in the collocation analysis of *you*. The verb *know* was the most frequently appearing right collocate of *you* in the hand-off corpus.

The two-word phrase *you know* is classified by Biber et al. (1999) as a discourse marker; discourse markers serve a functional purpose in conversations by linking together clauses or phrases, but they also serve to underscore the interactive relationship of the participants in the discourse (Biber et al., 1999; Schrifin, 2001).

You know has also been classified as a hedge, or a linguistic device that "softens" or weakens the strength of an utterance by signaling uncertainty or lack of commitment to the statement (Dixon & Foster, 1997; Lakoff & Bucholtz, 2004). Hedges have been

identified as more prevalent in women's language than in men's. Women use hedges to avoid being seen as too assertive or aggressive (Lakoff & Bucholtz).

Investigations of the use of *you know* have demonstrated that it serves as more than a discourse marker and/or a hedge, but has meaning and function in discourse. In addition, *you know* is used with comparable frequency by both men and women, although it is used differently by men and women (Holmes, 1986). *You know* can be used to express either certainty or uncertainty (Holmes), and within the hand-off corpus, nurses used it to express both. There were 58 occurrences of *you know* in the hand-off corpus; using Holmes' framework, 34 were expressions of certainty and 22 were expressions of uncertainty. Two could not be classified as either certainty or uncertainty due to ambiguity of the context surround the phrase and missing words. A portion of the concordance for *you know* from the hand-off corpus is shown in Figure 6.6.

The use of *you know* to communicate certainty is demonstrated by expressions that refer to mutually understood knowledge, confidence that the listener understands the type of situation being described, or emphasis to reassure the listener of the validity of the statement (Holmes, 1986). Examples of these from the hand-off corpus include:

(52) "You know he's completely nonverbal." (Hand-off 007)

(53) "... you know with that drop in pressure we couldn't give her Lasix."
(Hand-off 005)

(54) "... so I told the resident like 'I don't feel comfortable with this. This is not an appropriate order for her. You don't even know her', you know."
(Hand-off 025)

Example (52) is an example of conjoint knowledge, or information that the speaker knows that the listener knows (Fung & Carter, 2007; Holmes, 1986). Prior to this excerpt from the hand-off, the off-going nurse had already received information that the oncoming nurse had cared for the patient previously, so the off-going nurse's use of *you know* was expressing her knowledge that the oncoming nurse was aware of the patient's communication deficit; in effect, the oncoming nurse is saying "as you know, ...". Example (53) shows the off-going nurse using *you know* as an emphasis of her confidence that she had done the right thing by withholding the Lasix, and the patient's drop in blood pressure was justification for that act. Example (54) is an illustration of an attributive use of *you know* (Holmes); the off-going nurse is relating how she interacted with a resident physician to protect the patient from a potential error. Her use of *you know* at the end of the utterance was an expression of confidence that the oncoming nurse understood the type of situation that the off-going nurse was describing. Emphasis and the attributive use of *you know* were found to be more frequently used by women in conversation (Holmes). The use of *you know* in ways that express certainty may also serve as a verification of the shared knowledge that has been noted to be an essential component of effective communication (Allen, 1995); Fung & Carter, 2007; Richards et al. 2002).

Figure 6.6 Portion of *you know* Concordance from Hand-off Corpus

1 -H-E patient (xx), so I had a lot to learn (xx). You know <LAUGH> <OCN>: Oh I wouldn't guess (xx) <
 2) <OCN>: (xx) so I just left them. S3: Save em, you know. (xx) <OCN>: Yeah. I mean, yeah. In case an
 3 <OCN>: Yeah totally. Um, no problem <OCN>: Do you know if they're (xx) <OCN>: No. Well - no. Um <
 4 s is uh Sally and I think she says her name (xx), you know her husband (xx). <OCN>: (xx)? <OCN>: Yeah
 5 ny residual from that um that I could tell I mean you know (xx) she does get iron. Um (xx) that. And he
 6 nd then doctor um Morse X just wanted her on (xx) you know in case um there's you know even though they
 7 st wanted her on (xx) you know in case um there's you know even though they did a T-E-E and her valves
 8 n. I think he just wanted to cover her with (xx). You know he's just being real cautious with her. <
 9 N>: What's the heparin for? <OCN>: Well, buh, you know because of the P-E? (xx) P-E (xx) <OCN>:
 10 it so that's why we gave her (xx) milligrams. But you know then after that she went down to like sixty-
 11 when I came back. <OCN>: <LAUGH> <OCN>: So uh you know that's why I gave you the key in case she ne
 12 pretty short of breath with any activity. Um the you know ang anxiety part you know she is on Celexa a
 13 h any activity. Um the you know ang anxiety part you know she is on Celexa an anti-depressant. They di
 14 name is (xx). And <OCN>: (xx) <OCN>: Yeah. And you know I think they (xx) a business, a home health
 15 N>: Yeah. So um this is his cell phone. And he is you know, real nice. She also has a dad and he called
 16 but you can tell in the edema. In her um feet um you know her hands and stuff and of course her hands
 17 hands are real tight (xx) sarcoidosis. Um, but we you know with that drop in pressure we couldn't give
 18 s not - she doesn't have any tube feeds going but you know (xx) got this (xx) going down her uh O-J and
 19 (xx) <OCN>: <LAUGH> <OCN>: Umm just the usual you know vent care plan. I put a couple that were ina
 20 ent care plan. I put a couple that were inactive, you know um teaching and um um oh knowledge about her
 21 forward. I mean we. No weaning today because um you know I didn't see how we could shut off her vers
 22 Oh nine, okay. <OCN>: Okay. Thank you. <OCN>: You know, we had -- so her (xx) you know a hundred u
 23 ank you. <OCN>: You know, we had -- so her (xx) you know a hundred units an hour of heparin so we cha
 24 to make sure that that wasn't the factor. So um you know with this new one if it's pretty much the sa
 25 nk I'm gonna have one, I think I'm gonna have one you know (xx), but has had nothing. I called the doc
 26 ctor in there just saying she doesn't feel right. You know? I took her blood pressure it's still like
 27 gonna, then she doesn't want to sleep because she you know thinks it's gonna happen. <OCN>: Right <
 28 <OCN>: Right <OCN>: But. I mean other than that you know, she gets up with assistance and stuff. You
 29 kay and then three-forty-two Eric Mason. You said you know him? <OCN>: Yeah, I had him (xx) <OCN>: O
 30 e him in the condition that he's in right now. So you know that he had a brain stem hemorrhage. Um he

There were also instances in the hand-off corpus of *you know* used to express uncertainty, including appealing (e.g. seeking validation), and signaling linguistic imprecision in word choice or false starts (Fung & Carter, 2007; Holmes, 1986), as shown in these examples:

(55) "I've never had a T-H-E patient (xx), so I had a lot to learn (xx). You know (Hand-off 002)

(56) "... but you can tell in the edema. In her um feet um you know her hands and stuff..." (Hand-off 005)

(57) "Which no - you know nobody knew" (Hand-off 016)

In example (55), the off-going nurse seemed to be expressing her uncertainty in caring for a patient who has had a T-H-E (an esophagectomy) and appealing for understanding of her uncertainty. The off-going nurse in example (56) used *you know* as she attempted to be accurate and precise in her description of the patient's edema. Example (57) provides an example of a false start; the off-going nurse began to say something beginning with "no", stopped, inserted *you know*, and then went on to say "nobody." The use of *you know* to signal linguistic imprecision in word choices was used more often by men than women (Holmes, 1986).

While there were examples of both certainty and uncertainty in the use of *you know* in the hand-off corpus, it is not clear whether those expressions can be attributed to gender alone, nor can it be concluded that gender plays no role in the use of *you know* by nurses in hand-offs. While there is evidence that attributes some functions of *you know* to gender (Holmes, 1986), other factors that are not known about the speakers in this

study, such as experience, length of shift, educational level may have also played a role in the use of *you know* in hand-offs.

Nouns

Nouns are words that "denote types of physical objects (such as human beings, other biological organisms, and natural or artificial inanimate objects)" (Huddleston & Pullum, 2002, p. 32). Nouns are one component of the category of lexical words, which carry the meaning of the text. While nouns are the most frequent lexical word class overall, they are the least common lexical words in English conversation (Biber et al., 1999). The occurrence of nouns in the frequency list from the hand-off corpus bore this out; the first noun did not appear until the 61st position on the list.

Based on the frequency counts alone, the list of most common nouns in the hand-off corpus is quite different from the list of most common nouns in two corpora of spoken English, the BNC spoken English corpus, and a sub-corpus of research speech events from the MICASE corpus. A side-by-side comparison of the most common nouns in the three corpora, displayed in Table 6.6, shows the similarities between the general spoken English of the BNC and the academic spoken English of the MICASE corpus. The table also displays the contrast between the common nouns that nurses use in hand-offs and the other two corpora of spoken English.

In both the MICASE corpus and the BNC corpus, the three most common nouns are identical, and even the fourth and fifth most common nouns in the MICASE corpus are not specific to research discussions. Beginning with the sixth most frequent noun, however, the nouns in the MICASE corpus are words that are associated with discussions of research (e.g. problem, question, state) (Swales, 2004).

Table 6.6 Most Common Nouns in Hand-off Corpus and Two Reference Corpora of Spoken English

Rank	MICASE Corpus (Research Speech Events)	British National Corpus (Spoken)	Hand-off Corpus
1	thing	thing	blood
2	time	time	night
3	people	people	pain
4	point	year	home
5	word	way	morning
6	problem	day	room
7	question	week	air
8	state	pound	history
9	model	point	patient
10	example	number	bowel

In comparison to the MICASE and BNC corpora, the most common nouns used by nurses in hand-offs are more specialized. There are similarities between the BNC corpus and the hand-off corpus in that both lists include nouns that describe time; the nouns in the hand-off corpus are more specific. The nouns describing time in the BNC corpus represent broad periods of time (e.g. year, day, week). In the hand-off corpus, the nouns describing time suggest that nurses are focused on much narrower periods of time (e.g. night, morning). Also, while people appeared commonly in the MICASE and BNC corpora, nurses use patient to describe a specific subgroup of people.

The most striking difference in the word frequency lists was in the use of nouns that suggested that nurses talked about the patient's body and its current status and the location of the patient in time and in a place. For example, *blood* and *bowel* refer to parts of the physical body. The appearance of *pain* in the frequency list suggested that nurses discuss patients' comfort. *Morning* and *night* refer to time of day, while *room* and *home* might refer to locations, in terms of where the patient is and where he/she has come from or is going. Concordance and collocation analyses were carried out to determine how these words appeared in the context of the words around them.

Nouns Describing the Physical Body

Frequently appearing nouns that refer to the patient's physical domain include *blood* and *bowel*. The results of collocation analysis for both of these nouns indicated that they were primarily used by nurses as compound nouns. Compounding of nouns is a productive language process that combines two nouns to form a single noun. In written English, compound nouns take the form of two distinct words used together as a noun (e.g. filing cabinet), hyphenated words in which the two words are connected by a

hyphen (e.g. self-control), or two words that are merged into one continuous word (e.g. cookbook) (Biber et al., 1999).

Words that were collocated immediately adjacent to *blood* in the hand-off corpus at least three times are shown in Table 6.7. The most frequent right collocation of *blood* was *pressure*; this is an example of a compounded word. In this case, when nurses use the word *blood*, they are really discussing *blood pressure*. Other frequent collocations included *sugar*, *cultures* and *red* and *cells*; examples of each from the hand-off corpus are shown in (58), (59), (60) and (61).

(58) "I took her blood pressure it's still like in the one forties..." (Hand-off 006)

(59) "His blood sugar last night was quite high at two ninety-four." (Hand-off 017)

(60) "...we did actually send off more blood cultures today..." (Hand-off 005)

(61) "...she's had just one unit of packed red blood cells on the sixth." (Hand-off 033)

These examples illustrate the compounding of *blood* with nouns to form the compound nouns *blood pressure*, *blood sugar*, *blood cultures* and *red blood cells*. The nurse was not discussing blood itself, but rather was discussing the functions or components of blood as measures of the patient's response to illness (in the case of *blood pressure*, *blood sugar*, and *blood cultures*) or as an intervention to treat the patient's illness (in the case of *red blood cells*). However, as seen in lines 20, 23, 24, and 28 of the concordance for *blood* shown in Figure 6.7, nurses do discuss blood as a separate entity when it is observed or described as a symptom.

Table 6.7 Collocations with *blood* in the Hand-off Corpus

Frequency	Frequency		Word
	Left	Right	
14	0	14	pressure
14	14	0	her
6	0	6	sugar
9	9	0	his
4	4	0	red
4	0	4	cultures
3	3	0	the
3	0	3	cells

Figure 6.7 Portion of *blood* Concordance from Hand-off Corpus

1 around, the lab box down there. Um ...there's (xx) blood um (xx) she do anything with um (xx) gener
2 at seventy-five. Umm vitals have been fine. Her blood pressure I think I got in re report due to the
3 or they removed they're kind of worried about her blood pressure. And it's been jumping. Like wh - in
4 icient fluid volume, and we are tr - working this blood loss severity. On her admission, her I-N-R was
5 eight point oh, she gets two units of packed red blood cells and we're on her first unit. You are to d
6 r with the results. Her first unit of packed red blood cells was begun at sixteen hundred and she will
7 r vital signs monitoring, because on arrival, her blood pressure was eighty over fifty, heart rate a hu
8 nd twenty, ah respers was twenty-eight. Now, her blood pressure's ninety-six over fifty four with a hu
9 point nine at seventy-five c-cs an hour after the blood transfusion is complete. For her self-care, we
10 oh one axillary so we did actually sent off more blood cultures today and I know she was cultured up I
11 ing she doesn't feel right. You know? I took her blood pressure it's still like in the one forties and
12 t's that? Why is her temp like that? Why is her blood pressure like that?" You know, and you're like
13 e put out six, number two put out seven. Um, his blood sugars are q six. <OCN>: (xx) <OGN>: I thi
14 <OGN>: Any questions? ... And I will check on the blood sugars. <OGN>: Two seventeen, Ron Duffy.
15 m sorry at (xx). <P:06> Um he's A-C and H-S, his blood sugar was one ninety-nine. And he got two units
16 did pretty well for us when we got her up. White blood count was nineteen yesterday ... and there's, all
17 et a new one. Room air. Vitals were okay. Her H-S blood sugar last night was three-thirty-six. And she
18 neutropenic precautions. But yesterday her white blood count was up to six point seven, so I would thi
19 uses it as needed. <OCN>: (xx) <OGN>: Yeah. His blood sugar last night was quite high at two ninety-f
20 because he didn't have any food in it's just, the blood working its way out. Um let's see. He has a hi
21 n there too. Umm, she's on (xx), she's (xx). Her blood sugar this morning, from eleven was one-sixty-o
22 had an I-V going (xx) hepllocked that. And uh, her blood sugar was two oh eight and I gave her three uni
23 he went to the bathroom and noticed just a little blood so she she kind of panicked but nothing to be (
24 he's been to the E-R she hasn't had any more any blood in that in the urine or in stool (xx). She hasn
25 ittle bit. <P:07> We started lisinopril, for his blood pressure. <OCN>: Cool. <OGN>: And, I gave hi
26 's got a visitor now. Um, and, any questions? His blood pressure was still up wh- in the one-fifties.
27 er leg. Um, I don't have the results of that. His blood cuh cultures came back positive today. Uh, for
28 x) bowel movements that were, basically just dark blood <OCN>: Okay <OGN>: so um they want to (xx) a
29 igh temps when she came in. Um, they checked her blood cultures times two. Lot of lot of stuff they've
30 aws this morning and then they didn't have enough blood so they're going to redraw (xx) what she did no

The use of *bowel* in the hand-off corpus showed similar patterns to that of *blood*; its collocations are shown in Table 6.8. (There were no words that collocated three times with *bowel* in the corpus, so the collocation table was expanded to include collocations that occurred twice with *bowel*.) Again, *bowel* appeared to be compounded with another word to produce noun compounds; in this case, *bowel movement* and *bowel sounds*. When nurses talked about *bowel* in hand-offs, they discussed the function of the bowel, and not the organ itself, using *bowel movement* and *bowel sounds* as indicators for the functioning of the gastro-intestinal tract.

Table 6.8 Collocations with *bowel* in the Hand-off Corpus

Frequency	Frequency		Word
	Left	Right	
4	0	4	movement
4	4	0	a
4	0	4	sounds
2	2	0	small
2	0	2	obstruction
2	2	0	good

Examples of this from the concordance of *bowel* in the hand-off corpus include:

(62) "Um he had one small bowel movement this morning." (Hand-off 023)

(63) "Like an ascites um, with diminished bowel sounds." (Hand-off 039)

In English, noun + noun compounds, such as the examples shown for *blood* and *bowel* from the hand-off corpus, are the most frequently seen type of compounds, but

again, noun compounds are not observed in conversation at the same rate of frequency as in other areas of English. This is attributed to the lower frequency of nouns in conversation relative to other forms of English (e.g. news, fiction, academic) (Biber et al., 1999).

Pain

The management of pain is of significant concern to nurses, so it is not surprising that *pain* appeared in the frequency list from the hand-off corpus. *Pain* appeared with a number of other words; there were nine different words that were collocated with *pain* at least three times in the hand-off corpus. The collocations are shown in Table 6.9.

Only two of the collocates for *pain* were adjectives that described the location of the pain. Both *back* and *abdominal* were used to modify the noun *pain* in three instances each. There were other examples of the use of descriptors to describe the location of pain, but they occurred fewer than three times in the corpus. In other cases, the mention of *pain* was to report its absence, as in lines 1, 6, 14, 24, and 25 of Figure 6.8; the absence of pain was rather infrequently stated as "no pain," as evidenced by the relatively low frequency of collocation of *no* with *pain*. The off-going nurse often stated that she had not administered any treatment for pain, as in (64), leaving the oncoming nurse to infer that the patient did not have pain.

(64) "Um, I didn't give her anything for pain." (Hand-off 002)

Table 6.9 Collocations With *Pain* in the Hand-off Corpus

Frequency	Frequency		Word
	Left	Right	
10	7	3	for
8	8	0	of
4	4	0	her
3	0	3	um
3	0	3	She
3	3	0	no
3	3	0	back
6	0	6	and
3	3	0	acute
3	3	0	abdominal

The accepted method for assessing the intensity of pain for patients who are able to respond is to ask the patient to rate his/her pain on a numeric scale of 0 – 10, where 0 is no pain at all and 10 is the worst pain imaginable (Sikorski & Barker, 2009). The patient's rating not only serves a guide for nurses in the evaluation of pain management, but also provides nurses a means for communicating with colleagues about how much pain the patient is experiencing. Only one of the 39 occurrences of *pain* in the hand-off corpus noted the numeric rating that the patient had given her pain; it is shown in line 3 of the concordance. Other instances of *pain* in the corpus included descriptions such as "a lot," "quite a bit," and "some," or stated that the patient had been getting pain meds "all night." Communication regarding pain management in the corpus sometimes included information about doses and/or frequency of pain medication that had been administered, but did not include evaluation of effectiveness, which should be included in hand-off information about pain and pain management (Sikorski & Barker, 2009; Wells, Pasero, & McCaffrey, 2008).

Figure 6.8 Portion of *pain* Concordance from Hand-off Corpus

1 asically. Um he voids he's room air. Um, no pain. <OCN>: (xx) <OGN>: great. <OCN>: (xx)
 2 for me. Um, I didn't give her anything for pain. She has I-V um Zosyn, (xx) heparin three ti
 3 er at six if she wanted it but she rates her pain like at a one so she's been fine. Umm her Fo
 4 some Lasix today. And they were giving her pain meds all night long, um all yesterday <OCN
 5 f re report. So, any questions? <OCN>: Any pain? <OGN>: Nope. Nothing for pain. Nope, he's
 6 <OCN>: Any pain? <OGN>: Nope. Nothing for pain. Nope, he's (xx) Nothing? <OCN>: (xx) <Lau
 7 m, antibiotic that she's on. So nothing for pain for her (xx) she is alert and oriented (xx) .
 8 just hanging (xx). He's wanted nothing for pain. <P: 04> Any questions? <OCN>: (xx) <OGN>:
 9 t two. And she's been having quite a bit of pain in her lower leg, um, and she also has numb
 10 ng a little stronger. She's having a lot of pain yet. Alert and oriented. She has a positive
 11 and a condo here. She came in with abdominal pain, dehydration, fever. Uh, she's a no code. Ha
 12 he also uh got Oxy I-R ordered yesterday for pain. I gave that to her twice. I probably gave
 13 kind of restless and it looks like she's in pain; she didn't she'll tell you she's not, but. .
 14 s knees at home I guess. Uh, hasn't had any pain for me. He's he gets up to the bathroom and
 15 it's all filled out and ready to go. Um, no pain for me. He last moved his bowels on the twen
 16 for nausea, vomiting, dehydration, and chest pain. Um they've done a work up on him and it's no
 17 the full two milligrams of Dilaudid for the pain. <OCN>: Which pain? <OGN>: (xx) chest and
 18 ams of Dilaudid for the pain. <OCN>: Which pain? <OGN>: (xx) chest and abdominal pain. And,
 19 hich pain? <OGN>: (xx) chest and abdominal pain. And, he does okay with that but he always ge
 20 hink a little neglected and he had asked for pain meds but then I didn't get in there till lik
 21 and a laminectomy. Got chronic back and leg pain. Um he also had something done to his left
 22 and <P: 05> he gets Vicodin as well for his pain. And I just gave him one. He gets one every s
 23 there. <OCN>: (xx)? <OGN>: Um, his back pain <OCN>: Okay <OGN>: So. .. Um, let's see. Th
 24 a. ... Her bowel sounds good, soft abdomen, no pain. <OCN>: Okay <OGN>: She uh ... doesn't void
 25 GN>: to what to do with it. No complaints of pain. Um <P: 06> What else oh she's got Protonix.
 26 <OCN>: Oh, yeah <OGN>: so it was kind of a pain? <OCN>: That always happens (xx) ... Um, and
 27 lower lobe (xx). Um, having some right hip pain, so they x-rayed that and that was negative a
 28 at a ton today. Um she's using Dilaudid for pain and that kind of makes her nauseous too. So
 29 I think she's she's a bit dramatic about her pain. She's got pretty good sunburn. She was at Mi
 30 sunburned, enough that she's complaining of pain. (xx) appropriate to use Dilaudid for sunburn

Time

Four collocations that occurred at least three times were identified for the noun *morning* in nurses' hand-offs. The two most frequent collocations for *morning* were *this* and *the*. For *night*, there were five collocations identified that occurred at least three times; the most frequent was *last*. The collocations for *morning* are shown in Table 6.10.

Table 6.10 Collocations with *morning* in the Hand-off Corpus

Frequency	Frequency	Frequency	Word
	Left	Right	
17	17	0	this
12	12	0	the
4	0	4	and
3	0	3	she

Both the concordance and the collocations for *morning* indicated that when nurses discussed the morning in hand-offs, they talked about both the morning previous to the hand-off as well as the morning following it. The concordance for *morning* is shown in Figure 6.9. References to *this morning* described activities that had already occurred, such as medications that were given or not given (lines 12, 18, and 29), physician visits that had already occurred (lines 8 and 9), tests that had already been completed (lines 19 and 21), and patient observations (lines 3, 11, and 26). When the determiner *the* appeared to the left of *morning*, *morning* almost exclusively appeared in a prepositional phrase that began with *in* and described tests or treatments that were yet to be done (lines 5, 13, 28, and 30). Line 31 of the concordance is an exception to this; in this case, the

Figure 6.9 Concordance for *morning* from Hand-off Corpus

1 He's awesome. Very sweet. I got them coffee this morning so they're in a good mood SS: <LAUGH> <OCN
2 side is changed T-I-D. Then (xx) service does the morning dressing change <CHAIR SCRAPING ON FLOOR> and
3 edema. Um she did have a bowel movement (xx) this morning and she gets up with a walker. Um she has a
4 an M-R-I. So, the M-R-I is scheduled for tomorrow morning at ten o'clock in the morning under conscious
5 eduled for tomorrow morning at ten o'clock in the morning under conscious sedation. <OCN>: I think
6 . Originally they said he N-P-O after five in the morning that's for M-R-I but the docs just wrote it
7 gm stuck in the back of his of his throat so this morning at five I gave him a red robinson I cut it
8 t but ortho and neuro were both here already this morning and I didn't get to see what they wrote but
9 e was actually asking the doctors about that this morning if she could leave by Friday and they said we
10 e it was mixed with stool. She, um but then this morning she didn't go till about probably like five
11 And he was doing a little bit of dry heaving this morning but, didn't actually produce anything.
12 ction and pneumonia. Um, she got forty Lasix this morning (xx) had (xx) P-O forty to be given at five
13 to admit her and the plan is to scope her in the morning (xx) if they are not seeing (xx).
14 anything happens and it doesn't go through in the morning (xx) it's probably the (xx) said they would
15 ake it last night. She tell me "I take all in the morning anyway and I said well, if you are taking it
16 king it twice a day you shouldn't take all in the morning so. Um I I just forget I just forget anyways
17 I just forget anyways I take it when (xx) in the morning <OCN>: (xx) <OGN>: And she- she didn't ta
18 one. He gets one every six. ... And he had one this morning before (xx) hemo (xx) down there. <OCN>: (
19 nics but not anymore. Her white count for me this morning was two point one one and that's up from like
20 they're (xx) um they're going to check her in the morning too. <OCN>: Mm-hmm. <OGN>: But um (xx)
21 pretty good. Um ... she refused lab draws this morning and then they didn't have enough blood so th
22 to know right now but obviously she wants it for morning but you can call her back and say can we cha
23 : (xx) her lungs? <OGN>: Um her lungs, from this morning she was crackling in the bases this morning b
24 this morning she was crackling in the bases this morning but progressively, I think she got a little b
25 k she sounds a little bit worse than she did this morning so and he talked to the family. He was like i
26 y good about sticking to q four but that was this morning before she got all that fluid taken taken off
27 d and it's been hurting her. Uh, (xx). Like this morning she was she was like on her right side for a
28 oint three. And, she will have labs drawn in the morning also. She's alert, she's orientated times th
29 , one-eighty-nine. They did hold his Norvasc this morning secondary to a lower blood pressure. His bl
30 And ... if his I-N-R is within normal range in the morning they plan to put a PICC line in. And he's af
31 um she came over from seven, at like four in the morning when she crumped out there. But, she present

prepositional phrase *in the morning* is preceded by information that indicates a discussion about when the patient *came* to the present unit. The use of *morning* in hand-offs is further evidence of the nurses' focus on the day of the hand-off – there were no references to "yesterday morning," and only one to "tomorrow morning."

In contrast to discussions of *morning*, when *night* appeared in the hand-offs, its use was exclusively retrospective. As shown in Table 6.11, it was most frequently collocated with *last*, indicating that the night previous to the hand-off was being described. This is likely a reflection of the relative lack of activity in hospitals during the night; tests and procedures are not routinely scheduled or planned for the nighttime hours, so nurses who have cared for the patient during the day or evening shift would not have information to share about upcoming activities.

Table 6.11 Collocations with *night* in the Hand-off Corpus

Frequency	Frequency		Word
	Left	Right	
12	11	1	<i>last</i>
9	9	0	<i>the</i>
3	0	3	<i>but</i>
3	0	3	<i>and</i>
3	3	0	<i>all</i>

Words other than *last* that collocate with *night* indicate that the discussion is focused on the previous night, as in this example of *the* used with *night*:

(65) "The rest of the night he did fine." (Hand-off 018)

Location

The words *room* and *home*, which appeared in the ten most frequent words in the hand-off corpus, suggest locations. Examination of the collocations for *room*, however, revealed that this was not the case for that word. Rather than a description of a location or place, *room* was actually used to describe a treatment. The use of *room* in the hand-off corpus was an additional example of the combination of two nouns to form a noun compound, in this case, *room air*. This noun compound was used by the off-going nurse to inform the oncoming nurse that the patient is not receiving supplemental oxygen; rather, the patient was breathing the air that is in the room. Table 6.12 displays collocations of *room* that occurred at least three times in the hand-off corpus.

Table 6.12 Collocations with *room* in the Hand-off Corpus

Frequency	Frequency		Word
	Left	Right	
13	13	0	on
19	0	19	air
4	4	0	the

The collocations of *room* revealed that *on* appeared to the left of *room*, and *air* occurred to the right of *room*, forming the prepositional phrase *on room air*. This use is shown in example 66:

(66) "Her lungs sound clear, she's on room air." (Hand-off 024)

The word *home*, the tenth most frequent noun in the hand-off corpus, was used to describe the location where the patient lived. References to the patient's home were of

two main types: 1.) how the patient functioned or cared for himself/herself prior to admission to the hospital; and 2.) anticipation of the patient's return to home. These references are illustrated in the collocations with *home* from the hand-off corpus in Table 6.13, and in the concordance for *home* displayed in Figure 6.10.

Table 6.13 Collocations with *home* in the Hand-off Corpus

Frequency	Frequency		Word
	Left	Right	
10	10	0	at
7	0	7	and
6	6	0	go
6	6	0	from
4	0	4	with
4	4	0	going
3	3	0	him

When *at* was used prior to *home*, the off-going nurse discussed information about the patient's status prior to admission, as in

(67) "Sounds like she normally kind of gets around with a cane at home ..."

(Hand-off 026)

(68) " she's got a right pelvic fracture. She fell at home. About a week ago."

(Hand-off 033)

The discussion of what had happened at home or the patient's living conditions at home was generally included as a part of the off-going nurse's introduction of the patient; there

was little to no information about how the patient's home routines were continued in the hospital. There was also evidence that patients' routines from home were not always continued while they were hospitalized, without explanation for the change. In Example (69), the off-going nurse is relating that the patient used oxygen at home:

(69) <OGN>: "Um, she's on three liters of oxygen at home although, when I had her, for most of the day she was on room air, she was actually doing okay."

<OCN>: "Is she still on room air?"

<OGN>: "She's on two liters now." (Hand-off 026)

In this exchange, the off-going nurse related that the patient used oxygen at home, but had not been using the oxygen for at least part of the time that she had been in the hospital. When the oncoming nurse inquired as to the current treatment, the off-going nurse related an oxygen rate that was different from what the patient used at home, without an explanation for the change.

The word *home* also appeared with *go* or *going*, which indicated anticipation of the patient's discharge from the hospital. The phrases *go home* or *going home* were generally used to describe the discharge; *discharge* and *discharged* only appeared a combined total of seven times in the entire corpus. A projected time for discharge was noted, but either no information about continued care was relayed, or uncertainty regarding continuation of care was noted, as in the examples below:

(70) "And she's supposed to go home mm today. Like hopefully probably in the A-M they said." (Hand-off 003)

(71) "I think the two daughters are going home with her so they've been watching me do suctioning and things like that..." (Hand-off 009)

Figure 6.10 Portion of *home* Concordance from Hand-off Corpus

1 eah. And you know I think they (xx) a business, a home health care business? Poor thing. I think
2 comes from home independently. I guess she has a home in California and a and a condo here. She came
3 couldn't walk on her own. She had been walking at home independently with a walker, and was able to c
4 knee and elbow from when he fell to his knees at home I guess. Uh, hasn't had any pain for me. He'
5 age (xx). Um, she's on three liters of oxygen at home although, when I had her, for most of the day
6 versus home. Uh, she has a Foley. She retains at home and she does self cath at home. And that's dr
7 th few melana stools. I don't know if that was at home or that was on seven. Put an N-G down in the E
8 He's also refusing home care but he is going back home today, um, late afternoon probably. The daught
9 at an H-S snack. (xx) social worker referring for home antibiotics. He got some Zanax on the day shif
10 so hot. She's eighty-one of the house comes from home independently. I guess she has a home in Calif
11 ight? Elizabeth. Eighty-six of Slater comes from home with her daughter. In for (xx) the pneumonia,
12 He's seventy-two of the house. Um comes from home with his spouse on the eighteenth with a right
13 eart. He's seventy-nine of Ericssen. He comes from home alone, on the twenty-first, for nausea, vomiti
14 a, and (xx) moderate atrophy. She, uh came from home and she has a (xx) supportive husband. I I-V f
15 um flu vaccine. <P: 06> And she's supposed to go home mm today. Like hopefully probably in the A-M t
16 he is a very pleasant lady. She just wants to go home by Friday cause she has a very dear friend tha
17 a urinary tract infection. Um, she is going to go home sometime this evening. She is like on (xx) so
18 x-ray done. The possibility will be for him to go home tomorrow with skilled home care. Um, he did- g
19 eatment of radiation and chemo and then she'll go home to Lockport and then she can go to Lockport ou
20 ed about her. I think the two daughters are going home with her so they've been watching me do
21 suction
22 . <OCN>: Okay <OCN>: Um she's supposedly going home today, however her potassium is three point fo
23 got um a left single lumen PICC. And she's going home on I-V antibiotics. It starts with an 'E' so
24 s my own fault because I took an Advil when I got home and I didn't think about it' <OCN>: Ohh (xx)
25 now coming to ask him if he's really sending her home (xx) I can just go ahead and take it out inste
26 noon probably. The daughter is going to take him home and she's probably going to come after work so
27 ught <FLOOR CLEANING MACHINERY> <P: 11> She lives home with her husband. Sounds like she normally kin
28 n and doesn't really like to. He's also refusing home care but he is going back home today, um, late
29 will be for him to go home tomorrow with skilled home care. Um, he did- gets accu checks A-C and H-S
30 6> Any questions with her? <OCN>: Any (xx) take home (xx)? <OCN>: Yup. Yup. And <OCN>: (xx) <O
31 e's dry. Um (xx) word is he could go back to the home but he can't the home can't take him currently
32 is he could go back to the home but he can't the home can't take him currently. So they want to do a
33 was in for most of the day today and then he went home just a little bit ago. Um, pretty short of bre

In (70), the off-going nurse expressed the possibility that the patient will be discharged, although her uncertainty about the discharge is emphasized through the use of *supposed* and *hopefully probably* within the utterance. Her uncertainty about the patient's discharge may be why she did not offer any information about what the patient might need prior to going home. In Example (71), the off-going nurse related that the daughters might be going home with the patient, but again, did not discuss the daughters' readiness to perform the technical care that the patient might require in the home. The nurse related that the daughters were "watching" suctioning, but did not discuss whether or not she provided any teaching about when suctioning would be needed or how to do the suctioning.

These examples from the concordance of *home* provide evidence that the transition from home to hospital and then back home is not a focus of end-of-shift hand-offs. The transition from hospital to home may be anxiety producing for patients and families, and failures in planning appropriately for follow-up care have been linked to re-hospitalization for Medicare recipients (Jencks, Williams, & Coleman, 2009).

Key Nouns

There were 92 nouns in the hand-off corpus that were identified as positively key in the keyword list. These positively key nouns were found with high frequency in the hand-off corpus as compared to the reference corpus of spoken English, meaning that speakers used these words with higher frequency in hand-offs than they are used in general conversation. The nouns identified as key are described in four broad categories, shown with examples in Table 6.14.

Table 6.14 Examples of Key Nouns from Hand-off Corpus

Key Noun Category	Examples from Keyword List
Body Parts and Substances	Blood, Bowel, Lungs, Urine, Forearm, Abdomen, Stool
Medications	Dilaudid, Morphine, Tylenol, Coumadin, Lasix, Phenergan, Versed, Vicodin, Zosyn, Vanco
Conditions	Pain, Edema, Pneumonia, Nausea, Dehydration
Devices/Tests/Procedures	Heplock, PICC, Dressing, Ultrasound, Duoderm, Potassium, Hemoglobin

All of the top ten most frequent nouns from the hand-off corpus appeared within the keyword list (see Appendix B); however, only three of the ten most frequent nouns (*blood, pain, and bowel*) appeared in the ten most positively key nouns. Table 6.15 shows the list of ten most frequent nouns from the hand-off corpus in comparison to the ten most positively key nouns identified in the keyword analysis with the BNC reference corpus.

Table 6.15 Comparison of Ten Most Frequent Nouns to Ten Most Positively Key Nouns
in Hand-off Corpus

Most Frequent Nouns in Hand-off Corpus	Key Nouns in Hand- off Corpus
blood	blood
night	pain
pain	liters
home	edema
morning	heplock
room	Dilaudid
air	hemoglobin
history	pneumonia
patient	bowel
bowel	potassium

With the exception of *liters*, all of these most positively key words are clear examples of one of the categories identified in Table 6.14. The uses of *blood*, *pain*, and *bowel* have been previously discussed. *Edema* and *pneumonia* are physical conditions; *hemoglobin* and *potassium* are test results (and components of blood); *heplock* is a device inserted in a vein for administration of fluids and/or medications; and *Dilaudid* is a narcotic administered for pain relief. Examination of the concordance for *liters* revealed that it is exclusively used in the context of discussions about the administration of oxygen, which is also considered to be a medication (Micromedex®, 2009).

The key nouns identified in the keyword analysis are consistent with those identified in the word frequency lists, indicating that not only do nurses use these words frequently in hand-offs, their use is more frequent than in general spoken English. As previously noted, nouns are lexical words that carry the "meaning" of a text or discourse (Biber, 1999), and keyword analysis reveals what a specialized language is about (Bowker & Pearson, 2002). The nouns identified in both the frequency analysis and the keyword analysis of the hand-off corpus indicate that the language of nursing hand-offs is about body parts and processes, medications, physical conditions, and the devices used in treating those conditions, and makes heavy use of nominals that reflect the nurses' expertise in these areas. Nurses' care of patients' bodies and administration of treatments in the course of their daily work are reflected in the language that they use, and this language is different from the language used in general spoken English.

Modals

Modality is the expression of a speaker's attitude about the factuality or certainty of information that he/she is relating (Huddleston & Pullum, 2002). Modals are words

that "express a wide range of meanings, having to do with concepts such as ability, permission, necessity, and obligation" (Biber et al., 1999, p. 73). The modals *will*, *would*, *shall*, and *going to* indicate volition (the intent to take an action) and prediction. Volition is said to have intrinsic modality, meaning that the reference is to actions and/or events that persons directly control, whereas prediction has extrinsic modality, referring to an assessment of the likelihood of an event or state (Biber et al, 1999: Huddleston & Pullum, 2002).

While modals and semi-modals are not marked for tense in the way that verbs are (e.g. past, present, future), discourse that includes modals conveying volition and prediction may center on activities that have yet to occur. Retrospective qualities of the hand-off corpus have already been noted in both the move analysis of the corpus, discussed in Chapter 4, and in the use of past tense verbs discussed earlier in this chapter. The hand-off corpus was examined for the presence of modals expressing volition and prediction to identify possible prospective qualities in the hand-offs.

The frequency of volition/prediction modals in the hand-off corpus differed from their frequency in conversational English. In English conversation, *will* is the most frequently used modal, followed by *would* and *going to* (Biber et al., 1999). In the hand-off corpus, *going to* was the most frequently occurring modal, followed by *will* and then *would*. Table 6.16 displays the raw frequency of modals in the hand-off corpus along with the frequency normalized to 1,000 words and the estimated normalized frequency per 1,000 words of conversational English as reported by Biber et al.

Table 6.16 Frequencies of Volition/Prediction Modals in the Hand-off Corpus and Conversational English

Modal	Raw Frequency in Hand-off Corpus	Frequency per 1000 Words in Hand-off Corpus	Frequency per 1000 Words in Conversational English
going to/ gonna	34	1.62	2.2
would	18	.86	4.2
will	16	.76	5.6
shall	0	0	.4

All of the volition/prediction modals appeared with less frequency in the hand-off corpus than in spoken English, suggesting that during the hand-off, nurses focus on what was actually done, rather than what they may have intended to do. Only *would* also appeared in the keyword list as a significantly negatively key word. It appeared in the hand-off corpus with significantly lower than expected frequency when compared to general spoken English. The modal *shall* is extremely uncommon in American spoken English; a search for *shall* in the MICASE corpus, selecting only native American English speakers, returned 30 occurrences in over 220,000 words. This represents a frequency of .14 occurrences per 1000 words. *Shall* did not appear in the hand-off corpus at all.

The modal *going to* is much more common in conversational English than in other forms of English, and when it is used in conversation, it is primarily used to express volition (Biber et al., 1999). The phrase is sometimes pronounced as a single word, "gonna," that runs the two words together and the occurrences of this shorthand were included in the analysis with "going to." This was true in the hand-off corpus, although there were occurrences of both volition and prediction. There were 34 occurrences of *going to/gonna* in the hand-off corpus; 17 of them were identified as volition, 10 as prediction. Seven uses of *going to/gonna* were ambiguous. (Five of the seven examples of *gonna* were used in a single hand-off by one nurse who was quoting the patient, and were classified as ambiguous.) Examples of volition in the use of *going to* are shown below.

(72) "And I was just going to go and hang his um (xx) when I got out of re report"

(Hand-off 008)

(73) "... she's going to have a sleeping pill at eleven o'clock." (Hand-off 033)

In (72), the nurse was expressing her intent to hang some medication or fluid (the (xx) shows a word or words missing from the transcript due to poor tape quality). In (73), the off-going nurse was relaying the patient's intent to take a sleeping pill; although the speaker herself (the nurse) will not undertake the action of taking the pill, she will provide the pill to the patient. In both of these examples, the person has direct control of the actions of hanging the medication and taking/providing a medication, respectively.

Other uses of *going to* in the hand-off corpus did not seem to clearly meet the criteria for prediction, which occurs when some action or event was or would be occurring, but the activity cannot be attributed to the individual. Rather, the use of *going*

to appears to be more similar to that of a stative verb, which describes a state or event, as shown in the following examples from the hand-off corpus:

(74) "and then she's got two coming out of her side that are going to one bulb."

(Hand-off 009)

(75) " and then started complaining of numbness and tingling (xx) up and down

her legs and going to her (xx)" (Hand-off 025)

In (74), the off-going nurse was describing wound drains that were attached to a collection device; the drains were *going to* the bulb, but the utterance is a description of the state of the drain connection to the device. Because the drains are already connected to the bulb, there is no action for the nurse to take to make the connection; however, the off-going nurse's mention of the connection may be a prompt to the oncoming nurse to monitor the status of the drains (e.g. verify that they are not kinked or blocked, monitor the amount of drainage in the bulb). Similarly, in (75), there is no direct action on the part of the patient to move the numbness and tingling to another body part, but the off-going nurse's mention of these symptoms may give implicit direction to the oncoming nurse to monitor this condition for improvement or exacerbation.

Would

The modal *would* is classified as a volition/prediction modal, but its meaning also pertains to the past or hypothetical (Biber et al., 1999). *Would* was the only modal in the hand-off corpus that appeared in the keyword analysis; it was identified as negatively key, meaning that it occurred less frequently than would be expected based on comparison with the reference corpus. It occurred 18 times in the hand-off corpus; 8

occurrences were volition, 8 were prediction, and one occurrence was ambiguous.

Examples are shown in (76) and (77) below:

(76) " But every time we would turn her to that side..." (Hand-off 027)

(77) "... a left arm fistula just in case he would have to have dialysis. (Hand-off 016)

In (76), the off-going nurse was describing what happened when she and a colleague intentionally positioned a patient on her side. This demonstrates the use of *would* as a modal of volition; the nurse(s) positioned the patient. In the excerpt in (77), the nurse was explaining why the patient had an arterio-venous fistula, using *would* to predict the state or event that might lead to the use of the fistula.

Will

Will is the most common of the modals in general spoken English; it is used to express both volition and prediction, although this distinction is sometimes difficult to make (Biber et al., 1999). In the hand-off corpus, *will* appeared 16 times; 4 of these expressed volition, while 12 expressed prediction. Examples of each are shown below:

(78) "And I will check on the blood sugars." (Hand-off 011)

(79) "forty to be given at five and then tomorrow it will be eighty in the morning, P-O." (Hand-off 019)

(80) "She will have labs drawn in the morning." (Hand-off 029)

Example (78) shows the use of *will* as volition; the off-going nurse was stating her intention to check on blood sugar levels in response to a question from the oncoming nurse. In (79), the off-going nurse was explaining a change in dosage for a medication, and reported the upcoming dose, in effect "predicting" the event of the change in dosage.

The example in (80) is a bit ambiguous, but was classified as prediction. There were several examples such as (94) which stated that lab work or other testing would be carried out the following morning. The subject of the sentence (*she*) is the patient, who will not be taking action to get the blood drawn for the test; rather, the act of drawing the blood was an event that would take place the next morning. In essence, the off-going nurse is simply informing the oncoming nurse of the patient's scheduled tests.

Insert Words

Insert words, including those sometimes called discourse markers, such as *um* and *uh* appeared in the results of the keyword analysis. *Um* and *uh* are described as hesitators or filled pauses in a discourse or utterance; these are used by the speaker (albeit unconsciously) to signal that she has more to say and to discourage a listener from taking over the conversation. The use of these hesitators serves to allow the mental planning, or cognitive work, of speaking to "catch up" with speech production. These occur as a result of the unrehearsed nature of conversation (Biber et al., 1999).

The reference corpus used for the keyword analysis was the British National Corpus, and filled pauses are transcribed in British English as "erm" and "er", rather than the American English spelling convention "um" and "uh" (Biber et al., 1999). This difference in spelling may have resulted in *um* and *uh* being identified as occurring with unexpected frequency; if the spelling in the transcribed hand-offs had been consistent between the two corpora, the term might not have been identified as key. However, *um* and *uh* did appear in the keyword analysis carried out with the MICASE corpus, indicating that their appearance in the hand-off corpus occurred with higher frequency than in American English.. It was noted, as discussed in Chapter 5, that face-to-face

hand-offs contained significantly more hesitators or filled pauses than did audio-taped hand-offs.

Final Utterance *but*

The coordinating conjunction *but* did not appear as a keyword; however, during the move analysis, the use of *but* at the end of sentences or utterances was noted. The usual function of *but* is to connect clauses. When *but* is used in this way, the information that follows it in the text generally presents some sort of contrast or negation to the information preceding *but* (Biber et al., 1999; Mulder & Thompson, 2008). The predominant use of *but* by nurses during hand-offs is as a conjunction, as seen in (81):

(81) "He has no I-V access now but he will need a heplock put in..." (Hand-off 037)

In this example, discussing a patient who will be having a procedure the next day, the off-going nurse stated that the patient did not have an intravenous line in place. After she says *but*, she went on to say that the patient will need to have one placed before he goes to the procedural area.

Mulder and Thompson (2008) have identified that the use of *but* in conversation has been changing from its traditional use as a conjunction, which the speaker uses to continue his/her turn, to use as a discourse particle that signifies that the speaker is yielding his/her turn to another participant in the discourse. Mulder and Thompson present a continuum for the change in usage, and have documented this transition in both American and Australian conversational English. Within the concordance for *but* from the hand-off corpus, it appeared that this change in function may be occurring in the

genre of hand-offs as well, although the transition is not as fully made in hand-offs as it is in conversational English.

Line 6 of the concordance for *but* shown in Figure 6.11 displays the use of *but* early in the continuum of transition to a discourse particle (Mulder & Thompson, 2008). In this example, shown in (82), the nurse did not follow *but* with any kind of contrast to the information shared before *but*. Rather, she implied that even though the patient said that she was not in pain, the nurse believed that the patient is in pain.

- (82) "She just gets kind of restless and it looks like she's in pain; she didn't she'll tell you she's not, but. ... And that's every six hours she can have that."
(Hand-off 014)

In this excerpt, the off-going nurse was discussing pain management for a patient, describing what she was observing in the patient's behavior and the patient's denial of pain. The nurse related that the patient denied pain, followed by the word *but*. In this case, *but* is not followed by a contrasting clause; rather, it is followed by a brief pause of not more than 5 seconds. The off-going nurse went on to relate the frequency with which the patient can have pain medication, which is related to the previous information. It was left to the listener to infer that even though the patient says that she is not in pain, the nurse believed that the patient was having pain. Mulder and Thompson (2008) describe this use of *but* as one of the middle points along their continuum from conjunction to discourse particle. The appearance of *but* comes at the end of an utterance, but the speaker goes on with his/her turn, discussing different or new information.

Figure 6.11 Portion of *but* Concordance from Hand-off Corpus

1 ke out her two heplocks in her right arm <OCN>: but (xx) <OGN>: (xx) so I just left them. S3: Save
2 N>: yeah I don't know. (xx), I didn't look it up, but (xx) that. <OCN>: Oh, okay. <OGN>: One is
3 t know how to describe it but she's not edematous but (xx). <OCN>: Tight <OGN>: Tight, yeah. Um, (xx) p
4 e's a a a turn. She's on her left side right now. But (xx). So came in with the cough, decreased appet
5 AUGH> <OGN>: She's got some of her own lotion on but (xx). <OCN>: Okay, thank you.
6 's in pain; she didn't she'll tell you she's not, but. ... And that's every six hours she can have that
7 have parameters? <OGN>: Yeah, call less than 70 but actually I <OCN>: (xx) <OGN>: yeah. I- I updat
8 of gas. Um, she initially came over on Protonix. But after they scoped her, seeing gastric um, possibl
9 part of that and I tried to explain that to her, but. And she's on neutropenic precautions. But yesterd
10 hile <OCN>: Okay <OGN>: and it worked for awhile but. .. Any questions? <OCN>: I don't think so. All
11 1. <OCN>: Okay. <OGN>: (xx) one person turns. But apparently she doesn't get up out of she told me
12 ut it on the MAR. I don't know if they'll okay it but. But she's had the um flu vaccine. <P: 06> And
13 he, he wanted some for sleep <OCN>: Okay <OGN>: but by the time I got in there he was sleeping, so <O
14 She looks really good, I mean <LAUGH> (xx). Um, but, couple of them are up here. They had, they're
15 t that <OCN>: Okay <OGN>: And that was negative but, didn't have a lot of mucous in it. His (xx) are fin
16 as doing a little bit of dry heaving this morning but, didn't actually produce anything. <OCN>: Okay
17 r but not bad. <OCN>: (xx) <OGN>: That's a first. But doesn't look like (xx). <OCN>: Oh, (xx). <OGN>: T
18 he was so dyspneic he couldn't go any further, uh but earlier he did tolerate being up in a chair a goo
19 just reinforced it with tape and it's been fine. But every time we would turn her to that side it woul
20 p. She's (xx) in for the check up in the morning, but G-I is the one who set that up (xx) is ongoing. T
21 e (xx). So, tomorrow (xx) in the A-M (xx) set up. But G-I is the one who sets up a time and he told me
22 's heplocked. Um he does get a couple antibiotics but. Gets up uh ad lib he's okay to go off the floor.
23 ve one, I think I'm gonna have one you know (xx), but has had nothing. I called the doctor in there ju
24 at same question cause she had you know like (xx) but he finally put in an order to have the creat done
25 <OCN>: (xx) <OGN>: Yep. They were high. <OCN>: But he has no I-V so (xx). <OGN>: Okay. Um <CHAIR SC
26 n't really like to. He's also refusing home care but he is going back home today, um, late afternoon p
27 And, there is no definite date yet for discharge but he did come from home.
28 ma in his feet and I do try to keep them elevated but he is very noncompliant with that. He has a hepl
29 that. We offered to walk him also in the hallway, but he declined this evening. And ... if his I-N-R is w
30 ry. Um (xx) word is he could go back to the home but he can't the home can't take him currently. So th

In the final stage of the transition of *but* to a final discourse particle, the speaker uses *but* to end both the topic of discussion and his/her speaking turn (Mulder & Thompson, 2008). While there were appearances within the concordance of the use of *but* as the end of the topic by the off-going nurse, the oncoming nurse did not interpret this as a signal to enter the discourse. An example of this is line 22 in the concordance, in which the off-going nurse related that the patient was receiving antibiotics through an intravenous device. In this case, after she used the word *but*, she went on to relate the patient's activity level, which was not related to the heplock device or the antibiotics. The context of the sentence is expanded beyond the concordance in example (83):

(83) "He has a left double lumen PICC, and, it's heplocked. Um he does get a couple antibiotics but. Gets up uh ad lib he's okay to go off the floor. (Hand-off 001)

The implication here seemed to be that the patient got his antibiotics through the PICC (Peripherally Inserted Central Catheter), but no fluids were being given through the PICC line, although this was left for the listener to infer. In a general conversation, the listener might take the cue from *but* that he or she may take a speaking turn, but this use of *but* within the hand-off corpus did not demonstrate that the oncoming nurse took a speaking turn. There may have been additional cues present in the prosody, or inflections, of the off-going nurse's speech that she was not ready to yield the floor. Alternatively, the oncoming nurse had the cognitive work of "filling in the blanks", so may have been determining the inference while the off-going nurse had already moved on to another topic.

In example (81) above, the off-going nurse's use of *but* as a conjunction could be understood by the oncoming nurse to mean that the patient didn't currently have an intravenous device in place, but was going to need to have one. In other examples, the lack of explicit information following *but* in a sentence left the interpretation of the contrasting information up to the listener, as in (84):

(84) "She is, I'd say just alert and oriented one to two. I think she's maybe more ah oriented three like during the day, but. Um, I did give her an Ambien last night just to help her sleep throughout the night." (Hand-off 014)

In this example, the off-going nurse was discussing the patient's mental state and awareness of who she is, where she is, and her sense of time. The off-going nurse has cared for the patient overnight, and the oncoming nurse will be caring for the patient during the upcoming day. The off-going nurse was relating that she thought the patient was less confused during the day than she was during the night, and ended the sentence with *but*.

The lack of additional information following *but* is difficult to interpret; it might be that the oncoming nurse did not need to be concerned about the patient's mental state during the day. Alternatively, it might mean that the off-going nurse was not sure about how well the patient was oriented during the day, and therefore, the oncoming nurse should monitor the patient for confusion and disorientation. It is not clear if the off-going nurse meant to link the administration of the Ambien (a medication to induce and maintain sleep) to the patient's labile mental status, or if she meant to imply that the oncoming nurse might want to monitor the patient for effects of the drug during the daytime hours. Within hand-offs the use of *but* as a discourse marker, rather than as a

conjunction, may present risks of misinterpretation by the listener and a resulting risk of injury to the patient.

The word *but* appeared in the hand-off corpus 193 times; 16 (8.3%) of these occurrences of *but* as a form of final discourse particle were identified. However, it is difficult to evaluate the prevalence of *but* used as a final discourse particle in conversation. Mulder and Thompson (2008) did not describe how often the usage was seen in the corpora they examined, although they did conclude that the final discourse particle usage was more prevalent in Australian English than in American English.

Phrase Analysis

Frequently appearing 3-word phrases were identified within the hand-off corpus by analyzing the text with the kfNgram software package (Fletcher, 2007). This application identifies lexical bundles, defined as "recurring sequences of three or more words" (Biber et al., 1999, p. 990). These bundles are identified as n-grams, where n is the number of words in the phrase.

Three-grams are very common in English conversation, occurring as many as 80,000 times per million words (Biber et al., 1999); there were 532 3-grams that occurred at least three times in the hand-off corpus. The ten most frequently appearing 3-grams are shown in Table 6.17.

Table 6.17 Ten Most Frequent 3-grams in Hand-off Corpus

Phrase	Frequency
I don't know	31
a little bit	25
she has a	24
in the morning	22
I gave her	21
she had a	18
alert and oriented	16
on room air	13
she came in	13
a lot of	12

To further examine the use of these three word phrases, the kfNgram software was used to search for phrase frames for each of the 3-grams. This process revealed the phrases that occurred when the 3-gram appeared with another word either preceding or following it at least three times in the corpus. As shown in Table 6.18, only five of the ten most frequent 3-grams had phrase frames; *I don't know* appeared with words preceding it as well as following it. The two most frequent phrases, *I don't know* and *alert and oriented* were examined in further detail.

Table 6.18 Phrase Frames for 3-grams in the Hand-off Corpus

Phrase	Frequency	Variations of Phrase
I don't know*	17	4
* I don't know	6	2
* alert and oriented	12	3
she has a *	9	3
she came in *	7	2
* I gave her	7	2

* = any word

The 3-gram *I don't know* was the most frequently occurring phrase in the hand-off corpus; at first glance, this is somewhat alarming given that hand-offs are a transfer of responsibility for patient care. However, *I don't know* is also the most commonly occurring 3-gram in English conversation, occurring over 1000 times in one million words (Biber et al., 1999).

Since the hand-off corpus only contained about 21,000 words, the frequency count for *I don't know* was normalized to a frequency rate per 1,000 words for both the hand-off corpus and Biber et al.'s (1999) findings. This normalization process accounts for the difference in corpus size, and allows for a more accurate comparison of frequencies (Biber et al., 1998). After normalization to 1,000 words, the frequency for *I don't know* in general English was 1 per 1,000 words for conversation; for the hand-off corpus, the frequency was slightly higher at 1.47 per 1,000 words. (The statistical significance could not be computed for these frequencies because of lack of access to the

data used by Biber et al.) Frequencies in conversation for the remaining 3-grams in Table 6.17 were not reported in Biber et al. (1999).

The 3-gram *I don't know* was expanded into 4-gram phrase frames using the kfNgram software. Phrase-frames are sets of n-grams that are identical with the exception of one word (Fletcher, 2007). Results of that analysis are displayed in Table 6.19.

In the first row of Table 6.18, the asterisk indicates that there were four different variations of *I don't know* followed by at least three occurrences of another word in 17 of the 31 total occurrences. The most frequent word that followed the phrase was *if*. OCN, the beginning of an utterance by the oncoming nurse followed *I don't know* three times in the hand-off corpus. The words *what* and *how* followed *I don't know* three times each.

Table 6.19 Phrase-frames for *I don't know*

Phrase-Frame	Total Occurrences	Variations of Phrase	Frequency
I don't know *	17	4	
I don't know if			8
I don't know what			3
I don't know OCN			3
I don't know how			3
* I don't know	6	2	
so I don't know			3
and I don't know			3

The concordance for *I don't know* showed the occurrences of the phrase in the context of the sentences in which it appeared. The concordance is shown in Figure 6.12. Examining the context surrounding the phrase revealed additional patterns of use within broad areas; these areas and the lines of the concordance that comprise them are shown in Table 6.20.

Table 6.20 Context of Use of *I don't know* in Hand-off Corpus

Context of Use of <i>I don't know</i>	Occurrences	Concordance Line(s)
General knowledge of patient	8	1, 2, 3, 6, 11, 14, 21, 27
Tests and Results	8	5, 17, 18, 20, 23, 26, 28, 29
Medication Issues	5	8, 9, 16, 19, 31
Fall Risk/Prevention	1	10

When *I don't know* was used in the context of general knowledge of the patient, it was in reference to the patient's name, age, medical history or general status, such as baseline or "normal for the patient." While name and age can be quickly verified using the patient's medical record, lack of knowledge regarding the patient's baseline status regarding an issue could represent a risk to patients in that alterations in condition might not be readily recognized as change. For example, the patient under discussion in line 3 of the concordance was hospitalized for a brain stem hemorrhage; changes in mental status might indicate an exacerbation of his condition. If the nurse was not aware of the patient's baseline status, the nurse might miss subtle changes that indicate a need for follow-up to prevent complications.

Figure 6.12 *I don't know* Concordance from Hand-off Corpus

1 en they can do it (xx) <OCN>: Mm-hmm. <OGN>: So I don't know... And then, she has some allergies, she's
2 offee (xx) <OGN>: um. Patricia Jones is um uh - I don't know how old she is. She's a fifty five year
3 age. Um he baseline he's mentally challenged. So I don't know how far off he really is from his baseline
4 kind of just, thick. You know what I mean? Like ... I don't know how to describe it but she's not
5 rs are q six. <OCN>: (xx) <OGN>: I think so. I don't know, I'll check. I want to say one eighty.
6 s a lot better but. She's still a full code. Um, I don't know I think she (xx) a lot. She's, um, (xx)
7 nts the pneumonia vaccine so I put it on the MAR. I don't know if they'll okay it but. But she's had
8 last night. And we had her on a versed drip but I don't know if she needs it now that's why I'm
9 starts with an 'E' so I have to give that today. I don't know if she is getting it (xx) I can't
10 d salt diet. He also has his walker in there too. I don't know if he uses it all the time. I think he's
11 <OCN>: Okay <OGN>: so um they want to (xx) and I don't know if her baseline is incontinence or what.
12 >: So, but yeah, she has edema on her (xx). (xx) I don't know if somebody didn't (xx), (xx) the only
13 ually one time her tube actually came fully apart I don't know if she pulled it <OCN>: (xx) <OGN>: so
14 I guess, she had a emesis with few melana stools. I don't know if that was at home or that was on
15 ll putting out pseudomonas and um like bile. (xx) I don't know <OCN>: (xx) <OGN>: Yeah I think
16 m every time. I <OCN>: (xx) <OGN>: Just water, I don't know <OCN>: (xx) <OGN>: I've never had a T-
17 x-ray.to verify that (xx)? <OGN>: <OVERLAP> Oh, I don't know. <OCN>: Or just pull it back and hook
18 ous, supposed to have a lumbar puncture today. I don't know of the time for that yet but the consent
19 ous, supposed take this like every hour so I mean I don't know. She was she was better last night then
20 rvical spine. (xx) showed myelopathy, myloapathy, I don't know. She had an abdominal x-ray as well on
21 night. <OGN>: This is Donna Vinton, or Vintner, I don't know. She's sixty-three years old. I guess,
22 he went down for her ultrasound. <ADDRESSED TO SU>I don't know that she needs to know right now but
23 rtive. <OCN>: Okay <OGN>: Um, so the ultrasound I don't know the results of that. Um, her ECHO
24 when she was not intubated and she could talk and I don't know what (xx) that means (xx) for
25 said they wouldn't be able to for five more days. I don't know what the deal is on that, it's kind of
26 N>: (xx) <OGN>: Yeah I just I've been looking oh I don't know what's up with lab (xx). However, I
27 itis, afib ... uh stasis ulcers, hyperhomocysteine. I don't know what that is. Hyperlipidemia. Anxiety ...
28 ble. Her blood sugar was a hundred and ninety and I don't know what's up with that. I think she's
29 set of C-I-Cs eight hours after the first set but I don't know when the first set was done. Her K was
30 w, like, where are you sick at? And she was like 'I don't know' (xx) She writes really well (xx) and
31 st a (xx) she's had. <OCN>: Urocit? <OGN>: yeah I don't know. (xx), I didn't look it up, but (xx)

While the use of *I don't know* regarding test results might simply mean that the results had not yet been reported, it might also represent a risk to patients in that knowledge of test results might change the frequency and intensity of patient monitoring. Test results might necessitate a change in the patient's treatment plan that was delayed because the results were not known. In line 5 of the concordance, the off-going nurse was unsure of the patient's blood sugar level, but thought it was 180, which is elevated. No additional information is supplied about how the blood sugar level was treated. Changes in blood sugar levels could require re-testing, additional observation, and/or administration of insulin or food, and delays in any of these could result at least in discomfort for the patient, and at worst, a deterioration of his/her condition requiring more intensive treatment.

Lack of knowledge regarding current medications and medication history also represents a risk to patients, and might be indicative of failed medication reconciliation processes. In line 9 of the concordance, the off-going nurse is discussing an antibiotic that the patient is to receive, but the nurse stated that she did not know if the patient has received it. If the patient did indeed miss a dose of the medication, it would be classified as a medication error; also, the time of administration of a given dose affects subsequent administration times. The oncoming nurse may need to adjust the timing of subsequent doses for safe administration, but lack of information might prevent this from happening as it should.

While there is only one use of *I don't know* regarding fall risk and prevention (line 10 of the concordance), it is significant in that falls are a risk of patient injury. The patient being discussed in this hand-off apparently has a walker, but if he is not using it

properly or consistently, his risk for falls increases. The off-going nurse states that she does not know if the patient is using the walker reliably, but does not discuss interventions that might improve the patient's use of his equipment or otherwise reduce his risk for falls, such as toileting schedules, prompt response to call light, or education.

The last three rows of Table 6.19 show that the phrase *I don't know* was preceded by two different variations of another word in 6 of the 31 total occurrences; the conjunctions *so* and *and* preceded the phrase three times each in the corpus. In these instances, the conjunctions connected the phrase to the contextual information discussed above and shown in Table 6.20. The use of *I don't know* might also be an implied suggestion to the oncoming nurse that an observation has been made, but the significance of the observation is not yet known, meaning that the oncoming nurse might want to monitor the patient closely and/or collect additional information. Often, the expert nurse cannot explicitly articulate the significance of an observation, but may "sense" that there is an impending change in a patient's condition (Benner, 1984; Benner & Wrubel, 1982; McCutcheon & Pincombe, 2001), and the use of *I don't know* could be a signal for that.

The words *alert* and *oriented* appeared in the keyword list (see Appendix B) as individual words, indicating that these words occur more frequently than expected in the hand-off corpus in comparison to the reference corpus. The three word phrase *alert and oriented* also appeared in the list of the ten most frequent 3-grams, and there were three phrase-frames identified for *alert and oriented*.

Alert and oriented is used by both physicians and nurses to describe a patient's cognitive state. *Alert* generally refers to whether the patient is awake or can be easily aroused if asleep; *oriented* is used to provide additional information about the patients'

level of consciousness. Orientation is described in three areas: 1.) Awareness of self or identity (e.g. name); 2.) Awareness of place, or the physical setting in which the patient is located (e.g. hospital, home, city); and 3.) Awareness of the current moment in time (e.g. day, date, year) (Potter & Perry, 2005; Stewart-Amidei, 2009). The phrase *alert and oriented* occurs in nurses' documentation of patient assessment in medical records (Irving, et al., 2006); it also occurs in physicians' documentation (Blumenfeld, 2002).

Within the hand-off corpus, *alert and oriented* appeared a total of 16 times; it appears that nurses used the phrase *alert and oriented* as a form of shorthand to relay the information that the patient was presently awake or easily arousable and was aware of his/her surroundings. However, the concordance for *alert and oriented*, shown in Figure 6.13, revealed additional information about the use of the phrase.

In 8 occurrences within the concordance (lines 3, 5, 6, 7, 8, 14, 15, and 16) *alert and oriented* appeared to be an ellipsis, with the omitted words implying the patient was awake and alert, and was aware of his/her identity, surroundings, and the moment. In 6 additional occurrences (lines 1, 9, 10, 11, 12, and 13), the phrase was followed by the word *times* plus the numeral *two* or *three*. In line 4, the off-going nurse omitted the word *times* and followed the phrase with "one to two." The word *times* appears to be used as a form of shorthand by nurses in hand-offs to relay information about the patient's level of awareness of his/her surroundings; if the patient was reported to be "*alert and oriented times three*," the patient was not confused or disoriented.

These uses of ellipsis present incomplete information to the oncoming nurse, and are a source of ambiguity in the hand-off. While *times three* can be interpreted to mean

Figure 6.13 Concordance of *alert and oriented* from Hand-off Corpus

1 atient is able to request the bedpan since she is alert and oriented times three. Thank you very much.
 2 he's on. So nothing for pain for her (xx) she is alert and oriented (xx). She's ready to, hit the
 3 little stronger. She's having a lot of pain yet. Alert and oriented. She has a positive U-A. And B-U-
 4 little smear this morning. She is, I'd say just alert and oriented. Very pleasant. Soft diet. Gets up
 5 for us so we just turn her and change her. She's alert and oriented. General no added salt diet. He
 6 is last bowel movement on the twenty-second. He's alert and oriented. Diabetic no added salt diet. He
 7 He (xx) really well (xx) <OCN>: Okay <OGN>: He's alert and oriented. He was N-P-O after midnight. And
 8 ss. He was telling me about it so. Poor guy. Umm, alert and oriented times three. His lungs are a
 9 egs. He has a heplock in his right hand. ... He's alert and oriented times two. ... Her lungs sound
 10 <P: 06> <OCN>: (xx) <P: 05> <OGN>: She's alert and oriented times two. ... Her lungs sound
 11 on't take any more than she's supposed to. She's alert and oriented times three. (xx) with the neck.
 12 e's pretty good at keeping track of that. ... She's alert and oriented times three. She's up with a (xx)
 13 e what the (xx) they extubated her. Um ... she is, alert and oriented. Um, he's had no trouble with any
 14 left and expiratory wheezing on the right. He is alert and oriented, real nice guy. And that's the
 15 in. And he's afebrile, ninety-eight point three. Alert and oriented. She's very nice. She's a little
 16 so ... she came over about four o'clock. ... She, is alert and oriented.

that there are no deviations from normal, the use of *times two* (or one, as seen in line 4 of the concordance), does not give the oncoming nurse information regarding which of the three areas of orientation is/are affected. In addition, none of the examples of the discussion of orientation in fewer than three areas discuss whether these are new findings, which might indicate a change in the patient's condition. Textbooks in both nursing and medicine caution practitioners to avoid ambiguity in communicating information regarding patients' mental states. The standard practice recommendations are to note specific deficits that exist, as well as the onset of these deficits as a means of avoiding misunderstandings about the patient's condition (Blumenfeld, 2001; Potter & Perry, 2005).

Hedges

The analysis of the hand-off corpus revealed that words that are classified as hedge words, such as *think*, *guess*, *kind of/kinda*, *like*, and *sort of* (Biber et al., 1999) were present in the language that nurses use during hand-offs. Hedges, which convey uncertainty or hesitance to voice a strong opinion (often in consideration of the listener), are sometimes seen as a form of gendered communication (Lakoff & Bucholtz, 2004; Kendall & Tannen, 2003), although this is inconclusive (Bradac, Mulac & Thompson, 1995; Holmes, 1986). (The two word phrase *you know* has also been called a hedge; the use of *you know* in the hand-off corpus has been discussed earlier in this chapter.) Words frequently associated with hedges also appeared in the results of the keyword analysis, meaning that they appeared in the hand-off corpus more or less frequently than was expected. The word *think* did not appear more frequently than would be expected in the hand-off corpus based on comparison with general spoken English. Results from the frequency and keyword analyses for *like*, *guess*, *kind of/kinda*, and *sort* are shown in Table

6.21; *sort* was negatively key, meaning that it appeared less frequently in the hand-off corpus than was expected.

Table 6.21 Frequency of Hedge Words in Hand-off Corpus and Keyword List

Word	Rank in Frequency List	Frequency in Hand-off Corpus	Rank in Keyword List	Keyness Statistic
like	28	144	168	40.93
kind	90	35	107	58.84
guess	136	21	73	75.63
kinda	324	8	96	62.88
sort	841	3	242	-34.86

In English, *like* appears as both a lexical word and a function word (Biber et al., 1999), and it occurred in several of these forms in the hand-off corpus. It also appeared as a hedge word or discourse marker. It was the most frequently appearing hedge word in the hand-off corpus. As was the case with *you know*, *like* is not always seen as a hedge. It has a quoting function, when it is used to relay what another party has said; and functions as an approximator when used with numbers, measurements, or quantities (Biber et al., 1999; Fox Tree, 2006; Fuller, 2003). The use of *like* as an approximator more closely fits the concept of a hedge. All of these uses of *like* were seen in the hand-off corpus, as well as its use as a discourse marker, as seen in these examples:

- (85) "... he's like 'ah it's my own fault because I took an Advil...'" (Hand-off 018)

(86) "... she was running like eighty-four over fifty pretty much all day."

(Hand-off 026)

(87) " You can (xx) tell she had that like exophthalmia. She had like the surgery..."

(Hand-off 003)

In (85), the off-going nurse was quoting the patient; *like* was used as "said" might be used to relate what someone has stated or asked. In (86), the off-going nurse used *like* as an approximator. Although the nurse stated a specific blood pressure finding, it appeared that she was trying to relate that the patient's blood pressure had been in that range throughout the day. Example (87) is an example of *like* used as a hedge; the off-going nurse may have been unsure of her use of the term *exophthalmia* and her insertion of *like* communicated her uncertainty. Table 6.22 shows the frequencies with which each of these forms of *like* was used in the hand-off corpus.

Table 6.22 Uses of *like* in the Hand-off Corpus

Use of <i>like</i>	Frequency	Percent
Approximator – Measure	24	16.55
Approximator – Time	32	22.07
Comparison	15	10.34
Hedge	48	33.10
Quotation	12	8.23
Verb	12	8.23

Like was most frequently used as an approximator when discussing time or measurement during hand-offs, appearing in this function in 38.62% of its appearances.

The next most frequent use was as a hedge, as in (87). Both of these uses can express uncertainty or imprecision.

It is not clear from the hand-off corpus, however, that oncoming nurses perceive the use of *like* as either uncertainty or imprecision, and the lack of additional data about the speakers contributes to this lack of clarity. The use of *like* as a discourse marker has been widely attributed to younger speakers and categorized as a "verbal virus" (Fox Tree, 2006); the use of *like* in the excerpt shown in (87) might also be interpreted as a discourse marker. The lack of demographic data about the speakers in this hand-off corpus prevents conclusions from being drawn about speaker characteristics as a contributing factor to the use of *like* in hand-offs.

It is also possible that nurses use *like* to attempt to communicate their observations in a way that their listener will understand, looking for common ground and/or a means of expressing concerns that may require monitoring or follow-up, similar to the use of *you know*. If this were the case, the use of *like* in nurses' hand-offs may not fit the traditional view of hedging as a means of expressing powerlessness.

Guess is a mental verb; mental verbs are used to express a "range of activities and states experienced by humans" (Biber et al., 1999, p. 362). The traditional meaning of *guess* as a word is "to form an opinion or hypothesis respecting (some unknown state of facts), either at random or from indications admittedly uncertain; to conjecture." (Oxford English Dictionary Online, 1989). This definition of the lexical word *guess* is congruent with Lakoff's (2004) identification of *guess* as a hedge that conveys uncertainty or hesitation, and is accurate when *guess* is a part of the main clause of a sentence, as in (88), where the oncoming nurse is responding to a question .

(88) <OGN>: "Okay. All set?"

<OCN>: "I guess so" (Hand-off 043)

Like the final utterance *but* described above, there is evidence that the function of *I guess* is transforming from a word with lexical meaning to a phrase structure that has a grammatical function. When *I guess* is used in this way, it is not functioning as a subject + verb of a sentence that introduces a complement, but as a phrase that expresses a degree of commitment on the part of the speaker. This structure is known as an epistemic parenthetical, and functions within a sentence much like an adverb, modifying the subject + verb of the sentence (Thompson & Mulac, 1991).

In (89), the off-going nurse was relating that the patient has an abrasion, and was apparently aware that the patient had fallen at home prior to his admission to the hospital. It seems reasonable to conclude that the skin injury is a sequel to his fall, but the nurse is hesitant to clearly state that connection. This excerpt is a clear example of hedging using *I guess* as both Biber et al. (1999) and Lakoff (2004) have defined hedge. It also illustrates the use of *I guess* as an epistemic parenthetical as described by Thompson and Mulac (1991).

(89) "he's got the rug burn on his right knee and elbow from when he fell to his knees at home I guess." (Hand-off 016)

Guess appears more frequently in American English than in British English (Biber et al., 1999), and it did appear as a positively key word in the hand-off corpus when compared with the BNC corpus. However, *guess* did not appear as a keyword in the comparison of the hand-off corpus to the MICASE corpus, leading to the conclusion

that it was not used more frequently by nurses during hand-offs than in American spoken English.

Kind was the next most frequent hedging word used by nurses during hand-offs; for the purposes of this discussion, *kinda* will be included with it. *Kind* appeared in the keyword analysis results and was overwhelmingly collocated with *of* in the hand-off corpus – 34 of the 35 occurrences of *kind* had *of* as its right collocate. *Kinda* is a colloquial "combination" of *kind* and *of*. *Kind of* indicates imprecision and is used to "show that the proposition being conveyed is somehow imprecise" (Biber et al., 1999, p. 856), meeting the criteria for hedging. An example of this from the hand-off corpus is shown below:

- (90) "So I'm not sure what they would decide on that anyway. I kind of talked with her daughters about what that means if she was to start on dialysis."
(Hand-off 026)

In this example, it is not clear why the nurse would relate that she *kind of* talked with the patient's daughters, nor is it clear what she specifically discussed with them regarding dialysis for their mother. The nurse may have felt she was overstepping her boundaries; earlier in the hand-off, she stated that the physicians were undecided about the course of treatment for this patient. This view is consistent with the view that women (Lakoff & Bucholtz, 2004), and nurses in the hierarchical hospital setting (Crawford et al., 1999), speak in ways that reflect their uncertainty that they have the right to speak.

While the use of hedges such as *kind of* has historically been viewed as an act of deference, hedging has also been described as an expression of politeness (Holmes, 1986). More recently, hedging has also been identified as a feature of discipline specific

speech, more common in the humanities and social sciences than in physical and biological/health sciences regardless of the gender of the speaker (Poos & Simpson, 2002).

The use of *kind of* and *sort of* in academic speech serve several functions, including filled pauses, conveying the inexactness of a topic, softening the force of an opinion, mitigating criticism or requests, and "acknowledging the potential face-threatening nature" of the topic to the listener who may have limited knowledge. (Poos & Simpson, 2002, p. 17). The use of *kind of* in (89) might also mean that the nurse talked with the family in very general terms about dialysis and its implications for their mother's future care, introducing the subject in a way that allowed the family members to adjust to the idea of dialysis and generate further questions as the family is ready to ask them – and hear the answers to them. This is a reflection of the use of hedging as a means of conveying inexactitude (the nurse may not have followed a formal "teaching plan") and also saving face for the listener, in this case the family members. The off-going nurse communicates these approaches to the oncoming nurse through the use of *kind of*; it is not clear what the oncoming nurse inferred.

Like *guess*, *kind of* is much more commonly used in American English conversation (400 occurrences per million words) than in British English (fewer than 50 occurrences per million words). The finding that *kind* occurred with unexpectedly high frequency in the hand-off corpus was likely due to the use of the British National Corpus of spoken English as the reference corpus, as neither *kind* nor *kinda* were identified as key in the comparison to the American English MICASE corpus.

Sort of appeared only three times in the hand-off corpus; *sort* appeared in the BNC keyword list as negatively key, meaning that it occurred less frequently in the hand-off corpus than would be expected in comparison to the reference corpus. In contrast to *kind of* and *guess*, the occurrence of *sort of* is much more common in British English conversation (600 occurrences per million words) than in American English (200 occurrences per million words). *Sort* also appeared as negatively key in the comparison of the hand-off corpus to the MICASE corpus, which leads to the conclusion that its usage by nurses during hand-offs was indeed less frequent than in spoken American English.

Discussion

Applying corpus analysis techniques to this relatively small corpus revealed a number of language patterns that nurses use in the patient information transmission function of end-of-shift hand-offs. Among these patterns were the relatively high usage of function words; the use of lexical words that describe patients' physiologic responses to illness to the exclusion of psychosocial responses; the use of present and past tense constructions; assumptions on the part of the off-going nurse that the oncoming nurse possesses knowledge about patients and/or their disease states; and ambiguity in the transmission of patient information.

Because the corpus was not labeled with parts of speech for each word, the lexical density (ratio of lexical words to total words in the corpus) of the hand-off corpus cannot be calculated, but the high frequencies of function words in both the frequency list and the keyword list suggest that the information content of hand-offs is not different from

general conversations in English, and may even be less, given the keyword findings of function words that would have been expected to be similar in the two corpora.

On the other hand, there is evidence that nurses use language and language patterns that are not ordinarily used in spoken English. This evidence exists in the use of third-person pronouns and the verbs that appear in conjunction with those pronouns. The frequency of these pronouns in the corpus, as well as their appearance in the keyword analysis, demonstrate that the discourse during the hand-off is about a third party who is not a participant in that discourse, namely the patient. This talk about a third party occurs to a greater extent during the hand-off than it does in general English conversation. This finding, in conjunction with the finding that first and second person pronouns are used less frequently during hand-offs than in general English, is evidence that, in this sample of hand-offs, both off-going and oncoming nurses keep the focus of the hand-off on the patient, and not on themselves.

The verbs that are used in conjunction with these pronouns demonstrate the activities that nurses engage in with, for, and on behalf of the patient – giving, taking, telling, and checking. Many of these activities are focused on medication administration and management, underscoring the important role that nurses play in medication safety (Hughes & Blegen, 2008). The results of other analyses in this study, such as the link between *I don't know* and medication issues, suggest that there is opportunity to strengthen the medication reconciliation process, a National Patient Safety Goal which should be included in the transition between care providers (Pillow, 2007) at the time of hand-off.

The nouns identified as frequently occurring in the hand-off corpus were also identified as keywords in comparison to corpora of general spoken English, and included words that describe body parts and functions, pain, time, and home. Collocation analysis revealed that nurses use both common nouns and compound nouns that describe body parts, processes, functions and products. The focus of these frequently appearing words is on physiologic states and measurements, which confirms the findings of earlier investigations of hand-off content (Ekman & Segesten, 1995; Liukkonen, 1993; Payne et al., 2000; Philpin, 2006). Language that describes psychosocial, family, and emotional issues was infrequently present in the hand-off corpus. If it is true that the goals of nursing include nurturing patients, identifying their social needs, and determining their resources for recovery (Benner, 2004), the absence of language which addresses these goals is a shortcoming of the hand-offs in this sample.

When words describing psychosocial issues, such as *home*, were discussed, there was little evidence of maintaining the patient's care as it was managed prior to the hospitalization or of planning the transition back to home. In this sample of hand-offs, it appeared that nurses were focused on the immediacy of the current status of the patient within the hospital setting, as evidenced by the predominant use of past and present tense verbs, the use of modals in relation to activities and schedules that extend no farther in time than the next 24 hours. This may be a reflection of the multiple demands placed on the off-going nurse caring for several patients; she is simply trying to get patients safely through her shift and the next (Björnsdottir, 1998).

The appearance of *pain* in the frequency and keyword lists demonstrates that the nurses in this sample were attentive to patients' comfort. However, a lack of consistency

in discussing pain assessment and management is evident from the context in which *pain* is used within the hand-offs. The apparent lack of adherence to widely accepted standards for assessment and management of pain also presents an opportunity for improvement, given the potential impact of inadequately treated pain on patient safety (Wells et al., 2008).

It is apparent that nurses, still mostly women, use what has been characterized as "women's language" to communicate with each other, expressing uncertainty and imprecision through the use of hedging. It is not clear if these language patterns exist because the speakers are women who have been socialized to use these patterns, or if these language patterns have become part of the language of nursing because nursing has historically been made up of women. The findings of Poos and Simpson (2002) suggest that the use of hedges might not be gender-based, but discipline based.

The results of the corpus analysis support the findings of the move analysis, and are further illustrative of the characteristics of the hand-off genre as retrospective and focused on completed tasks. The use of past-tense verbs reflect the retrospective nature of the hand-offs as seen in the emphasis on Move 2 – Relating the Shift's Events and the less frequent application of Move 3 – Looking Ahead. Additionally, the relatively infrequent use of the modal *would* supports the conclusion that the hand-off genre is not used to communicate recommendations for future activities, but rather to relate what the off-going nurse did during the time that she cared for the patient. Off-going nurses did not use statements beginning with "I would" to suggest actions that the on-going nurse might take during the upcoming shift.

Based on the relative lack of questioning by oncoming nurses identified in the move analysis (discussed in Chapter 4), it seems that the words and phrases used by nurses during hand-offs have a shared meaning for both the off-going and oncoming nurses. Similarly, the use of *I don't know* and modals may represent the communication of "hunches" or intuition, and serve as signals to the oncoming nurse to increase monitoring or watchfulness; however, this cannot be concluded with certainty given the lack of data about the speakers and the patients.

While the off-going nurses in this sample used a number of strategies, such as ellipsis and use of pronouns, to decrease the work of speech production, these strategies increase the work of the oncoming nurses. The ambiguity and implication that result from these strategies, as well as strategies used within the move structure of the hand-offs, have implications for patient safety. Findings based on the analysis of the hand-off corpus, together with the findings from the analyses presented in earlier chapters, also have implications for both nursing practice and future research. These implications will be discussed in Chapter 7.

Chapter 7

Discussion, Conclusions and Recommendations

Hand-offs, the transfer of responsibility for patient care between nurses at the end of their work shift, are a potential source of errors in patient care (Clancy, 2006; Solet et al., 2005). To date, studies of nurses' hand-offs have focused primarily identifying the functions and meaning of the hand-off to nurses (Buus, 2006; Ekman & Segesten, 1995; Kerr, 2002; Lally, 1999; Manias & Street, 2000; Payne et al., 2000; Philpin, 2006; Strange, 1996). These functions include: (a) education and acculturation; (b) enhancing group cohesion; (c) exercise of power and/or control; (d) ritual; and (e) patient information transmission. There are relatively few studies in the literature which examine the language used by nurses to accomplish the transmission of patient information during the hand-off. The primary aim of this study was to describe the language used by nurses during hand-offs.

For the purpose of this study, hand-offs were considered a language genre, defined as “a class of communicative events, the members of which share some set of communicative purposes” (Swales, 1990, p. 58). Genre theory proposes that these communicative events are comprised of both language and the context within which it is used. Although the relationship between language and context in genres is interactive, this secondary analysis of hand-offs focused on describing the language component of the genre of nursing hand-offs in order to identify the structure and language patterns used by

nurses during the transmission of patient information and to relate those findings to patient safety.

This chapter presents the findings from this descriptive study of nurses' language use in relation to each of the research questions asked:

1. What are the structural components of nurses' hand-offs?
2. What are the language patterns, including both lexical and grammatical features, used by nurses during hand-offs?
3. How does the language that nurses use during hand-offs differ from general spoken English?
4. How do the characteristics of nurses' language use in hand-offs differ based on the method used for the hand-off?
5. What strategies to enhance patient safety can be identified by analyzing the language used by nurses during hand-offs?

Limitations of the current study and implications for nursing practice and further research will then be presented.

Research Question 1

What are the structural components of nurses' hand-offs?

A move analysis of the hand-offs revealed an identifiable structure used by both off-going and oncoming nurses to communicate information about patients. This structure contained four moves used by nurses to achieve the purpose of the hand-off, which is to transfer the responsibility for patient care. Two of the four moves were found in every hand-off: Move 1 – Introducing the Patient, which served to introduce the patient to the oncoming nurse and Move 2 – Relating the Shift's Events, which served to

relate the activities of the off-going nurse's shift. The remaining two moves were present in about two-thirds of the hand-offs: Move 3 – Looking Ahead, during which nurses discussed upcoming procedures/tests, and Move 4 – Wrapping Up, which usually consisted of a solicitation of questions.

The move analysis supports the findings of previous research that the nursing hand-off genre is focused on task completion (Ekman & Segesten, 1995; Keenan et al., 2006; Lally, 1999; Liukkonen, 1993; Manias & Street, 2000; Payne et al., 2000) and is highly retrospective (Ekman & Segesten; Lally). While there is a structure to the hand-offs in this sample, they can hardly be called standardized. The moves occur with some regularity, but there is wide variation in the use of strategies to accomplish the moves.

There was no move that addressed overall goals for the patient's care. One of the potential gaps in information that has been identified is that of hand-offs focused on tasks rather than on patient outcomes (Pillow, 2007), and the structure of hand-offs in this sample perpetuates this potential gap. There was no move or strategy identified that addressed an overall plan for the patient's care that included identification of patient problems, outcomes or goals to address those problems. While there was a strategy specifically focused on sharing interventions, those interventions were not clearly linked to an outcome or goal of the patient's overall care; there was no move or strategy that discussed other components of a plan of care, such as problem identification or outcome evaluation.

Research Question 2

What are the language patterns, including both lexical and grammatical features, used by nurses during hand-offs?

Two structural features of the language in the hand-offs were noted that were not part of the move structure: (a) ellipsis, and (b) metonymy. Ellipsis is the omission of words; metonymy is a figure of speech in which a part is substituted for the whole. Some form of ellipsis occurred in 83% of the hand-offs in this sample; ellipsis is a means of economy for the speaker, but is seen to increase the workload of the listener (Merchant, 2001). Ellipsis also assumes that both participants in the discourse have shared knowledge for effective communication to occur. If that assumption is incorrect, a risk of miscommunication exists.

Metonymy occurred in 42% of the hand-offs in the sample; effective communication when metonymy is used also depends on the presence of shared mental or cognitive models for the listener and the speaker (Radden & Kövecses, 1999). If these shared models are not in place, the risk of miscommunication increases.

Function words, such as pronouns, prepositions, determiners and conjunctions were the most frequently appearing words in the corpus. The most frequently used pronouns were the third person pronouns, such as *she*, *he*, *her*, *his* and *him*; this is no doubt due to the fact that nurses were talking about a person who was not participating in the discourse of the hand-off.

When third-person pronouns were used, the verbs that were most frequently associated with the pronouns in the corpus were present or past tense verbs such as *is*, *was*, *gets*, *got*, *gave*, *has* and *had*. This was true whether the pronoun was used as the subject of the verb (e.g. *she*, *he*) or as the object (e.g. *her*, *him*). This use of the present or past tense verb further demonstrates the retrospective nature of the hand-offs that was identified in the move structure.

Nouns are lexical words that carry the meaning of a text (Biber et al., 1999). The most frequent nouns in the hand-off corpus included those that name body parts or substances (e.g. *blood, bowel*) and time (e.g. *morning, night*). The list of most frequent nouns used by nurses in hand-offs suggested that nurses talked about the patient's body and its functions and status and the location of the patient in time and in a place.

The use of concordance and collocation analysis to examine these nouns in the context within which they were used revealed patterns of missing information in the hand-off corpus. For example, when *pain* was used, descriptions of the intensity of patients' pain were imprecise, using words such as *a lot of, some, or quite a bit*. Standards for pain assessment include the use of a "pain scale" for patients to provide a rating of pain (Sikorski & Barker, 2009); patients' ratings of pain were not relayed in hand-offs. Untreated or inadequately managed pain represents a risk of patient injury in the form of increased complications, morbidity and mortality, and lack of standardized communication about pain status and management contributes to this risk (Wells et al., 2008).

When *home* was used in the hand-offs, there was little discussion of what activities had been undertaken to prepare patients and/or their family members to return home and assume their own care. This lack of information does not imply that such work has not been done, but failure to communicate what has been completed can lead to unnecessary or duplicate work for oncoming nurses as well as increased length of stay (Pillow, 2007).

The conjunction *but* also appeared fairly frequently in the hand-off corpus. In most cases of its use, *but* was clearly used as a conjunction to connect contrasting or

negating information with a prior clause in the sentence. However, there were a number of instances in which *but* appeared at the end of a sentence with no following clause, leaving the oncoming nurse to infer what the off-going nurse intended to state. This finding is consistent with current usage of *but* in spoken English; it presents risks of misinterpretation of information when used in hand-offs.

Modal forms that show intent or prediction (e.g. *going to*, *will*, *would*) appeared in the hand-off corpus with relatively low frequency. *Going to* usually occurred with the past tense verb *was*, indicating that the off-going nurse had intended to do something, but was not able to complete it. While *will* was used to relate something that would happen after the hand-off, it was most frequently used to relate a task that the off-going nurse would complete or to state that the patient "*will* have lab work". The low use of volition/prediction modals and the manner in which they were used provide further evidence of the retrospective nature of hand-offs.

Hedges are words such as *like*, *guess*, *kind of/kinda* which express uncertainty or tentativeness (Biber et al., 1999); these were also present in the hand-off corpus. *Like* was used to express imprecision or uncertainty in 72% of its appearances in the corpus; *guess* and *kind of/kinda* were used in this manner in all of their appearances.

I don't know and *alert and oriented* were among the most common three-word phrases in the corpus. When *I don't know* was used, it was frequently associated with information about the patient (e.g. name, medical history, normal status), laboratory tests and results, medications, and fall risk. When *I don't know* was used regarding laboratory tests, it was not clear if the lack of knowledge was due to the results having not been reported at the time of the hand-off. However, lack of knowledge regarding medications

and fall risk are concerning, due to the risk of patient injury associated with these two areas.

Alert and oriented was used to describe the patient's cognitive state, including wakefulness and awareness of self, location, and time. It is not surprising that it appeared in the hand-off corpus; however, ambiguity and imprecision were evident in the context of its use. This was especially true when the off-going nurse described a deficit in the patient's state, and did not specify whether the current state represented new findings or if the patient's cognitive state was unchanged. When there was a deficit in one or two of the three areas of awareness, the nurse did not specify which area(s) were abnormal, how it was related to the patient's condition, or if it was a change from the patient's previous status.

The lexical and grammatical structures used by nurses are retrospective and focus on tasks and the patient's physical state. Imprecision and uncertainty are displayed in both the words that nurses use (e.g. hedges) as well as in the context within which frequent words and phrases, such as *pain* and *alert and oriented*, are used. The lexical and grammatical choices (e.g. pronouns and final utterance *but*) made by off-going nurses reduce the work of language production for them, but may increase the work of language processing for the oncoming nurse.

That being said, the extensive use of "shorthand" in the form of metonymy and ellipsis suggests that nurses possess shared knowledge and shared mental models as a basis for their communication about patients and their care. The relative lack of questioning by the oncoming nurse when these features are used is evidence that oncoming nurses "know" what to do with the information that has been presented to them. The use of *room air* to relate information about the patient's oxygenation is an example of this; it is more than just a statement that the patient is not

receiving supplemental oxygen. The oncoming nurse seems to interpret this to mean that "the patient is not on oxygen, he/she is not short of breath, he/she tolerates physical activity, and is not in distress."

Research Question 3

How does the language that nurses use during hand-offs differ from general spoken English?

To answer this question, a keyword analysis was carried out to compare the hand-off corpus to the British National Corpus of Spoken English. The results of the keyword analysis showed that many of the frequently appearing words in the hand-off corpus also appeared with significantly higher frequency than would be expected given their frequency in the spoken English corpus, indicating that nurses do use different language in the course of hand-offs than in general spoken English.

The results of the keyword analysis showed that the positively key words were similar to the words identified as most frequent in the hand-off corpus. The third person pronouns that were frequent in the hand-off corpus (e.g. *her, she, he, his, he*) appeared as positively key words. The second person pronouns *we* and *you* were identified as negatively key, meaning that they appeared less frequently in the hand-off corpus than was expected. Since pronouns are among the most commonly used function words in spoken English (Biber et al., 1999), it would not be expected for them to be significantly more common in the hand-offs. The finding that *you* appeared with less frequency than expected is not so surprising, since the move analysis identified a lack of recommendations from the off-going nurse to the oncoming nurse; the appearance of *you* as a negatively key word may be due to nurses' reluctance to give specific direction to a colleague.

The frequency with which past tense forms of verbs appeared in the corpus provides evidence that supports previous research findings that the hand-off genre is retrospective and task-oriented (Ekman & Segesten, 1995; Lally, 1999; Riegel, 1985). As Patterson et al. (2004) have pointed out, the discussion of contingency planning, which involves forecasting and not just reflecting, is a strategy used in high-reliability organizations to improve the effectiveness of transitions.

Three of the ten most frequent nouns in the hand-off corpus (*blood, pain, and bowel*) appeared in the ten most positively key words. The remaining words in the list of ten most frequent words in the hand-off corpus all appeared in the list of positively key words, although they did not appear in the ten most positively key. Other nouns that were positively key included conditions (e.g. *edema, pneumonia*) and test results (e.g. *hemoglobin, potassium*). The remaining three were *heplock, Dilaudid, and liters*. These words were used more frequently in the hand-off corpus than in the reference corpus.

As previously noted, nouns are lexical words that carry the "meaning" of a text or discourse (Biber, 1999), and keyword analysis reveals what a specialized language is about (Bowker & Pearson, 2002). The nouns identified in the keyword analysis of the hand-off corpus indicate that the language of nursing hand-offs is about body parts and processes, medications, physical conditions, and the devices used in treating those conditions. The frequency with which these nouns appeared in the hand-off (with the exception of *pain*) suggests that nurses at the bedside remain focused on the bio-physical domain of their patients, as well as procedures and devices. Nouns that describe patients' emotional, social and/or spiritual domains, while not entirely absent from the corpus, did not appear frequently in the corpus, nor did they appear in the results of keyword analyses. This does not imply that nurses were not concerned about these

issues or never discussed them with their nurse colleagues; however, they were not discussed during hand-offs.

Research Question 4

How do the characteristics of nurses' language use in hand-offs differ based on the method used for the hand-off?

There were two methods used for conducting hand-offs in this sample: 27 of the 43 hand-offs were conducted using the face-to-face method, in which the off-going and oncoming nurses sat together during the hand-off. For the remaining 16 hand-offs in the sample, the off-going nurse audio-taped her hand-off and the oncoming nurse listened to the tape outside the presence of the off-going nurse. The two methods were compared to determine if significant differences existed for mean time and word counts of the hand-offs and the presence of selected linguistic features, including use of Moves 3 and 4, metonymy, ellipsis, side sequences, filled pauses, and oncoming nurse utterances during the hand-offs.

The mean time for audio-taped hand-offs was significantly shorter than the mean time for face-to-face hand-offs. In discussions comparing methods of hand-offs, the shorter length of time required for audio-taped hand-offs has been identified as an advantage for this method (Friesen et al., 2008; O'Connell & Penney, 2001; Pillow, 2007); the findings from these analyses in this study support these claims with empirical findings that have not previously been reported.

Moves 1 and 2 were present in all 43 of the hand-offs in the sample, but Moves 3 and 4 did not occur in every hand-off. The presence of Moves 3 and 4 did not differ significantly for the two methods. . While it is not clear what prompted the off-going

nurse to include Move 3 or Move 4 in the hand-off, the method of hand-off did not affect the decision to do so. This finding can also be taken as validation that the move structure applied to the hand-offs regardless of the method used.

The use of metonymy, or substituting a part for the whole, occurred in both face-to-face and audio-taped hand-offs; nurses who used the face-to-face method of hand-off were significantly more likely to use metonymy in hand-offs than nurses who audio-taped hand-offs. As previously noted, the successful use of metonymy in communication requires a shared cognitive model (Radden & Kövecses, 1999); during a face-to-face hand-off, the off-going nurse would be able to evaluate the oncoming nurse's understanding of the metonymy using verbal and non-verbal feedback. The absence of this, along with uncertainty as to who the listener would be, may have reduced the off-going nurse's willingness to use a non-literal figure of speech during an audio-taped hand-off.

While ellipsis was present in both face-to-face and audio-taped hand-offs, the number of audio-taped hand-offs in which it occurred was significantly less than the number of face-to-face hand-offs in which ellipsis was used. The same uncertainty regarding who the listener would be may have applied to the use of ellipsis, the interpretation of which depends on shared knowledge (Allen, 1995).

Filled pauses, measured as the frequency of *um* and *uh* per hand-off, are the result of "online" or "on-the-fly" speech production, and allow the speaker's planning process to catch up with his/her spoken words (Biber et al., 1999). Filled pauses occurred in audio-taped hand-offs as well as in face-to-face hand-offs; the mean number of filled pauses per face-to-face hand-off was significantly greater than the mean number per audio-taped

hand-off. Nurses who conducted hand-offs using the audio-taped method may use some form of advanced planning, or "rehearsal" prior to starting the taping session that results in less online planning for speech, resulting in fewer filled pauses. Application of strategies that nurses use to prepare for audio-taped hand-offs could assist nurses in preparing for effective face-to-face hand-offs (Patterson et al., 2005).

Only the face-to-face method of hand-offs included oncoming nurse utterances, and the occurrence of these was determined to be greater than chance. The results indicate that oncoming nurses will take advantage of the opportunity to participate in the hand-off communication process, although no conclusions could be drawn about the quality of these interactions.

Research Question 5

What strategies to enhance patient safety can be identified by analyzing the language used by nurses during hand-offs?

This analysis of the language used by nurses revealed strategies that nurses use to enhance patient safety during hand-offs. Additional approaches that might be employed to further improve patient safety were also identified; both of these areas are outlined below

Patient Safety Strategies Present in the Hand-offs

The move structure for this sample of hand-offs revealed that portions of suggested approaches to hand-offs (Pillow, 2007; Sandlin, 2007) already exist within the move structure of the genre of nurses' end-of-shift hand-offs. These included introducing the patient, providing background information or history about the patient, and reviewing assessment data.

Within Move 1, nurses consistently identified the patient about whom they were speaking at the outset of the hand-off. Most often, this identification included the patients' room number on the unit and some form of the patient's name. While room number is not generally considered to be a valid means of patient identification (Joint Commission on Accreditation of Healthcare Organizations [JCAHO], 2008; Pillow, 2007), nurses' work assignments are often organized by room number, and the notation of the room number may assist the oncoming nurse in the organization of her work for the upcoming shift. While the National Patient Safety Goal (NPSG) regarding accurate patient identification requires the use of two identifiers (e.g. name, birth date, medical record number), the Joint Commission does acknowledge that two identifiers are not required for end-of-shift hand-offs (Pillow). The use of room number and name by nurses during end-of-shift hand-offs serves to place the patient in the context of the nurse's work assignment as well as to identify the patient.

Also within Move 1 of the hand-offs, the off-going nurse clearly named either the physician or the medical service responsible for the patient's care. This identification served to inform the oncoming nurse of who they could or should contact regarding patient care issues. The nurse's awareness of these other providers enhances patient safety; should a change in patient condition arise, the need to identify who to contact could delay treatment for the patient. Other studies have reported that nurses could identify their patient's physician just 43% of the time (Friesen et al., 2008); although this information was verbally communicated in 51% of the hand-offs in this sample, the nurses may have had access to this information through other sources, such as medical records or unit patient lists.

In both Moves 1 and 2, off-going nurses provided background information about the patient to the oncoming nurse. Although there was some variation of the level of detail provided, within Move 1 this was demonstrated by the inclusion of information such as the reason for admission and review of the patient's medical history and hospital course. In Move 2, the off-going nurse presented background information that was specific to the shift during which she had cared for the patient, including new test reports, assessment data, observations, and interventions that had been provided for the patient.

Less consistently, information was provided using Move 3 to help the oncoming nurse anticipate upcoming care needs for the patient. When this information was present, it included upcoming tests and/or procedures, and planned discharge date and/or time, and the patients' readiness for these activities.

Opportunities for Enhancing Patient Safety in Hand-offs

The Joint Commission's National Patient Safety Goals (NPSG) (JCAHO, 2008) include a specific goal for hand-off communication, but several other NPSG have implications for the hand-off process as well, including patient identification, repeat-back of information, report of critical test results, medication reconciliation, reducing the risk of patient injury due to falls, and reducing the risk of wrong-site surgery (JCAHO; Pillow, 2007). The results of this study indicate that opportunities exist to improve patient safety in the areas of medication reconciliation, and fall risk reduction, as well as pain management. The incorporation of plans of care into the hand-off process may also contribute to increased patient safety.

Medication Reconciliation

Medication errors are one of the most common types of errors that occur in hospitals (deVries, Ramrattan, Smorenburg, Gouma, & Boermeester, 2008; Kohn et al., 2000), and the Joint Commission specifically addresses risk of medication error in the NPSG. According to the Joint Commission, "updating the status of a patient's medications is also an important component of all patient care hand-offs" (JCAHO, 2008, p. 19). There are opportunities to enhance medication safety in nurses' end-of-shift hand-offs.

Hospitals are required to have a process in place for reconciling patient's medications at admission, transfers within the hospital, changes in care providers, and at discharge (or transfer to another facility) (JCAHO, 2008). It does not appear that nurses have fully incorporated that process into end-of-shift hand-offs. When medications were discussed during hand-offs, specific responses to medications were noted, usually regarding medications that were given for pain or nausea. However, it is often unclear as to whether other medications were new additions to the patient's treatment or an ongoing treatment. In some cases, the off-going nurse admitted a lack of knowledge about the patient's current medications or medication history. Incorporating a review of the patient's medication record for the off-going nurse's shift into the hand-off process would provide access to this information and an opportunity for the oncoming nurse to ask questions regarding medications.

Pain Management

Discussions of patients' pain and its treatment was included in many of the hand-offs in this sample; *pain* appeared in both the list of most frequently appearing nouns in

the hand-off corpus and in the results of keyword analyses in both reference corpora. However, when pain was discussed by nurses during the hand-offs, it was rarely reported using the standard practice of the patient's rating of his/her pain on a 0 – 10 scale. The lack of consistency with which pain was described within the hand-off corpus was somewhat surprising, given the emphasis that has been placed on pain management in recent years, and the fact that the state in which these nurses practices has a re-licensure requirement for continuing education regarding pain.

Clear and effective communication between nurses about patients' pain and pain management is an important component of safe, effective patient care. Pain management is often used as a measure of patients' satisfaction with their care, but it also is a measure of quality of care. Inadequate and/or inconsistent pain management can lead to adverse physical and psychological patient outcomes. Inadequately managed pain can have adverse effects on the immune, cardiovascular and gastrointestinal systems. It also reduces patients' mobility, which may lead to complications such as pneumonia, deep vein thrombosis, and pulmonary embolus, all of which can lead to increased length of stay and morbidity/mortality for hospitalized patients. Unrelieved pain can also lead to anxiety and/or depression and to chronic pain (Wells et al., 2008). Clear and consistent communication during end-of-shift hand-offs has the potential to reduce these risks to patient safety.

Fall Risk Reduction

Falls are the most frequent adverse event reported in adult inpatient care settings. The risk of falls in acute care inpatient settings is estimated at 1.9 to 3 percent of all hospitalizations; this risk has been estimated to result in more than 1 million falls per year

(Currie, 2008). In 2 of the 43 hand-offs (4.6%) included in this sample, a history of a fall at home prior to the hospitalization was reported by the off-going nurse. In one hand-off, this was reported within Move 1, because it was the reason for the patient's admission; in the second, it was reported within Move 2 associated with an observation of an abrasion on the patient's skin. History of a fall is an indicator of risk for falling during a hospitalization (Kim, Mordeffi, Bee, Devi, & Evans, 2007), and, as one of the NPSGs, hospitals are required to have a program for identifying patients at risk for falls that includes interventions to reduce the risk of falls (JCAHO, 2008).

In both of the hand-offs in which patient history of a fall was discussed, the information that the patient had a recent history of a fall was stated. However, during the hand-offs for these patients, there were no discussions of current risk factors for falls, outcomes or goals for the patient's stay (e.g. patient knowledge about reducing falls, patient behavior that reduces the risk of falling, occurrence of falls), or interventions that had been used or should be continued to reduce the risk of falls.

Incorporation of Plans of Care

There was no move within this sample of hand-offs that addressed overall goals for the patient's care. One of the potential gaps in information that has been identified in current hand-off practices is that of hand-offs focused on tasks rather than on patient outcomes (Keenan et al., 2006; Pillow, 2007), and the structure of hand-offs in this sample perpetuates this potential gap. There was no move or strategy identified that addressed an overall plan for the patient's care that included identification of patient problems, outcomes, or goals to address those problems. While there was a strategy specifically focused on sharing interventions, those interventions were not clearly linked

to an outcome or goal of the patient's overall care; there was no move or strategy that discussed other components of a plan of care, such as problem identification or outcome evaluation.

The incorporation of a plan of care into the hand-off process could contribute to the effectiveness of hand-off communication by emulating the strategies of high-reliability organizations that include the incorporation of the outgoing nurse's anticipation of changes and perspective on contingency plans for those changes (Patterson et al., 2004). A plan of care for the patient can also function as the basis of a shared mental model, the presence of which has been shown to positively affect team performance (Mathieu et al., 2000).

Limitations

Secondary analysis is a valuable technique, as it makes use of data that has already been collected, conserving time as well as money. However, an inherent limitation of secondary analyses is that the data used for the new study was collected to address a different research question (Polit & Beck, 2004). The hand-offs used for this study were originally collected for a study based on a theoretical model of heedful interrelating and mindfulness in care planning and examining the effectiveness of an electronic care planning application (Keenan et al., 2006), and not as an genre analysis. No demographic data (e.g. age, race, gender, years of experience, education level, native speaker status) was collected about the nurses involved in the hand-offs, and this prevented comparisons of language patterns by groups of nurses.

In corpus analysis, corpus design is an important consideration in the planning of such studies. Corpus design includes such criteria as overall corpus size, samples of text

to be included in the corpus, and the purpose for which the texts were produced (Biber et al., 1998). Because this study was a secondary analysis, these design criteria were not applied to the collection of the hand-off data.

The quality of the tape recordings of the hand-offs also proved to be a limitation for the analyses in this study. The recordings were made in busy nursing units, sometimes in nurses' stations or conference rooms where there were multiple activities occurring simultaneously. While this is a reflection of the reality of hand-offs, a number of the tapes had significant background noise, which resulted in missing or unintelligible words in the transcripts of the hand-offs. Missing words, designated as (xx) in the transcripts, were the second most frequent "word" type in the corpus, and it is not known how many words this designation actually represented (the (xx) may have been a single word or a sequence of several words). The resulting hand-off corpus was just under 21,000 words, which is a relatively small sample for corpus analysis (Biber et al., 1998). However, this limitation was offset by some degree by the fact that the corpus was an example of specialized language and was only comprised of nurses' hand-offs (Bowker & Pearson, 2002).

The audio-recording of the face-to-face hand-offs was conducted with the research assistant present for the hand-off; even though the research assistant was known to the staff on the units, the assistant was not normally a part of the hand-off process. The presence of a relative outsider and the fact that the speaker was being recorded may have influenced what nurses said. In contrast, the audio-taped hand-offs were recorded in the presence of the oncoming nurses, so the data collection did not alter the off-going nurses' usual routine. The extent to which the nurses conducting the face-to-face hand-

offs behaved or spoke differently than they normally would during a hand-off is not known.

The hand-offs included in the corpus were collected from relatively homogenous settings in four hospitals in a single state in the Midwestern United States. The majority of the hand-offs (41) were from inpatient adult medical surgical units; only two hand-offs were from an intensive care unit. Results should be generalized to other geographic or patient care settings with caution.

As noted previously, language genres are comprised of both language and the context within which the language is used. This study examined only the language component of the hand-off genre, to the exclusion of the context. Contextual information about the culture of the organization and the unit, the experience level of the nurses working there, group cohesion on the unit, the type of patients cared for on those units, and the demographic characteristics of the nursing staff might have led to different conclusions about the language used in the hand-offs on those units.

Conclusions have been drawn based solely on the language of the hand-offs as it appeared in the transcripts. Nurses, like other professionals, use language in their workplaces that meets their needs as professionals, and what is unsaid may be as important in that communication as the words that are spoken. The conclusions of this study are limited by lack of information from the participants in the hand-offs; interviews with the participants may have shed additional light on the off-going nurses' meaning of words or phrases and the oncoming nurses' interpretation of that language. Conclusions were also limited by the lack of information about supporting documentation for the

hand-off, such as patient medical records, medication records, and nurses' personal notes which may have been referred to during the hand-offs.

Implications for Health Care Policy

Current discussions surrounding patient safety in health care focus on the importance of effective communication in reducing the risk for error and patient injury. Transitions in care providers, whether as a result of a change in shift for providers or a change of environment for the patient, represent a potential gap in patient care (Cook et al., 2000) in which errors can originate. As a means of overcoming potential communication breakdowns in these gaps, several frameworks have been recommended by regulating bodies and are being adopted by hospitals. The most prominent and widely cited of these frameworks is the S-BAR method for hand-offs (Friesen et al., 2008; Pillow, 2007; Sandlin, 2007).

A number of approaches for standardizing hand-offs have been put forth by various agencies and health care organizations; these approaches essentially prescribe a set of moves for the genre of hand-offs. The most prevalent of these approaches to hand-offs is the S-BAR method (Pillow, 2007; Sandlin, 2007). The S-BAR approach was developed to enhance communication between members of two groups who use very different communication styles to accomplish their work: nurses and physicians. S-BAR enhances communication through the creation of a shared mental model for the immediate management of an acute clinical event (Durham & Alden, 2008; Guise & Lowe, 2006; Leonard et al., 2004).

However, the move analysis of this sample of hand-offs revealed that an end-of-shift hand-off does not represent an acute clinical event. Rather, it is a summary of the

care that the off-going nurse has provided over the period of time that the patient was in her care, and includes the patient's responses to that care, and patient care activities that will be coming up in the next 24 – 36 hours. Accordingly, organizational leaders, regulating agencies and policy makers must take into account the information needs and communication practices of nurses that may differ from those of other health care professionals before promulgating policies and rules that require a specific approach to hand-offs.

Implications for Nursing Practice

The results of this study suggest that the incorporation of a clear and current plan of care into the hand-off process may improve the hand-off in that plans of care include identification of goals and outcomes for patients. Both the move structure and the language patterns in the hand-off corpus demonstrate that goals or outcomes for patients' care are not discussed in hand-offs. Rather, the focus of the hand-offs is on three principal features: what has already occurred, versus what is expected to occur; completed tasks; and orders that may or may not reflect change. The additional incorporation of a plan of care into the hand-off process would not only enhance patient safety, by reducing the risk of omitted or duplicative care, but could use nurses' time more efficiently by potentially reducing re-work.

The transition from home to hospital and back to home represents a risk for patients; if they do not understand how to manage their care once they are discharged, there is a risk of readmission (Jencks, et al., 2009). At discharge, family members may assume the care that nurses have been responsible for while the patient was hospitalized; when this occurs, family member caregivers require education to provide safe care and

emotional support in the caregiving role. The caregiver/family member essentially becomes another patient for the nurse at the bedside (Reinhard, Given, Petlick & Bemis, 2008). However, the results of this study show that nurses caring for patient in these hospitals are focused primarily on the patient in the bed for the period of time that they have cared for that patient.

While most hospitals have discharge planning teams that coordinate post-discharge needs for patients, it is the bedside nurses that interact most frequently with patients and family members, so even if the bedside nurse is not actively coordinating the discharge planning, they need to have knowledge of it and reinforce it with patients and families. Families feel frustration when they have to repeat information that they have already told someone to multiple healthcare providers, but that didn't get passed on (Brintnall, 2009; Leebov, 2006). Family and social needs may be as important to the patient as physical needs, and hand-offs should include information about the person behind the patient.

Implications for Nursing Education

Patient safety in general, and hand-offs in patient care in particular, have been relatively neglected in health care professionals' educational preparation (Solet et al., 2005), and nursing education is no exception. The most recent revision of the American Association of Colleges of Nursing (AACN) Essentials for Baccalaureate Education for Professional Nurses has addressed this discrepancy by calling for colleges of nursing to include knowledge, skills and attitudes regarding patient safety and communication in outcomes of their curricula (2008).

The results of this study suggest that educators should include information about the end-of-shift hand-off as unique from hand-offs and communication between nurses and physicians; in other words, not all hand-offs are the same, and students who are entering the nursing profession need to understand that the information needs of their nurse colleagues differ from the needs of physician colleagues. There is great potential in the use of simulation to teach students communication and hand-off techniques (AACN, 2008); while the development of simulations that reflect the components of an end-of-shift hand-off may be challenging, they are not unrealistic.

Implications for Future Research

Although there were limitations for this study, it does demonstrate the successful application of genre analysis and corpus analysis to nursing communication, and the results suggest several areas for future research. Several specific potential research questions are discussed below, as well as general areas for future research:

1. What is the relationship between nurse characteristics, such as age, experience level, gender, race, native speaker status and education level and language used in hand-offs? This study has shown that the context surrounding the use of language cannot be ignored in evaluation of language use and genre; the characteristics of speakers and their relationships to each other may affect both the language used by each participant and the effectiveness of the hand-off communication. Future studies of hand-offs should incorporate data collection methods that include information on nurse characteristics such as age, experience, educational level and race to identify the impact that these contextual factors have on hand-off communication.

2. What is the relationship between end-of-shift hand-offs and errors in patient care? A related question is what are the errors associated with end-of-shift hand-offs? The S-BAR approach to hand-offs between nurses and physicians was developed based on analysis of errors that occurred as the result of ineffective communication between nurses and physicians (Leonard et al., 2004), but there is little, if any, published data about errors that result from ineffective end-of-shift hand-offs. An explication of these errors would contribute to the development of effective approaches for nurse-to-nurse communication during hand-offs, and result in cost-effective allocation of scarce funding resources for research. Also, adverse events associated with medications have been estimated to account for 15.1% of adverse events in hospitalized patients (deVries et al., 2008). That finding, coupled with the findings regarding medication safety in this study, suggest that further investigation of medication errors in relation to end-of-shift hand-offs may be warranted.
3. How do the language patterns used in various types of nurse-to-nurse hand-offs differ from those of end-of-shift hand-offs? This study examined only end-of-shift hand-offs in inpatient units, but the analytic approaches used in this study could be applied to other types of hand-offs, such as patient transfers to other units within a hospital (e.g. Emergency Department to Intensive Care Unit or Operating Room, Post-Anesthesia Care Unit to inpatient unit) or patient discharges to other facilities (e.g. hospital to long-term care facility, inpatient facility to home health care). Analysis of the

language used in these transitions could identify additional language patterns that are unique to these transfers of patient care responsibility and could contribute to improving their effectiveness.

4. What different language patterns might be observed in other hand-off methods? This study found significant differences between face-to-face hand-offs and audio-taped hand-offs; some hospitals have adopted face-to-face hand-offs at the patient bedside. Hand-offs at the bedside are intended to involve the patient and/or family members; (Friesen et al., 2008; Pillow, 2007). If patients are truly involved, the results of analysis should show more second-person pronouns as the patient and family are included in the discourse.
5. How much variation exists in the sequencing of strategies used within hand-off moves? One of the strategies for effective hand-off suggested by Patterson et al.'s (2004) examination of high-reliability organizations suggests that presentation of information in the same order for every hand-off contributes to effective transitions. While variation was noted to exist in this sample of hand-offs, it was only explored at the move level. Additional analysis would contribute to a deeper understanding of how nurses structure their hand-off communication.
6. How much information is lost and/or retained in hand-offs over time? This study focused on the language used in a group of one-time hand-offs; examination of a series of hand-offs for a group of patients might reveal how patient care concerns are carried forth from hand-off to hand-off.

7. How do nurses prepare for and structure hand-offs using different methods?

The decreased use of potentially ambiguous language in audio-taped hand-offs is a strength of this method that has not previously been identified (Friesen et al., 2008). The results of the comparison of hand-off methods suggest that there are approaches that nurses use to prepare for audio-taped hand-offs that may enhance the communication process during hand-offs. Studies that investigate and identify these strategies for preparing for hand-offs could contribute to effective communication in all methods of hand-offs.

8. How does the language by nurses in hand-offs represent the mental models that nurses share about patients and their care? The use of language features such as metonymy and ellipsis by nurses during hand-offs suggest that shared knowledge (Allen, 1995), idealized cognitive models (Radden & Kövecses, 1999), and shared mental models play an important role in hand-offs; however, these concepts have not been investigated in the context of hand-offs. The results of such investigations could be used to develop interventions that support the development of these shared models during hand-offs.

9. What is the effect of nurse gender on language use? Findings from the corpus analysis identified that nurses use language that has traditionally been associated with women, such as hedges. Whether this use of language is related to the historically (and continued) high percentage of women in nursing is not clear from this study. However, as more men enter the nursing profession, there may be a risk of miscommunication between nurses based on gender. Findings that hedges are more associated with academic discipline

than with speaker gender (Poos & Simpson, 2002) suggest that language used by nurses may be discipline-based, rather than gender-based. Further investigation of this phenomenon may identify if communication difficulties exist between male and female nurses and lead to enhanced communication between these two groups.

Other areas that may be ripe for further investigation include the development of technological support for hand-off communication in the form of devices and/or content of electronic medical records and patient satisfaction. Findings that patients and family members perceive that information about them is not passed on from nurse to nurse (Brintnall, 2009) suggest that studies that seek to link patient perceptions to hand-offs may lead to increased satisfaction.

Summary

The results of this study demonstrate that nurses do use some structure in the language of hand-offs, but that there is variation in how the structure is applied. The findings also illustrate language that implies ambiguity, imprecision and uncertainty on the part of nurses; however, the study was not able to verify these attributes with the speakers or listeners. This leads to the conclusion that studies of the hand-off genre cannot focus on the use of language without considering the influence of context on the language and communication. However, this descriptive secondary analysis of nurses' hand-offs using genre analysis and corpus analysis does demonstrate the applicability of these techniques to health care in general and nursing in particular. This research provides a foundation on which to design future research to investigate linguistic and communication factors. The results of such investigations can be utilized as a means of

identifying potential patient care errors that can be attributed to nurses' communication during hand-offs and designing interventions to help nurses communicate effectively during the hand-off process.

Appendices

Appendix A

MICASE Transcription and Markup Conventions

SGML TAG or SYMBOL	MEANING/DESCRIPTION	APPEARANCE IN ON-LINE TRANSCRIPTS (HTML VERSION)
SPEAKER ID		
<U WHO=S1>, <U WHO=S2>, etc.	Speaker IDs, assigned in the order they first speak.	S1: at the beginning of each turn or interruption/backchannel.
<U WHO=SU>, <U WHO=SU-f>, <U WHO=SU-m>	Unknown speaker, without and with gender identified	SU: SU-f, SU-m
<U WHO=SU-1>	Probable but not definite identity of speaker	SU-1:
<SS>	Two or more speakers, in unison (used mostly for laughter)	SS:
PAUSES		
<PAUSE DUR=:05>	Pauses of 4 seconds or longer are timed to the nearest second.	<P: 05>
,	Comma indicates a brief (1-2 second) mid-utterance pause with non-phrase-final intonation contour.	,
.	Period indicates a brief pause accompanied by an utterance final (falling) intonation contour; not used in a syntactic sense to indicate complete sentences.	.
...	Ellipses indicate a pause of 2-3 seconds	...
OVERLAPS		
<OVERLAP>...</OVERLAP>	This tag encloses speech that is spoken simultaneously, either at the ends and beginnings of turns, or as interruptions or backchannel cues in the middle of one	Text of overlapping speech is in blue.

Appendix A

MICASE Transcription and Markup Conventions

	speaker's turn. All overlaps are approximate and shown to the nearest word; a word is generally not split by an overlap tag.	
BACKCHANNEL CUES and FAILED INTERRUPTIONS		
Embedded utterance (<U> tag within a <U> tag)	Backchannel cues from a speaker who doesn't hold the floor and unsuccessful attempts to take the floor are embedded within the current speaker's turn, and not shown as a separate line/paragraph.	[S3: Text of embedded speech is in orange and surrounded by orange square brackets.]
Embedded and overlapped utterance (<OVERLAP> tag within an embedded utterance)	Backchannel cues or unsuccessful interruptions that overlap with the main speaker's speech.	[S3: Text of embedded speech that is overlapped is in blue and surrounded by orange speaker ID and square brackets.]
LAUGHTER		
<EVENT DESC=LAUGH> or <EVENT DESC=LAUGH WHO=S2>	All laughter is marked. Speaker ID not marked if current speaker laughs.	<LAUGH>, <S8 LAUGH> <SS LAUGH>, etc.
CONTEXTUAL EVENTS		
<EVENT DESC="WRITING ON BOARD">	Various contextual (non-speech) events are noted, usually only when they affect comprehension of the surrounding discourse.	<WRITING ON BOARD>
<EVENT DESC="APPLAUSE">		<APPLAUSE>
<EVENT DESC="AUDIO DISTURBANCE">, <EVENT DESC="BACKGROUND NOISE">		<AUDIO DISTURBANCE>, <BACKGROUND NOISE>
<EVENT DESC="SOUND EFFECT">, <EVENT DESC="GASP">		<SOUND EFFECT>, <GASP>
READING PASSAGES		
<SEG TYPE="READING">.....</SEG>	Used when part of an utterance is read verbatim.	<READING>.....</READING>

Appendix A

MICASE Transcription and Markup Conventions

FOREIGN WORDS		
<code><FOREIGN>.....</FOREIGN></code>	Used for non-English words or phrases.	Italics e.g.: the mother says <i>c'est quoi?</i> and Annika says to <i>parce que</i> eh and then,...
PRONUNCIATION VARIATIONS		
<code><SEG TYPE="PRON" SUBTYPE="/seltik/">Celtic</SEG></code>	Used when an unexpected pronunciation is used that would affect comprehension of the surrounding discourse. Dialect or other phonological variations are generally not represented.	Pronunciation guide follows the word e.g.: ...they asked the librarian for pictures of old Celtic <code><PRON: /seltik/></code> uniforms the basketball team, and it turns out that the project was he was supposed to find Celtic <code><PRON: /keltik/></code> costumes.
<code><SIC>...</SIC></code>	Used when a speaker makes a mistake without self-correcting, and the error might otherwise appear to be a transcribing error.	<i>(sic)</i> follows the word. e.g.: despite the fact that that was the era of Women's Liberation like i say on the cover of Newsweek, and Gloria Steinman <i>(sic)</i> and uh Betty Friedan...
UNCERTAIN or UNINTELLIGIBLE SPEECH		
<code>(xx)</code> <code>(words)</code>	Two x's in parentheses indicate one or more words that are completely unintelligible. Words surrounded by parentheses indicate the transcription is uncertain.	i don't (xx) whole (xx) analysis it just struck me... lemme not write it that way (lest it be confused) with C syntax...

NAMES

When participants' names occur in a recording, they are changed to pseudonyms in the transcript, except in the case of most public colloquia (i.e. COL-prefixed files). In some cases, names of non-present people referred to in the recording are also changed. There is no SGML marking for names.

Appendix B

Results of Keyword Analysis BNC Corpus

N	Keyword	Hand-off Corpus Frequency	Hand- off Corpus Percent	Reference Corpus Frequency	Reference Corpus Percent	Keyness Statistic	p
1	XX	643	2.98	1		7942.47	2E-21
2	UM	490	2.27	279		5054.15	6E-21
3	HER	475	2.20	14990	0.15	1691.71	2E-19
4	SHE	605	2.80	31895	0.31	1596.67	2E-19
5	SHE'S	245	1.13	8920	0.09	806.13	2E-18
6	UH	69	0.32	63		669.60	3E-18
7	BLOOD	55	0.25	530		316.62	4E-17
8	PAIN	48	0.22	410		287.07	5E-17
9	OKAY	136	0.63	11192	0.11	253.05	8E-17
10	LITERS	16	0.07	0		197.54	2E-16
11	ALERT	22	0.10	41		190.28	2E-16
12	ORIENTED	18	0.08	8		190.17	2E-16
13	HE'S	135	0.63	15249	0.15	183.32	2E-16
14	EDEMA	14	0.06	0		172.84	3E-16
15	GAVE	48	0.22	1531	0.01	169.18	3E-16
16	HIS	122	0.56	14137	0.14	160.90	4E-16
17	HEPLOCK	13	0.06	0		160.50	4E-16
18	V	41	0.19	1172	0.01	152.77	5E-16
19	DILAUDID	12	0.06	0		148.15	5E-16
20	HEMOGLOBIN	12	0.06	0		148.15	5E-16
21	R	47	0.22	1897	0.02	145.49	6E-16
22	ABDOMINAL	13	0.06	3		145.07	6E-16
23	HAS	118	0.55	14702	0.14	142.84	6E-16
24	PNEUMONIA	15	0.07	19		138.61	7E-16
25	P	61	0.28	4039	0.04	135.62	8E-16
26	UMM	20	0.09	114		134.46	8E-16
27	BOWEL	14	0.06	16		131.46	9E-16
28	C	66	0.31	5240	0.05	126.57	1E-15
29	ORDERED	21	0.10	176		126.31	1E-15
30	HMM	25	0.12	359		125.24	1E-15
31	IMPAIRED	13	0.06	13		124.51	1E-15
32	DOCTOR	35	0.16	1111	0.01	123.65	1E-15
33	POTASSIUM	16	0.07	52		123.55	1E-15
34	VITALS	10	0.05	0		123.46	1E-15
35	HE	258	1.19	57099	0.55	121.08	1E-15
36	SO	267	1.24	61294	0.59	114.97	2E-15
37	HEPLOCKED	9	0.04	0		111.11	2E-15
38	GETS	41	0.19	2115	0.02	108.92	2E-15
39	POINT	70	0.32	6961	0.07	108.74	2E-15
40	FLUID	15	0.07	64		108.66	2E-15

Appendix B

Results of Keyword Analysis BNC Corpus

N	Keyword	Hand-off Corpus Frequency	Hand- off Corpus Percent	Reference Corpus Frequency	Reference Corpus Percent	Keyness Statistic	p
41	SALINE	10	0.05	4		106.72	2E-15
42	NOPE	16	0.07	94		106.69	2E-15
43	CAME	58	0.27	4913	0.05	105.02	2E-15
44	PICC	9	0.04	1		104.61	2E-15
45	N	52	0.24	3950	0.04	103.52	2E-15
46	LUNGS	14	0.06	60		101.31	3E-15
47	PULSE	13	0.06	43		99.99	3E-15
48	URINE	12	0.06	28		99.40	3E-15
49	FOREARM	9	0.04	3		97.63	3E-15
50	ABDOMEN	10	0.05	9		97.21	3E-15
51	SINUS	10	0.05	10		95.77	3E-15
52	HAD	148	0.69	28164	0.27	94.73	4E-15
53	NEGATIVE	21	0.10	403		93.79	4E-15
54	DRESSING	15	0.07	129		89.50	5E-15
55	MORPHINE	9	0.04	7		89.21	5E-15
56	PATIENT	17	0.08	232		86.78	5E-15
57	TYLENOL	7	0.03	0		86.42	6E-15
58	OXING	7	0.03	0		86.42	6E-15
59	COUMADIN	7	0.03	0		86.42	6E-15
60	HEMO	7	0.03	0		86.42	6E-15
61	FOLEY	8	0.04	3		85.89	6E-15
62	COMMODE	8	0.04	3		85.89	6E-15
63	LABS	9	0.04	11		83.63	7E-15
64	RENAL	8	0.04	4		83.51	7E-15
65	FINE	34	0.16	1969	0.02	83.42	7E-15
66	PRETTY	30	0.14	1464	0.01	82.63	7E-15
67	CAUSE	21	0.10	548		81.77	7E-15
68	MORNING	50	0.23	4738	0.05	81.47	7E-15
69	ULTRASOUND	7	0.03	1		80.40	8E-15
70	NAUSEA	7	0.03	1		80.40	8E-15
71	HISTORY	24	0.11	901		77.42	1E-14
72	MIDNIGHT	13	0.06	119		76.06	1E-14
73	GUESS	21	0.10	642		75.63	1E-14
74	MILLIGRAMS	8	0.04	9		75.30	1E-14
75	DUODERM	6	0.03	0		74.07	1E-14
76	MEDS	6	0.03	0		74.07	1E-14
77	PHENERGAN	6	0.03	0		74.07	1E-14
78	SCOPED	6	0.03	0		74.07	1E-14
79	LASIX	6	0.03	0		74.07	1E-14
80	RAY	15	0.07	238		72.33	1E-14
81	DIALYSIS	7	0.03	4		72.02	1E-14
82	NEURO	7	0.03	4		72.02	1E-14

Appendix B

Results of Keyword Analysis BNC Corpus

N	Keyword	Hand-off Corpus Frequency	Hand- off Corpus Percent	Reference Corpus Frequency	Reference Corpus Percent	Keyness Statistic	p
83	LEFT	42	0.19	3784	0.04	71.82	1E-14
84	T	41	0.19	3608	0.03	71.67	1E-14
85	AIR	23	0.11	929		71.14	2E-14
86	TELE	8	0.04	14		69.98	2E-14
87	TWO	134	0.62	28306	0.27	69.50	2E-14
88	TODAY	47	0.22	4943	0.05	68.87	2E-14
89	LUMEN	6	0.03	1		68.34	2E-14
90	YESTERDAY	29	0.13	1792	0.02	67.88	2E-14
91	NIGHT	46	0.21	4829	0.05	67.53	2E-14
92	CS	10	0.05	64		65.11	3E-14
93	HYPERTENSION	6	0.03	2		65.09	3E-14
94	VERSED	6	0.03	2		65.09	3E-14
95	HEPARIN	6	0.03	2		65.09	3E-14
96	KINDA	8	0.04	24		62.88	3E-14
97	FLUIDS	6	0.03	3		62.63	3E-14
98	DEHYDRATION	6	0.03	3		62.63	3E-14
99	CED	5	0.02	0		61.73	4E-14
100	VICODIN	5	0.02	0		61.73	4E-14
101	MILLIEQUIVALENTS	5	0.02	0		61.73	4E-14
102	AFEBRILE	5	0.02	0		61.73	4E-14
103	TUBE	11	0.05	118		61.10	4E-14
104	STOOLS	7	0.03	13		60.58	4E-14
105	YEP	23	0.11	1210	0.01	60.29	4E-14
106	STOOL	9	0.04	54		59.66	5E-14
107	KIND	35	0.16	3210	0.03	58.84	5E-14
108	SHIFT	14	0.06	324		57.63	6E-14
109	ACUTE	8	0.04	35		57.59	6E-14
110	INTUBATED	5	0.02	1		56.33	7E-14
111	SUCTION	5	0.02	1		56.33	7E-14
112	YUP	7	0.03	19		56.21	7E-14
113	ANTIBIOTICS	8	0.04	41		55.32	8E-14
114	THIRTY	45	0.21	5529	0.05	55.32	8E-14
115	DECREASED	7	0.03	21		55.02	9E-14
116	E	35	0.16	3440	0.03	54.98	9E-14
117	ON	276	1.28	81729	0.79	54.88	9E-14
118	AND	740	3.43	267889	2.59	54.00	1E-13
119	RESPIRATORY	6	0.03	9		53.92	1E-13
120	BEDSIDE	6	0.03	9		53.92	1E-13
121	SIX	59	0.27	9084	0.09	53.67	1E-13
122	D	30	0.14	2629	0.03	52.64	1E-13
123	Q	15	0.07	507		51.25	2E-13
124	DIABETIC	6	0.03	13		50.43	2E-13

Appendix B

Results of Keyword Analysis BNC Corpus

N	Keyword	Hand-off Corpus Frequency	Hand- off Corpus Percent	Reference Corpus Frequency	Reference Corpus Percent	Keyness Statistic	p
125	ELEVATED	6	0.03	13		50.43	2E-13
126	CHEST	12	0.06	268		50.19	2E-13
127	PRESSURE	17	0.08	743		50.17	2E-13
128	M	32	0.15	3161	0.03	50.01	2E-13
129	CREATININE	4	0.02	0		49.38	2E-13
130	NANDA	4	0.02	0		49.38	2E-13
131	HYPOTENSION	4	0.02	0		49.38	2E-13
132	MILLIGRAM	4	0.02	0		49.38	2E-13
133	GASTRIC	4	0.02	0		49.38	2E-13
134	HEMODIALYSIS	4	0.02	0		49.38	2E-13
135	FISTULA	4	0.02	0		49.38	2E-13
136	CHEM	4	0.02	0		49.38	2E-13
137	KERLIX	4	0.02	0		49.38	2E-13
138	DYSPNEIC	4	0.02	0		49.38	2E-13
139	LITER	4	0.02	0		49.38	2E-13
140	NORMAL	18	0.08	917		48.20	3E-13
141	SHOWED	13	0.06	377		48.08	3E-13
142	TEMP	6	0.03	17		47.74	3E-13
143	NINETY	34	0.16	3773	0.04	46.99	4E-13
144	LITTLE	56	0.26	9111	0.09	46.81	4E-13
145	EIGHTY	31	0.14	3169	0.03	46.78	4E-13
146	ADMITTED	9	0.04	117		46.76	4E-13
147	PATENT	5	0.02	6		46.60	4E-13
148	SCOPE	9	0.04	123		45.91	5E-13
149	BILATERAL	5	0.02	7		45.46	5E-13
150	J	13	0.06	425		45.21	6E-13
151	FORTY	35	0.16	4142	0.04	44.97	6E-13
152	DIET	10	0.05	194		44.46	7E-13
153	FLUSHED	5	0.02	8		44.44	7E-13
154	AWHILE	4	0.02	1		44.38	7E-13
155	URINARY	4	0.02	1		44.38	7E-13
156	ACCU	4	0.02	1		44.38	7E-13
157	GIVING	19	0.09	1195	0.01	43.89	8E-13
158	BASELINE	5	0.02	10		42.67	1E-12
159	CLOTS	4	0.02	2		41.75	2E-12
160	SHORTNESS	4	0.02	2		41.75	2E-12
161	VOIDS	4	0.02	2		41.75	2E-12
162	MYERS	4	0.02	2		41.75	2E-12
163	WOUND	8	0.04	103		41.71	2E-12
164	LOWER	13	0.06	498		41.45	2E-12
165	PRECAUTIONS	6	0.03	31		41.40	2E-12
166	CHECK	17	0.08	1003		41.15	2E-12

Appendix B

Results of Keyword Analysis BNC Corpus

N	Keyword	Hand-off Corpus Frequency	Hand- off Corpus Percent	Reference Corpus Frequency	Reference Corpus Percent	Keyness Statistic	p
167	CODE	11	0.05	313		41.07	2E-12
168	LIKE	144	0.67	38410	0.37	40.93	2E-12
169	FOUR	65	0.30	12576	0.12	40.23	3E-12
170	REHAB	4	0.02	3		39.83	4E-12
171	NASAL	4	0.02	3		39.83	4E-12
172	ROOM	25	0.12	2471	0.02	39.04	6E-12
173	G	24	0.11	2290	0.02	38.82	7E-12
174	O	30	0.14	3540	0.03	38.67	8E-12
175	CULTURES	6	0.03	40		38.62	8E-12
176	X	20	0.09	1592	0.02	38.24	1E-11
177	WAS	250	1.16	78842	0.76	38.24	1E-11
178	LAST	50	0.23	8649	0.08	37.83	1E-11
179	ANYWAYS	4	0.02	5		37.04	3E-11
180	ZOSYN	3	0.01	0		37.04	3E-11
181	ZANAX	3	0.01	0		37.04	3E-11
182	POLYMEM	3	0.01	0		37.04	3E-11
183	RESPERS	3	0.01	0		37.04	3E-11
184	TACHY	3	0.01	0		37.04	3E-11
185	VAS	3	0.01	0		37.04	3E-11
186	VANCO	3	0.01	0		37.04	3E-11
187	INCISION	3	0.01	0		37.04	3E-11
188	BUH	3	0.01	0		37.04	3E-11
189	FENTANYL	3	0.01	0		37.04	3E-11
190	MESTINON	3	0.01	0		37.04	3E-11
191	LYTELY	3	0.01	0		37.04	3E-11
192	LOCKPORT	3	0.01	0		37.04	3E-11
193	DYSPHAGIA	3	0.01	0		37.04	3E-11
194	DARVOCET	3	0.01	0		37.04	3E-11
195	DIFFS	3	0.01	0		37.04	3E-11
196	COLOR	3	0.01	0		37.04	3E-11
197	EXTUBATED	3	0.01	0		37.04	3E-11
198	EXPIRATORY	3	0.01	0		37.04	3E-11
199	DRIP	6	0.03	50		36.15	8E-11
200	CHECKS	7	0.03	93		36.08	9E-11
201	VOMITING	4	0.02	6		35.95	1E-10
202	GOTTEN	5	0.02	22		35.95	1E-10
203	HOME	44	0.20	7331	0.07	35.40	3E-10
204	FIVE	66	0.31	13803	0.13	34.91	5E-10
205	GAUGE	5	0.02	25		34.80	7E-10
206	QUESTIONS	19	0.09	1597	0.02	34.62	1E-09
207	EIGHT	40	0.19	6387	0.06	34.42	2E-09
208	RESTRICTION	6	0.03	60		34.11	2E-09

Appendix B

Results of Keyword Analysis BNC Corpus

N	Keyword	Hand-off Corpus Frequency	Hand- off Corpus Percent	Reference Corpus Frequency	Reference Corpus Percent	Keyness Statistic	p
209	DIFF	5	0.02	27		34.10	2E-09
210	COMPLAINING	7	0.03	110		33.88	3E-09
211	PERCENT	23	0.11	2415	0.02	33.74	3E-09
212	ORIENTATED	5	0.02	29		33.45	4E-09
213	ANXIOUS	7	0.03	114		33.41	5E-09
214	PLACED	8	0.04	181		33.27	5E-09
215	SOFT	9	0.04	272		32.60	8E-09
216	SUNBURN	3	0.01	1		32.54	9E-09
217	UNIT	11	0.05	498		31.76	1E-08
218	LAB	5	0.02	37		31.22	2E-08
219	HOURS	20	0.09	1978	0.02	31.21	2E-08
220	HOUR	20	0.09	1979	0.02	31.20	2E-08
221	NINE	37	0.17	6017	0.06	30.94	2E-08
222	INSULIN	4	0.02	14		30.37	3E-08
223	LUMBAR	3	0.01	2		30.31	3E-08
224	BEEPER	3	0.01	2		30.31	3E-08
225	BEDPAN	3	0.01	2		30.31	3E-08
226	BEEN	92	0.43	23430	0.23	29.98	4E-08
227	PREP	5	0.02	44		29.62	5E-08
228	CHECKED	8	0.04	232		29.59	5E-08
229	OXYGEN	7	0.03	156		29.31	6E-08
230	LOW	14	0.06	1003		29.23	6E-08
231	BATHROOM	9	0.04	334		29.22	6E-08
232	HIM	63	0.29	13987	0.14	29.19	6E-08
233	BREATH	7	0.03	159		29.06	7E-08
234	ENDED	8	0.04	246		28.72	8E-08
235	FIFTY	34	0.16	5494	0.05	28.71	8E-08
236	INTACT	4	0.02	18		28.60	9E-08
237	THIS	78	0.36	64794	0.63	-28.88	7E-08
238	MM	28	0.13	32838	0.32	-31.08	2E-08
239	OH	55	0.25	52382	0.51	-33.31	5E-09
240	BY	12	0.06	21422	0.21	-33.94	3E-09
241	WHO	5	0.02	15006	0.15	-34.35	2E-09
242	SORT	3	0.01	12936	0.13	-34.86	6E-10
243	I'VE	8	0.04	18227	0.18	-35.21	5E-10
244	THEM	25	0.12	32369	0.31	-35.55	2E-10
245	NO	62	0.29	59129	0.57	-37.74	2E-11
246	IF	46	0.21	48515	0.47	-38.15	1E-11
247	WOULD	18	0.08	27906	0.27	-38.34	1E-11
248	IT'S	76	0.35	68919	0.67	-39.04	6E-12
249	OF	272	1.26	188013	1.82	-42.37	1E-12
250	OR	26	0.12	36033	0.35	-43.36	1E-12

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Results of Keyword Analysis BNC Corpus

N	Keyword	Hand-off Corpus Frequency	Hand- off Corpus Percent	Reference Corpus Frequency	Reference Corpus Percent	Keyness Statistic	p
251	MEAN	11	0.05	23558	0.23	-43.50	9E-13
252	MY	11	0.05	23641	0.23	-43.77	9E-13
253	SAY	8	0.04	22168	0.21	-48.56	3E-13
254	#	7	0.03	21721	0.21	-50.62	2E-13
255	TO	352	1.63	242687	2.35	-54.29	1E-13
256	THERE	46	0.21	55460	0.54	-54.93	9E-14
257	WE	80	0.37	80033	0.77	-56.78	7E-14
258	YEAH	78	0.36	81874	0.79	-63.97	3E-14
259	BE	44	0.20	60296	0.58	-71.64	2E-14
260	IT	216	1.00	181923	1.76	-85.26	6E-15
261	DO	33	0.15	57648	0.56	-89.72	5E-15
262	YOUR	5	0.02	31487	0.30	-95.89	3E-15
263	WHAT	41	0.19	67694	0.66	-99.71	3E-15
264	AS	13	0.06	45212	0.44	-111.57	2E-15
265	WELL	29	0.13	62068	0.60	-114.86	2E-15
266	YES	6	0.03	39825	0.39	-123.03	1E-15
267	THE	492	2.28	436894	4.23	-241.80	9E-17
268	ER	4	0.02	88645	0.86	-333.00	3E-17
269	YOU	143	0.66	230695	2.23	-335.59	3E-17

Appendix C

Results of Keyword Analysis MICASE Corpus

N	Keyword	Hand-off Corpus Frequency	Hand- off Corpus Percent	Reference Corpus Frequency	Reference Corpus Percent	Keyness Statistic	p
1	SHE	605	2.801	2280	0.127	2465.46	5.6E-20
2	HER	475	2.199	1347	0.075	2158.30	8.3E-20
3	XX	643	2.977	5322	0.298	1759.78	1.6E-19
4	SHE'S	245	1.134	725	0.041	1093.58	6.7E-19
5	HE	258	1.195	4731	0.265	369.75	2.1E-17
6	HE'S	135	0.625	1222	0.068	346.52	2.6E-17
7	PAIN	48	0.222	60		278.30	5.5E-17
8	BLOOD	55	0.255	136		261.22	6.8E-17
9	UM	490	2.269	17834	0.997	255.73	7.3E-17
10	HIS	122	0.565	1594	0.089	239.14	9.3E-17
11	MORNING	50	0.232	153		219.99	1.2E-16
12	GOT	133	0.616	2145	0.120	216.32	1.3E-16
13	HAD	148	0.685	2891	0.162	197.64	1.8E-16
14	DOCTOR	35	0.162	54		192.06	2E-16
15	ALERT	22	0.102	1		186.68	2.2E-16
16	GAVE	48	0.222	237	0.013	172.50	3E-16
17	NIGHT	46	0.213	208	0.012	172.19	3E-16
18	UMM	20	0.093	6		149.21	5.2E-16
19	CAME	58	0.269	543	0.030	145.43	5.8E-16
20	ON	276	1.278	10250	0.573	137.07	7.3E-16
21	HOME	44	0.204	302	0.017	133.41	8.1E-16
22	YESTERDAY	29	0.134	84		130.20	9E-16
23	HMM	25	0.116	52		125.63	1E-15
24	EDEMA	14	0.065	0		124.01	1.1E-15
25	BOWEL	14	0.065	0		124.01	1.1E-15
26	HIM	63	0.292	820	0.046	123.76	1.1E-15
27	DRESSING	15	0.069	2		120.60	1.2E-15
28	ORDERED	21	0.097	28		119.77	1.3E-15
29	PNEUMONIA	15	0.069	3		116.72	1.4E-15
30	HEPLOCK	13	0.060	0		115.15	1.5E-15
31	WAS	250	1.158	9644	0.539	113.89	1.6E-15
32	SIX	59	0.273	803	0.045	111.65	1.7E-15
33	HAS	118	0.546	3033	0.170	111.52	1.7E-15
34	BEEN	92	0.426	1974	0.110	110.09	1.8E-15
35	V	41	0.190	357	0.020	107.78	2E-15
36	DILAUDID	12	0.056	0		106.29	2.1E-15
37	LEFT	42	0.194	409	0.023	102.52	2.5E-15
38	IMPAIRED	13	0.060	3		99.78	2.8E-15
39	URINE	12	0.056	1		99.27	2.9E-15
40	LITERS	16	0.074	15		99.14	2.9E-15

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Results of Keyword Analysis MICASE Corpus

N	Keyword	Hand-off Corpus Frequency	Hand- off Corpus Percent	Reference Corpus Frequency	Reference Corpus Percent	Keyness Statistic	p
41	GETS	41	0.190	434	0.024	94.39	3.6E-15
42	ORIENTED	18	0.083	33		94.01	3.7E-15
43	MIDNIGHT	13	0.060	5		94.00	3.7E-15
44	SINUS	10	0.046	0		88.58	4.9E-15
45	VITALS	10	0.046	0		88.58	4.9E-15
46	ABDOMEN	10	0.046	0		88.58	4.9E-15
47	P	61	0.282	1117	0.062	87.21	5.3E-15
48	PATIENT	17	0.079	36		84.94	6.1E-15
49	POTASSIUM	16	0.074	28		84.72	6.1E-15
50	TODAY	47	0.218	684	0.038	83.90	6.4E-15
51	THIRTY	45	0.208	636	0.036	82.42	7E-15
52	SALINE	10	0.046	1		81.90	7.3E-15
53	RAY	15	0.069	24		81.47	7.5E-15
54	PICC	9	0.042	0		79.72	8.4E-15
55	MORPHINE	9	0.042	0		79.72	8.4E-15
56	FOREARM	9	0.042	0		79.72	8.4E-15
57	HEPLOCKED	9	0.042	0		79.72	8.4E-15
58	CHEST	12	0.056	8		79.56	8.5E-15
59	FORTY	35	0.162	384	0.021	78.49	9.1E-15
60	AIR	23	0.106	129		77.64	9.6E-15
61	NINETY	34	0.157	371	0.021	76.56	1E-14
62	LUNGS	14	0.065	25		73.69	1.3E-14
63	HEMOGLOBIN	12	0.056	12		73.31	1.3E-14
64	BED	16	0.074	47		71.46	1.5E-14
65	FOLEY	8	0.037	0		70.86	1.6E-14
66	COMMODE	8	0.037	0		70.86	1.6E-14
67	FINE	34	0.157	428	0.024	68.60	1.9E-14
68	NINE	37	0.171	526	0.029	67.42	2.1E-14
69	EIGHTY	31	0.144	355	0.020	67.33	2.2E-14
70	STOOL	9	0.042	3		66.29	2.4E-14
71	LAST	50	0.232	1000	0.056	64.90	2.7E-14
72	TELE	8	0.037	1		64.61	2.8E-14
73	FIFTY	34	0.157	465	0.026	64.05	2.9E-14
74	ABDOMINAL	13	0.060	29		63.87	3E-14
75	C	66	0.306	1669	0.093	63.76	3E-14
76	FIVE	66	0.306	1697	0.095	62.27	3.5E-14
77	DIALYSIS	7	0.032	0		62.00	3.6E-14
78	OXING	7	0.032	0		62.00	3.6E-14
79	COUMADIN	7	0.032	0		62.00	3.6E-14
80	ULTRASOUND	7	0.032	0		62.00	3.6E-14
81	HEMO	7	0.032	0		62.00	3.6E-14
82	TONIGHT	15	0.069	54		61.91	3.7E-14

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Results of Keyword Analysis MICASE Corpus

N	Keyword	Hand-off Corpus Frequency	Hand- off Corpus Percent	Reference Corpus Frequency	Reference Corpus Percent	Keyness Statistic	p
83	UP	114	0.528	4057	0.227	61.71	3.8E-14
84	EIGHT	40	0.185	682	0.038	61.51	3.8E-14
85	OLD	32	0.148	428	0.024	61.43	3.9E-14
86	FOUR	65	0.301	1673	0.094	61.24	4E-14
87	RENAL	8	0.037	2		60.90	4.1E-14
88	NOPE	16	0.074	70		60.77	4.2E-14
89	ROOM	25	0.116	247	0.014	60.41	4.3E-14
90	TWENTY	44	0.204	840	0.047	60.14	4.5E-14
91	DID	82	0.380	2489	0.139	59.77	4.7E-14
92	FLUID	15	0.069	61		58.83	5.2E-14
93	ANTIBIOTICS	8	0.037	3		58.04	5.8E-14
94	STOOLS	7	0.032	1		56.00	7.5E-14
95	TYLENOL	7	0.032	1		56.00	7.5E-14
96	CAUSE	21	0.097	183	0.010	55.16	8.4E-14
97	HOUR	20	0.093	163		54.79	8.9E-14
98	DIET	10	0.046	16		54.31	9.5E-14
99	MILLIGRAMS	8	0.037	5		53.66	1.1E-13
100	MM	28	0.130	377	0.021	53.44	1.1E-13
101	TOMORROW	18	0.083	129		53.24	1.1E-13
102	LUMEN	6	0.028	0		53.14	1.1E-13
103	DUODERM	6	0.028	0		53.14	1.1E-13
104	HEPARIN	6	0.028	0		53.14	1.1E-13
105	SCOPED	6	0.028	0		53.14	1.1E-13
106	PHENERGAN	6	0.028	0		53.14	1.1E-13
107	LASIX	6	0.028	0		53.14	1.1E-13
108	DRIP	6	0.028	0		53.14	1.1E-13
109	DEHYDRATION	6	0.028	0		53.14	1.1E-13
110	NAUSEA	7	0.032	2		52.52	1.3E-13
111	NEURO	7	0.032	2		52.52	1.3E-13
112	POINT	70	0.324	2092	0.117	52.36	1.3E-13
113	YEP	23	0.106	249	0.014	52.08	1.4E-13
114	SAID	58	0.269	1592	0.089	49.69	2.1E-13
115	WOUND	8	0.037	8		48.87	2.4E-13
116	TWO	134	0.620	5706	0.319	47.53	3.2E-13
117	ADMITTED	9	0.042	16		47.43	3.3E-13
118	SHIFT	14	0.065	78		47.41	3.3E-13
119	HOURS	20	0.093	207	0.012	46.77	3.8E-13
120	R	47	0.218	1188	0.066	45.41	5.4E-13
121	TUBE	11	0.051	40		45.21	5.7E-13
122	CED	5	0.023	0		44.29	7.3E-13
123	VICODIN	5	0.023	0		44.29	7.3E-13
124	A FEBRILE	5	0.023	0		44.29	7.3E-13

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Results of Keyword Analysis MICASE Corpus

N	Keyword	Hand-off Corpus Frequency	Hand- off Corpus Percent	Reference Corpus Frequency	Reference Corpus Percent	Keyness Statistic	p
125	SUCTION	5	0.023	0		44.29	7.3E-13
126	INTUBATED	5	0.023	0		44.29	7.3E-13
127	MILLIEQUIVALENTS	5	0.023	0		44.29	7.3E-13
128	MISTER	5	0.023	0		44.29	7.3E-13
129	ORIENTATED	5	0.023	0		44.29	7.3E-13
130	MEDS	6	0.028	2		44.20	7.5E-13
131	SIXTY	24	0.111	337	0.019	44.19	7.6E-13
132	NORMAL	18	0.083	182	0.010	42.79	1.2E-12
133	PULSE	13	0.060	78		42.38	1.4E-12
134	ACUTE	8	0.037	14		42.35	1.4E-12
135	PRESSURE	17	0.079	161		42.27	1.4E-12
136	VERSED	6	0.028	3		41.76	1.7E-12
137	O	30	0.139	565	0.032	41.60	1.8E-12
138	GIVING	19	0.088	221	0.012	40.77	2.6E-12
139	N	52	0.241	1516	0.085	40.51	2.9E-12
140	CHECKS	7	0.032	9		40.29	3.2E-12
141	AND	740	3.426	48197	2.695	40.13	3.5E-12
142	BATHROOM	9	0.042	27		39.88	3.9E-12
143	RESPIRATORY	6	0.028	4		39.78	4.1E-12
144	BEDSIDE	6	0.028	4		39.78	4.1E-12
145	OX	6	0.028	4		39.78	4.1E-12
146	FLUIDS	6	0.028	4		39.78	4.1E-12
147	FLUSHED	5	0.023	1		38.90	6.8E-12
148	NEGATIVE	21	0.097	293	0.016	38.88	6.9E-12
149	HANDS	12	0.056	74		38.56	8.4E-12
150	OFF	40	0.185	1015	0.057	38.43	9.2E-12
151	COMPLAINING	7	0.032	11		38.21	1.1E-11
152	ANXIOUS	7	0.032	11		38.21	1.1E-11
153	PRECAUTIONS	6	0.028	5		38.11	1.2E-11
154	DIABETIC	6	0.028	5		38.11	1.2E-11
155	CS	10	0.046	45		37.50	1.9E-11
156	TOLD	20	0.093	286	0.016	36.24	7.1E-11
157	LEG	8	0.037	23		36.01	9.9E-11
158	BLEEDING	5	0.023	2		35.96	1.1E-10
159	BILATERAL	5	0.023	2		35.96	1.1E-10
160	E	35	0.162	851	0.048	35.66	1.7E-10
161	VOMITING	4	0.019	0		35.43	2.7E-10
162	MYERS	4	0.019	0		35.43	2.7E-10
163	CREATININE	4	0.019	0		35.43	2.7E-10
164	HYPOTENSION	4	0.019	0		35.43	2.7E-10
165	KERLIX	4	0.019	0		35.43	2.7E-10
166	HEMODIALYSIS	4	0.019	0		35.43	2.7E-10

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Results of Keyword Analysis MICASE Corpus

N	Keyword	Hand-off Corpus Frequency	Hand- off Corpus Percent	Reference Corpus Frequency	Reference Corpus Percent	Keyness Statistic	p
167	MILLIGRAM	4	0.019	0		35.43	2.7E-10
168	NANDA	4	0.019	0		35.43	2.7E-10
169	GASTRIC	4	0.019	0		35.43	2.7E-10
170	FISTULA	4	0.019	0		35.43	2.7E-10
171	URINARY	4	0.019	0		35.43	2.7E-10
172	DYSPNEIC	4	0.019	0		35.43	2.7E-10
173	PILLOWS	4	0.019	0		35.43	2.7E-10
174	ELEVATED	6	0.028	7		35.37	3.1E-10
175	LABS	9	0.042	37		35.13	5.6E-10
176	SEVENTY	19	0.088	269	0.015	34.73	8.6E-10
177	SCOPE	9	0.042	38		34.72	8.8E-10
178	DONE	35	0.162	872	0.049	34.49	1.4E-09
179	DAY	28	0.130	594	0.033	33.92	2.8E-09
180	SEVEN	28	0.130	597	0.033	33.72	3.5E-09
181	SHOWED	13	0.060	116		33.62	3.8E-09
182	HISTORY	24	0.111	448	0.025	33.60	3.9E-09
183	THEY	194	0.898	10258	0.574	33.56	4E-09
184	BACK	53	0.245	1743	0.097	33.46	4.4E-09
185	SUGAR	7	0.032	17		33.44	4.4E-09
186	SOFT	9	0.042	42		33.19	5.4E-09
187	NECK	7	0.032	19		32.17	1.1E-08
188	PATENT	5	0.023	4		32.02	1.2E-08
189	DRY	9	0.042	46		31.80	1.4E-08
190	WITH	157	0.727	7980	0.446	31.71	1.5E-08
191	DECREASED	7	0.032	20		31.58	1.6E-08
192	TEMP	6	0.028	11		31.33	1.9E-08
193	GAUGE	5	0.023	5		30.54	3E-08
194	SHORTNESS	4	0.019	1		30.45	3.1E-08
195	CLOTS	4	0.019	1		30.45	3.1E-08
196	THREE	65	0.301	2480	0.139	30.21	3.6E-08
197	DIDN'T	50	0.232	1697	0.095	29.72	4.7E-08
198	EVERY	27	0.125	619	0.035	29.72	4.7E-08
199	T	41	0.190	1257	0.070	29.35	5.8E-08
200	CHECK	17	0.079	257	0.014	29.31	5.9E-08
201	TEA	5	0.023	6		29.27	6E-08
202	SURGERY	6	0.028	14		29.05	6.8E-08
203	RESTRICTION	6	0.028	14		29.05	6.8E-08
204	SENT	11	0.051	98		28.48	9.2E-08
205	RUNNING	11	0.051	98		28.48	9.2E-08
206	MY	11	0.051	3284	0.184	-28.89	7.4E-08
207	WHERE	9	0.042	3003	0.168	-29.23	6.1E-08
208	IT	216	1.000	25437	1.422	-30.28	3.4E-08

Appendix C

Results of Keyword Analysis MICASE Corpus

N	Keyword	Hand-off Corpus Frequency	Hand- off Corpus Percent	Reference Corpus Frequency	Reference Corpus Percent	Keyness Statistic	p
209	SORT	3	0.014	2055	0.115	-30.75	2.6E-08
210	CAN	41	0.190	7395	0.413	-32.56	8.6E-09
211	THINGS	6	0.028	2741	0.153	-33.47	4.3E-09
212	MORE	14	0.065	4012	0.224	-33.90	2.9E-09
213	MAKE	3	0.014	2220	0.124	-34.25	1.9E-09
214	WHO	5	0.023	2622	0.147	-34.63	1.1E-09
215	THING	5	0.023	2646	0.148	-35.12	5.7E-10
216	WAY	6	0.028	2942	0.164	-37.46	1.9E-11
217	BY	12	0.056	4034	0.226	-39.53	4.7E-12
218	ARE	57	0.264	9982	0.558	-41.48	1.9E-12
219	WOULD	18	0.083	5057	0.283	-41.88	1.6E-12
220	SAY	8	0.037	3679	0.206	-45.12	5.8E-13
221	WE	80	0.370	12943	0.724	-45.26	5.6E-13
222	MEAN	11	0.051	4525	0.253	-51.69	1.4E-13
223	HOW	13	0.060	4943	0.276	-53.41	1.1E-13
224	IT'S	76	0.352	13237	0.740	-54.48	9.3E-14
225	IF	46	0.213	9801	0.548	-57.47	6.2E-14
226	GONNA	7	0.032	4192	0.234	-59.18	5E-14
227	DO	33	0.153	8894	0.497	-70.55	1.6E-14
228	YOUR	5	0.023	4335	0.242	-70.80	1.6E-14
229	THESE	5	0.023	4665	0.261	-78.01	9.4E-15
230	BE	44	0.204	10997	0.615	-80.03	8.2E-15
231	THAT	285	1.320	39084	2.185	-87.15	5.3E-15
232	OR	26	0.120	9064	0.507	-91.72	4.2E-15
233	AS	13	0.060	7414	0.415	-102.37	2.5E-15
234	UH	69	0.319	16680	0.933	-116.77	1.4E-15
235	WHAT	41	0.190	12904	0.721	-119.76	1.3E-15
236	OF	272	1.259	42103	2.354	-133.85	8E-16
237	THIS	78	0.361	20192	1.129	-153.77	4.7E-16
238	THE	492	2.278	80756	4.515	-301.39	4.2E-17
239	YOU	143	0.662	39968	2.235	-333.88	3E-17

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