Chapter 34. Handoffs: Implications for Nurses

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Background

The transfer of essential information and the responsibility for care of the patient from one health care provider to another is an integral component of communication in health care. This critical transfer point is known as a handoff.[1–3] An effective handoff supports the transition of critical information and continuity of care and treatment. However, the literature continues to highlight the effects of ineffective handoffs: adverse events and patient safety risks.[4–11] The Institute of Medicine (IOM) reported that "it is in inadequate handoffs that safety often fails first"[12] (p. 45). This chapter presents an overview of handoffs, a summary of selected literature, gaps in the knowledge, and suggestions for quality improvement initiatives and recommendations for future research.

What Is a Handoff?

First one needs to recognize the term "handoff" and synonymous terms that are used in a wide variety of contexts and clinical settings. There are a number of terms used to describe the handoff process, such as handover,[1, 13, 14] sign-out,[15, 16] signover,[17] cross-coverage,[18, 19] and shift report.[20–22] For the purpose of this discussion, the term "handoff" will be used and defined as, "The transfer of information (along with authority and responsibility) during transitions in care across the continuum; to include an opportunity to ask questions, clarify and confirm"[23] (p. 31). The concept of a handoff is complex and "includes communication between the change of shift, communication between care providers about patient care, handoff, records, and information tools to assist in communication between care providers about patient care"[1] (p. 1). The handoff is also "a mechanism for transferring information, primary responsibility, and authority from one or a set of caregivers, to oncoming staff"[17] (p. 1). So, conceptually, the handoff must provide critical information about the patient, include communication methods between sender and receiver, transfer responsibility for care, and be performed within complex organizational systems and cultures that impact patient safety. The complexity and nuance of the type of information, communication methods, and various caregivers for each of these factors impact the effectiveness and efficiency of the handoff as well as patient safety.

Why Is There a Problem With Handoffs Today?

As health care has evolved and become more specialized, with greater numbers of clinicians involved in patient care, patients are likely to encounter more handoffs than in the simpler and less complex health care delivery system of a few generations ago.[11] Ineffective handoffs can contribute to gaps in patient care and breaches (i.e., failures) in patient safety, including medication errors,[19, 24] wrong-site surgery,[9] and patient deaths.[4, 7] Clinical environments are dynamic and complex, presenting many challenges for effective communication among health care providers, patients, and families.[25–27] Some nursing units may "transfer or discharge 40 percent to 70 percent of their patients every day"[28] (p. 36), thereby illustrating the frequency of handoffs encountered daily and the number of possible breaches at each transition point.

Our expanding knowledge base and technological advances in health care spawn additional categories of health care providers and specialized units designed for specific diseases, procedures, and phases of illness and/or rehabilitation. This dynamic, ever-increasing specialization, while undertaken to improve patient outcomes and enhance health care delivery, can contribute to serious risks in health care delivery and promote fragmentation of care and problems with handoffs.[3, 10, 29] It is ironic that as health care has become more sophisticated due to advances in medical technology focused on saving lives and enhancing the quality of life, the risks associated with the handoffs have garnered attention in the popular press[30] and reports from health care organizations and providers.[3, 4, 6, 10, 31–35] The hazard that "fumbled handoffs"[7, 10] pose to patient safety and the delivery of quality health care cannot be ignored. Ineffective handoffs can lead to a host of patient safety problems; research[1] and development of strategies to reduce these problems are required.[33, 34]

What contributes to fumbled handoffs? An examination of how communication breakdown occurs among other disciplines may have implications for nurses. A study of incidents reported by surgeons found communication breakdowns were a contributing factor in 43 percent of incidents, and two-thirds of these communication issues were related to handoff issues.[36] The use of sign-out sheets for communication between physicians is a common practice, yet one study found errors in 67 percent of the sheets.[15] The errors included missing allergy and weight, and incorrect medication information.[15] In another study, focused on near misses and adverse events involving novice nurses, the nurses identified handoffs as a concern, particularly related to incomplete or missing information.[37]

Acute care hospitals have become organizationally complex; this contributes to difficulty communicating with the appropriate health care provider. Due to the proliferation of specialties and clinicians providing care to a single patient, nurses and doctors have reported difficulty in even contacting the correct health care provider.[38] One study found that only 23 percent of physicians could correctly identify the primary nurse responsible for their patient, and only 42 percent of nurses could identify the physician responsible for the patient in their care.[39] This study highlights the potential gaps in communication among health care providers transferring information about care and treatment.

A handoff is largely dependent on the interpersonal communication skills of the caregiver[33] as well as the knowledge and experience level of the caregiver. There is reported variability in quality,[40] lack of structure in how handoffs usually occur,[33] and variances in shift handoffs.[22, 41–43] Concern has been raised that the transition of care between providers during handoffs will continue to be problematic as research indicates that "only 8 percent of medical schools teach how to hand off patients in formal didactic session"[3] (p. 1097), creating a large educational gap in new professionals and persistence of traditional models. Physicians and nurses communicate differently. Nurses are focused on the "big picture" with "broad and narrative"[44] (p. i86) descriptions of the situation, whereas physicians are focused on bullets of critical information.[44] A technique that seeks to bridge the gap between the different communication styles of nurses and physician is the situation, background, assessment, recommendation (SBAR) briefing model[44] that is being used successfully to enhance handoff communication.[45]

The issue of handoffs has become so prominent that the Joint Commission (formerly the Joint Commission on Accreditation of Healthcare Organizations, JCAHO) introduced a national patient safety goal on handoffs that became effective in January 2006.[45] The national safety goals, developed by the Joint Commission with input from the Sentinel Event Advisory Group, identify new actions with the potential to protect patient safety.[46] The patient safety goal requires

health care organizations to "implement a standardized approach to "handoff" communications, including an opportunity to ask and respond to questions."[47] While the goal is simply stated, it is challenging to develop and implement effective strategies for handoffs across various health care settings, given the complexity of health care delivery. The Joint Commission's guidelines for implementation of the safety goal are presented in Table 1,[48] and suggested strategies for effective handoffs are listed in Table 2.

Table 1. Joint Commission 2008 Hospital Patient Safety Goals Implementation Expectations for Handoffs

1.	Interactive communications allowing for the opportunity for questioning between the giver and receiver of patient information.
2.	Up-to-date information regarding the patient's care, treatment and services, condition, and any recent or anticipated changes.
3.	A process for verification of the received information, including repeat-back or read-back, as appropriate.
4.	An opportunity for the receiver of the handoff information to review relevant patient historical data, which may include previous care, treatment, and services.
5.	Interruptions during handoffs are limited to minimize the possibility that information would fail to be conveyed or would be forgotten.

Source: Adapted from Joint Commission, National Patient Safety Goals Hospital Program.[48]

Following are examples of each of these handoff expectations:
1. Nurse Brown on unit A is receiving report from Nurse Green who is transferring the patient from unit B to unit A. The patient medication administration record (MAR) does not indicate the patient has received any pain medication in the past shift. When Nurse Brown asks about this, Nurse Green realizes she gave morphine sulfate but did not document it on the MAR. Due to Nurse Brown's question, Nurse Green realizes the omission and communicates the information and documents it in the medical record, preventing an accidental overdose of a medication.
2. A patient who had undergone a surgical procedure has not been out of bed since being transferred to the nursing unit. The offgoing nurse alerts the oncoming nurses that the patient will need help getting out of bed, possibly preventing a patient fall.
3. Handoffs require a process for verification of the received information, including read back, as appropriate. For example, the receiver of the telephone message regarding a laboratory value is asked to write it down and read the message back, including the name of the patient, the test, and the test result/interpretation.[49, 50] Information to be recorded should also include the name and credentials of sender and receiver and the date and time.[50]

> *Laboratory Technician*: I am calling with the lab results on Mr. Green.
> *Nurse*: Let me get a notepad. You are calling the lab results for Mrs. Marie White?
> *Laboratory Technician*: No, I am calling results for Mr. Tom Green ID #12345678. Mr. Green's potassium level is 5.1, which was drawn at 0700 today.
> *Nurse*: You reported that Mr. Tom Green's potassium level is 5.1. This is Nancy Jones, RN.
> *Laboratory Technician*: Thank you, Nancy. That is correct; Mr. Tom Green's potassium level is 5.1 This is Bill Smith, lab tech.

4. The receiver of the handoff information has an opportunity to review relevant patient/client/resident historical data, which may include previous care, treatment, and services. A patient has been transferred, and the nurse notes several omissions from

previous medication orders, including insulin. The nurse notifies the physician and obtains correct and complete medication orders, thereby avoiding a potentially serious medication error.

5. A nursing unit schedules staffing coverage to accommodate the shift change and minimize the occurrence of interruptions during change-of-shift report. Ancillary staff does not leave the nursing unit until report is completed to assure phones are answered and timely responses to call lights are made so nurses can provide report effectively and efficiently.

Table 2. Strategies to Improve Handoff Communication

	Strategy	Example
1.	Use clear language and avoid use of abbreviations or terms that can be misinterpreted.	During the reconciliation process, the nurse noted a medication that is usually administered once daily being given every other day. The handwritten order for daily was written QD but read as QOD. QD and QOD are on the Joint Commission official "Do Not Use" list.[51] According to the list, "daily" should be written instead of QD and QOD should be written as "every other day."[51]
2.	Use effective communication techniques. Limit interruptions. Implement and utilize read-backs or check-back techniques.	In the middle of a shift handoff, the unit clerk interrupts the nurse to inform her that a patient needs assistance to go to the bathroom. The nurse must leave report to assist the patient or find a nurse's aide to help the patient. During this interruption, the offgoing nurse is in a rush to leave and get her son from child care. Due to the need to leave quickly, the offgoing nurse forgets to document and report to the oncoming nurse that a patient fell right before the shift change. Efforts need to be made to ensure adequate staffing during shift report to minimize interruptions.
3.	Standardize reporting shift-to-shift and unit-to-unit.	The surgical unit standardized shift-to-shift handoff report with a one-page tool that is used for each patient, thereby providing a comprehensive, structured approach to providing the critical information on new and recovering postoperative patients.
4.	Assure smooth handoffs between settings.	One of the busiest units in the hospital is the emergency department (ED). Patients must be discharged or moved quickly out of the ED to an inpatient unit. To ensure rapid patient flow, a new handoff process is established that includes a phone call to the receiving unit, the assignment of an admission nurse so that there are no delays on the receiving unit, telephone report so the receiving unit can prepare any special equipment, and then a final verbal handoff between the two nurses while viewing the patient to verify the condition of the patient and ensure no changes from one setting to another.
5.	Use technology to enhance communication. Electronic records can support the timely and efficient transmission of patient information.	The hospital has an electronic record and utilizes portable computers. Walking rounds are made by the offgoing and oncoming nurse using the portable computer and visiting each patient for introductions and quick visual assessment. The use of this technology allows the nurse to view the patient's plan of care, medications, and IVs at a glance to prepare for care during the next shift.

Source: Adapted, in part, from Joint Commission International Center for Patient Safety. *Strategies To Improve Hand -Off Communication: Implementing a Process to Resolve Questions*. 2005.[34]

Table 3. Nurse-to-Nurse Change-of-Shift Handoff Report

Type of report	Strengths cited in literature	Weakness cited in literature	Practice implications (strategies for reducing errors and improving safety)
Verbal report on nursing unit	• Allows face-to-face interaction.[41] • Allows staff to debrief and discuss situations.[41] • Allows for clarification of information.[41] • Can present educational opportunity for staff.[41]	• Verbal only—poor retention of information by receiver.[55] • There may discrepancies between reported status and actual patient status.[22] • May be difficult to access all relevant information[41] for concise report. • Time consuming.[41] • Sensory Overload.[22, 75]	• Augment verbal report with preprinted, patient-specific forms containing data that can be transferred to the oncoming shift to decrease loss of information.[55] • Use electronic support to provide easily accessible data that is accurate and up to date.[34, 58] • Include bedside rounds to check patient status and congruence between report and patient condition.[22] • Use standardized process to assure transmission of essential information.[34, 45, 47, 55]
Verbal report at the patient's bedside	• Allows face-to-face interaction.[41] • Allows for clarification.[41] • Nurses can assess patient together.[41] • Allow the remedy of errors.[41] • Involve patient.[41, 52, 56]	• Confidentiality issues need to be addressed.[13, 41, 56] • Not all patients wish to participate in bedside report.[52] • Terms (jargon) used by nurses in report may pose a concern to patients if not explained.[52] • Nurses may be interrupted.[41]	• Monitor to assure confidentiality is protected, report in private setting.[56, 57] • Introduce self to patient.[57] • Encourage patient to participate, but not all patients will want or be able to participate and this needs to be respected.[52] • Develop protocol to guide the bedside handover process.[57] • Use standardized process to promote transmission of essential information.[34, 47]

Type of report	Strengths cited in literature	Weakness cited in literature	Practice implications (strategies for reducing errors and improving safety)
Audiotaped report	• Can be a more efficient process, concise[53] and "less time consuming"[41] • Tape may be repeated.[53] • Nurses who taped report can provide patient care while oncoming shift is listening to report.[53]	• May be difficult to hear or understand.[41] • Need access to equipment[2] • Question and answer interaction must be built into the process.[47] • Sensory Overload.[22] • There may discrepancies between reported status and actual patient status.[22] • Lack of educational opportunity.[41] • May not be current; timeliness of information dependent on when report was taped.[41]	• Need to assure there is an opportunity to ask questions about the report and interact between offgoing and oncoming shifts.[34, 47] • Include bedside rounds to check patient status and congruence between report and patient condition.[22] • Ensure sound quality of technology.[53] • Use standardized process to assure transmission of essential information.[34, 47] NOTE: Joint Commission National Patient Safety Standards require there to be an opportunity for exchange of information and ability to ask and answer questions.[47]
Written report	• Improvement in documentation.[54] • Effective management.[54] • Allows oncoming shift to review data.[54]	• Question and answer interaction must be built into the process.[47] • May be missing essential information if not documented.[54] • Quality of documentation may vary.[54]	• Need to assure there is an opportunity to ask questions about the report and interact between off going and oncoming shifts.[47] • Information also provided verbally with written report.[54] • Use standardized process to assure transmission of essential information.[34, 47] NOTE: Joint Commission National Patient Safety Standards require there to be an opportunity for exchange of information and ability to ask and answer questions.

Source: Adapted from O'Connell (2001), Challenging the handover ritual: recommendations for research and practice.

It is important to understand the context in which care is provided and be cognizant of the impact of the environmental processes on health care providers. The physical work environment may not be conducive to effective handoffs as it may be noisy[58, 59] and prone to interruptions, (i.e., pagers, phone calls),[60–63] and the handoff may be conducted under physical and emotional pressures.[11] A study examining communication patterns among physicians and nurses found thirty one percent of communication exchanges involved interruption, translating into roughly 11 interruptions an hour for physicians and nurses.[60] Spencer and colleagues[62] found 15 interruptions per hour. Barriers to transmission of accurate information in a patient transfer include incomplete medical record, lack of complete information provided by nurses, and the omission of essential information.[64] Handoffs are compromised if critical pieces of information are omitted because of difficulties with data access[4, 29] or if documentation is illegible[31, 33] or not transferred.[55] Despite efforts to promote the use of electronic patient records, according to a 2002 survey, less than 10 percent of hospitals have complete access to electronic systems such as computerized physician order entry (CPOE).[65]

The ever-increasing abundance of data requires that health care providers synthesize and make decisions using large amounts of complex information. Unfortunately, data quickly degrades; for example, critically ill patients have many clinical parameters that are being monitored frequently.[66] Decisions need to be based on trends in the data and current information, which is essential to making informed decisions.[66] Tremendous amounts of information are constantly being generated, such as monitored clinical parameters, diagnostic tests, and multidisciplinary assessments. When this large amount of information is combined with the numerous individuals—clinical and nonclinical—who come in contact with a patient during a treatment episode and data transmission, not all members of the health care team may be aware of all the information pertinent to each patient.[66]

In an effort to compress information and make it manageable among health care providers, handoffs may result in a "progressive loss of information known as *funneling,* as certain information is missed, forgotten or otherwise not conveyed"[66] (p. 211). The omission of information or lack of easy accessibility to vital information by health care providers can have devastating consequences.[4, 11] Such gaps in health care communication can cause discontinuity in the provision of safe care[67] and impede the therapeutic trajectory for a patient. These gaps present major patient safety threats and can impact the quality of care delivered.

Where Do Handoffs Occur?

Handoffs occur across the entire health care continuum in all types of settings. There are different types of handoffs from one health care provider to another, such as in the transfer of a patient from one location to another within the hospital[64] or the transition of information and responsibility during the handoff between shifts on the same unit.[1, 41, 43] Interdisciplinary handoffs occur between nurses and physicians, and nurses and diagnostic personnel, while intradisciplinary handoffs occur between physicians[3, 15, 31] or between nurses.[13, 14, 41, 42,43] Interfacility handoffs occur between hospitals and among multiple organizations,[68] including home health agencies,[69, 70] hospices,[71] and extended-care facilities.[72, 73]

Handoffs may involve use of specialized technology (e.g., audio recorders, pagers, hand-held devices, and computerized records),[2] fax,[73, 74] written documents,[54] and oral communication.[41, 75, 77] Each type and location of handoff presents similar as well as unique challenges. Given the variety of handoffs, the following discussion will focus on:

- Shift-to-shift handoff
- Nursing unit-to-nursing unit handoff
- Nursing unit to diagnostic area.
- Special settings (operating room, emergency department).
- Discharge and interfacility transfer handoff
- Handoffs and medications
- Physician-to-physician handoffs

Shift-to-Shift Handoff

There are paradoxes in communication and handoffs, especially at shift changes.[20] Many human factors play a role. Human factors (ergonomics) focus on behavior and interaction between human beings and their environment. Human factors engineering focuses on "how humans interact with the world around them and the application of that knowledge to the design of systems that are safe, efficient, and comfortable"[76] (p. 3). The handoff poses numerous human factors engineering implications. From the perspective of patient safety, the primary purpose of the shift report or shift handoff is to convey essential patient care information,[14, 43, 55, 78, 79] promote continuity of care[13, 41, 77, 78, 80] to meet therapeutic goals, and assure the safe transfer of care of the patient to a qualified and competent nurse. However, other reported purposes of shift report include education,[41, 78, 81] debriefing,[14, 41] socialization,[78, 82] planning and organization,[78] enhancement of teamwork,[81] and supportive functions.[83]

The intershift handoff is influenced by various factors, including the organizational culture. An organization that promotes open communication and allows all levels of personnel to ask questions and express concerns in a nonhierarchical fashion is congruent with an environment that promotes a culture of safety.[58] Interestingly, one study reported novice nurses seeking information approached those seen as "less authoritarian."[84] The importance of facilitating communication is critical in promoting patient safety. The shift-to-shift handoff is a multifaceted activity.[78, 85, 86] A poor shift report may contribute to an adverse outcome for a patient.[55]

Handoff intricacies. A phenomenon well known to nurses is the use of nurse-developed notations, "cheat sheets" or "scraps" of information, while receiving or giving intershift reports. A study of such note taking found scraps are used for a variety of purposes, including creating to-do lists and recording specific information and perceptions about the patient and family.[87] This approach presents some challenges, as no one else has easy access to the information; therefore, continuity of care may be compromised during a meal break, for example, or if the scrap or cheat sheet is misplaced.

Method of shift-to-shift handoff. Handoffs are given using various methods:[13, 41, 88, 89] verbally,[75, 77] with handwritten notes,[80, 87] at the bedside,[41, 52, 56, 57, 90, 92] by telephone,[91] by audiotape,[41, 53] nonverbally,[54] using electronic reports,[92] computers printouts,[14] and memory.[14] The strength of the bedside report method is its effort to focus on and include the patient in the report. There have been concerns regarding patient confidentiality,[41, 52, 56, 90] which could be compromised if not carefully addressed. A qualitative study focused on describing the perceptions of patients who were present during a bedside report found some patients are in favor of bedside handoff, while others are not.[52] Patients also expressed concern regarding the jargon used by nurses.[52] One patient noted that including the patient in the handoff added another level of safety as erroneous data could be addressed and corrected.[52] Case studies indicate the bedside handoff may be implemented for a number of reasons, including addressing specific

issues and improving care delivery.[57, 92] A summary of the strengths and weaknesses of verbal, bedside, written, and taped shift-to-shift reports is included in Table 3.

The challenge during handoffs across settings and times is to identify methods and implement strategies that protect against information decay and funneling,[66] contributing to the loss of important clinical information. It is a challenge to develop a handoff process that is efficient and comprehensive, as case studies illustrate.[57, 88, 92, 93] Observation of shift handoffs reveals that 84.6 percent of information presented in handoffs could be documented in the medical record.[42] A concern that emerged in this study was some handoff reports actually "promote confusion," and therefore the authors advocated improving the handoff process.[42]

Another concern with handoffs is the degree to which the report is actually congruent with the patient's condition. One study found 70 percent congruence between the shift report and the patient's actual condition, with an omission rate of 12 percent.[22] A synthesized case example of a psychiatric patient presents the adverse consequences for the patient if essential information is not communicated.[94] The importance of communicating objective descriptions of the patient condition is highlighted.

A study focusing on assessing the effects of manipulating information in a shift handoff on the receiving nurse's care planning found in the different types of taped reports that the information recalled ranged from 20 percent to 34 percent.[95] Another study, by Pothier and colleagues,[55] examined different methods for transferring information during 5 consecutive simulated handoffs of 12 fictional patients. Three methods of handoffs were analyzed; the method demonstrating the greatest amount of information retention involved utilization of a preprinted sheet containing patient information with verbal report, followed by note taking and verbal report method, and lastly, only verbal report. The retained total data points for each style of handoff varied considerably during the five handoffs. Over 96 percent to 100 percent of information was retained using the preprinted sheet containing patient information and verbal report. Only 31 percent to 58 percent of the data were retained using the note taking style and verbal report.[55] The verbal-only style demonstrated the greatest amount of information loss, with retention ranging from 0 percent to 26 percent.[55] None of the data was retained using the verbal-only method for two handoff cycles. The insertion of incorrect information was observed in the verbal-only method. The generation of incorrect data did not occur at all during the handoff with the written or preprinted form style of report. This study[55] supports the use of a consistent preprinted form with relevant patient information during shift report, with less reliance on verbal-only reports, in order to optimize communication.

Nursing Unit-to-Nursing Unit Handoff

Patients may be transferred frequently during their hospital stays.[28] Yet, the patient transfer is fraught with potential problems and can have an adverse impact on patients.[96, 97] Issues have been identified in the transfer handoff process, including incomplete medical records and omission of essential information during the handoff report.[64] A number of factors that contribute to inefficiency during patient transfers from one nursing unit to another have been identified,[97] including delay or wasted time caused by communication breakdowns, waiting for responses from other nurses or physicians or a response from patient placement management or bed control.[97] Bed control involves personnel who manage the bed assignments of new and transferring patients. Decreasing the number of transfers is a possible strategy to decrease risks associated with handoffs.[58]

Nursing Unit to Diagnostic Area

Patients are frequently sent from a nursing unit to diagnostic areas during the normal course of a hospitalization. Transfers have been cited as a contributor to medication errors between nursing units and diagnostic areas (e.g., radiology, cardiac catheterization, nuclear medicine).[19] It is important when patients change nursing units, particularly to a different level of care, or go to a procedure in another department that there is clear, consistent communication and that the receiving area staff have the information they need to safely care for the patient.[34] Complexity of the patient's condition may require that the nurse caring for the patient actually accompanies the patient to the new setting.

Special Settings

Operating room and postanesthesia. Several special handoff situations occur in certain hospital settings. The operating room (OR) is considered "one of the most complex work environments in health care"[98] (p. 159), with a reported mean of 4.8 handoffs per case. Nursing staff average 2.8 handoffs per case, with a range of one to seven handoffs.[98]

There have been at least 615 wrong-site surgeries reported to the Joint Commission between 1995 and 2007.[99] To help prevent wrong-site surgery, the Joint Commission developed the Universal Protocol for Preventing Wrong Site Surgery, Wrong Procedure, Wrong Person Surgery^{TM}.[100, 101] It is based on the consensus of experts and endorsed by more than 50 professional organizations.[100] Effective interdisciplinary communication is critical. For example, a health care organization using a perioperative briefing process reported that no wrong-site surgeries have occurred since the adoption of the interdisciplinary briefings.[44]

Dierks suggests five categories for handoffs in the OR: (1) baseline metrics/benchmarks, (2) most recent phase of care, (3) current status, (4) expectations for the next phase of care, and (5) other issues such as "who is to be contacted for specific issues"[102] (p. 10). The use of a team checklist in the OR was pilot tested in another study and found to show "promise as a method for improving the quality and safety of patient care in the OR"[103] (p. 345).

A study focused on OR communication processes identified a number of patterns and found the most common reason for communication in 2,074 episodes was coordination of equipment, followed by "preparedness" for surgery.[104] The authors recommend increasing the use of automated processes to enhance process flow, especially related to "equipment management," thereby helping with transmission of information in a more efficient manner.[104]

Communication in handoffs is critical in all phases of care. However, a survey of 276 handoffs conducted in a postanesthesia care unit (PACU) revealed 20 percent of postoperative instructions were either not documented or written illegibly.[105] The nurses rated the handoffs from anesthesia staff as "good" in 48 percent of cases, "satisfactory" in 28 percent, and "bad" in 24 percent.[105] A number of suggestions for improving the quality of the postanesthesia care unit handoff protocol were presented including the need to communicate information verbally to the nurse.[105]

Emergency department. A study of five emergency departments (EDs) revealed that there were differences in the characteristics of handoffs among the EDs studied, but "nearly universal" attributes of handoffs were also noted.[106] The researchers developed a conceptual framework for addressing handoffs in the emergency setting. The handoffs were not one way communication processes as both the offgoing and oncoming providers were engaged in interactive handoffs.[106]

According to Behara and colleagues,[106] 8 of 21 handoff strategies used in other industries[2] were observed "consistently" in the ED setting, while four were used less often and nine were not or rarely used. The handoff in the ED setting is viewed as a "rich source for adverse events"[17] (p. 1). There are inherent risks in handoffs, but it was also noted that the handoff can provide the opportunity for two health care providers to assess the same situation and identify a "previously unrecognized problem"[17] (p. 2).

Studies focused on emergency nursing handoffs highlight unique aspects of this process.[107, 108] Currie reported in a survey of 28 ED nurses that the top three concerns nurses had with handoffs were missing information, distractions, and lack of confidentiality.[108] Recommendations included the development of guidelines to improve the handoff process in the ED.

Discharge and Interfacility Transfer Handoff

Handoffs from one facility to another occur frequently between many different settings.[68–70, 71, 72, 73, 109–111] Handoffs take place between hospitals when patients require a different level of care. The usual interfacility handoffs are between hospitals and long-term care facilities, rehabilitation centers, home health agencies, and hospice organizations. The factor that tends to make these handoffs challenging is gaps and barriers to communication among these agencies.[68, 111, 112] Handoffs between facilities are also impacted by the cultural differences between the types of facility.[73] Agencies are often geographically separate, requiring physical relocation of the patient, belongings, and paper records. Once the transfer has taken place, seeking additional information becomes a challenge.[73]

The continuity of patient care requires communication among various health care organizations.[68, 71, 73, 110, 113–115] One problem noted is nurses in different settings have different perceptions about what is important to be conveyed, such as different perceptions between the hospital and home health care.[70, 116] Another area of concern noted in transfers from hospitals to other health care organizations is incomplete documentation. More information was transmitted when a standard form to communicate information was utilized between a hospital and home health agency (HHA).[69] The usage of referral forms varies among health care institutions.[109] Rates of transmission of information differ from hospitals to HHAs[69, 109, 113] and to extended-care facilities.[72] It was found that HHAs affiliated with hospitals received more referral data than free-standing HHAs.[113]

Discharge planning forms address "the anticipation of a certain type of gap and also of an effort to create a bridge to permit care to flow smoothly over the gap"[67] (p. 793). One example of the development of such a form using "a consensus process" resulted in the implementation of a Patient Transition Information Checklist to help improve communication between hospitals and nursing homes.[114] Another type of form for communication of patient information among health care organizations was developed in Germany; however, followup revealed use of the form was not as widespread as anticipated because process barriers emerged, precluding users from easily completing and transmitting the forms.[111] Development of any type of "patient accompanying form"[111] requires numerous considerations and a balance between being comprehensive and not being cumbersome to use.[111] There also needs to be adequate resources to allow health care providers to retrieve necessary data and transmit patient information between agencies.[111]

Inadequate discharge planning has been implicated in adverse outcomes of patients.[117, 118, 119] A study of 400 patients found 76 patients incurred an adverse outcome after discharge from the hospital. The researchers reported "ineffective communication contributed to many of the

preventable and ameliorable adverse events"[119] (p. 166). The most frequent type of adverse event was related to medications. The implications of this study indicate the need to enhance communication in the handoff between the hospital and posthospital care. Suggested potential strategies to improve the handoff include discharge planning and education of patients related to medications prior to discharge.[119]

A number of contributors to a failed handoff in the discharge planning process have been identified, including, lack of knowledge about the discharge process,[117] lack of time,[117] lack of effective communication,[119, 120] patient and family issues,[117, 120] system issues,[120] and staffing issues.[117, 120] Communication issues have emerged as a potential contributor to readmissions.[121] An ineffective nursing handoff has been identified as a contributor to miscommunication within the discharge process.[122] The improvement of discharge planning requires that emphasis be placed on collaboration and interdisciplinary communication.[112] Well-orchestrated discharge planning is recommended to help improve patient safety[123] by controlling the risk of gaps occurring in the discharge process and its inherent handoffs.

Handoffs and Medications

Medication errors are considered preventable events.[124] Handoff issues (e.g., transfer, shift change, cross-coverage) have been identified by the United States Pharmacopeia (USP) through its MEDMARX® reporting program as a contributing factor to medication errors within health care organizations.[19, 24]

Incomplete transfer of medication information is recognized as a possible contributor to patient safety problems as patients are discharged from the hospital.[119, 125] Reasons for medication handoff failures include incomplete patient education and the "inability of ambulatory care providers (including nursing homes) to receive discharge medication information"[126] (p. 93). Medication changes during the transition (handoff) from hospital to skilled nursing facilities were identified as a cause of adverse drug events in a New York study.[127] One study reported patients who received medication information and counseling demonstrated more compliance with their medication regimen than patients who did not receive such information.[128]

There are multiple case examples of medication errors related to handoffs across the continuum of care.[129, 130] In fact, USP has reported that 66 percent of medication reconciliation errors occur during the transfer or transition of a patient to another care level.[130] A number of recommendations have been developed to improve the medication reconciliation process and reduce risks for patients.[130, 131] In addition, medication reconciliation is a Joint Commission patient safety goal,[47] with specific requirements for the process.[47, 132]

Physician-to-Physician Handoffs

Studies conducted to better understand physician-to-physician handoffs[31, 33] may have implications for nurses. Poor handoffs included omissions of essential information such as medications, code status, and anticipated problems.[31] Other issues contributing to failed communication processes included lack of face-to-face interaction and illegible documentation.[31] The weaknesses identified in another handoff study included incomplete and or illegible information, difficulty accessing clinical information quickly, communication failures, and difficulty contacting other doctors.[33] Strategies to address handoff problems include providing

legible, accurate, relevant, comprehensive information and the use of a face-to-face report.[31] Suggestions for improvement include development of a process to enhance transmission of information, for example, the adoption of templates; use of technology; use of communication processes such as SBAR, education, and evaluation of handoffs;[31] and a standardized handoff process.[33]

Evidence-Based Practice Implications—Handoffs for Today's Health Care Environment

The Australian Council for Safety and Quality in Health Care evaluated 777 papers for possible inclusion in a literature review on handoffs.[1] A total of 27 papers met the inclusion criteria, but it was reported that "no best practice" (p. 2) existed related to systems emerged in the search—although a number of recommendations were provided for systems, organizational, and individual factors.[1] Handoffs are an extremely complex phenomenon to study as they occur in a variety of settings; stages along the continuum of care; and among various personnel with different skill sets, priorities, and educational levels.

Contributors to handoff problems included failed communication,[4, 5, 6, 7, 10, 31] omissions,[31, 64, 108] distractions,[108] lack of or illegible documentation,[31, 33, 73] lack of utilization of transfer forms,[69] incomplete medical records,[64] lack of medication reconciliation,[129, 130] and lack of easy accessibility to information.[6, 33, 73] A variety of environmental issues emerged—including designs[28, 58]—that served to increase, rather than decrease, the number of handoffs. Interfacility handoffs posed a number of challenges, including cultural differences[73] and lack of integrated systems, thereby increasing the likelihood of transmission difficulties between organizations. Organizational and system failures or lack of systems to support the handoff process emerged as contributors to adverse events.[4, 6, 7, 10] A lack of knowledge was found regarding effective handoff processes,[117] and education on effective handoff strategies was also lacking.[3, 117] Handoff processes need to include consideration of the person involved in the handoff and their level of education, expertise, and comprehension (e.g., the novice nurse's informational needs may be different from the expert nurse).[41] Novices also differ from expert nurses in their use of information.[84]

There must be an organizational commitment to the development and implementation of systems that support effective handoffs as well as a just culture.[133, 134] This includes cultures of safety and learning.[134] A safety culture supports identifications of problems and errors to be addressed to prevent the recurrence.[134–136] A culture of learning promotes learning from the experiences of the past to prevent a recurrence of tragic fumbled handoffs. Environments and processes need to be designed to promote desired outcomes[76] and enhance patient safety.[137]

Electronic Support of Handoffs

A number of reports and studies have called for systems that allow ease of access to accurate information to improve handoffs.[6, 10, 15, 29, 89, 138] Electronic technology requires that design issues be considered and adequate resources be allocated for successful implementation and acceptance.[139] Research of computerized support for physician handoffs suggests this is a strategy that merits further consideration and evaluation.[16] A study at two hospitals reported the implementation of a computerized system for resident handoff enhanced delivery of care and decreased the number of patients missed on rounds.[138] There have been limited studies on

computerized clinical documentation systems (CDS) in the nursing shift handoff. One study reported nurses perceived shift-to-shift handoffs more positively after the implementation of the CDS.[140] Access to a physician computerized sign-out was rated positively by nurses and was reported to improve communication.[141]

Decrease Transfers of Patients

Decreasing the number of patient transfers may reduce the risks that occur during handoffs.[58] It has been suggested that "many patient transfers could be prevented by altering facility designs and nursing care models found in acute care hospitals"[97] (p. 163), thereby decreasing the need for handoffs. The implementation of "acuity-adaptable rooms" demonstrated a 90-percent decrease in patient transports; the same study also reported a decrease in medication errors of 70 percent.[28] More research of this strategy is recommended.[58]

Effective Handoff Process

A recurrent theme observed in the handoff literature is the need to convey essential information to the oncoming shift or provider. A standardized process to guide the transfer of critical information has been recommended.[33, 34, 45, 48, 108] The use of protocols that include the use of phonetic and numeric clarifications are important in helping convey information accurately.[11, 136] The Sentara health care organization adopted behavior-based expectations to improve the handoff process and used tools including the five Ps (patient/project, plan, purpose, problems, and precautions).[136] It reported a 21-percent increase in effective handoffs.[142] A medical center using SBAR in the handoff process reported less missing information in handoffs after implementation of SBAR.[45] The use of protocols such as safe practice recommendations related to reconciling medications[131, 132] and communicating critical test results[49, 50] should be used in designing strategies for more effective handoffs. Some hospitals have reported developing strategies to improve the communication between the hospital and other providers.[44, 71, 73, 74, 114] A summary of problems and barriers with handoffs observed in this review of literature are presented in Tables 4, 5, and 6. Strategies that have been reported in the literature are also included in the tables; however, more research is needed to identify evidence-based guidelines. The Evidence Table at the end of this chapter presents a summary of selected sources addressing handoffs.

Human Factors

The study of human factors engineering is currently being used to improve patient safety,[76] and there are an increasing number of strategies and tools that can be used to design systems in a manner to decrease adverse outcomes. Designs to promote patient safety should include integration with "forcing" functions to prevent errors. However, there needs to be testing of proposed solutions to assure validity of these tools in the health care environment.[76] Lessons learned from other industries are fostering the adoption of human factors principles and increasingly being used in health care.[44, 137, 143–146]

Studies of handoffs in other industries have been analyzed for possible implications for health care. Patterson and colleagues[2] analyzed data from four studies[147–150] and described 21 handoff strategies. According to their findings, strategies that could be applied to shift handoff

included interactive questioning, face-to-face handoff, forcing functions such as passing a pager to initiate handoff to the oncoming nurse to indicate an unambiguous transfer of responsibility, flagging critical information, and reduction of interruptions.[2] The researchers note a question remains "if the strategies can be generalized to health care"[2] (p. 132), and call for additional research in this area.

Research Implications

Following are suggested questions for future research:
- What are the best systems designs to reduce unnecessary handoffs? How can they best be implemented?
- What are best strategies for handoffs in various settings (i.e., nurse to nurse, unit to unit, agency to agency, physician to nurse)?
- What are the most effective strategies, instruments, and tools to employ to assure maximum transfer of and receipt of accurate, relevant, up-to-date information?
- How can electronic technology best be deployed to support and enhance effective handoffs, decrease errors, and improve patient safety and patient outcomes?
- What are the best techniques for assuring critical information is forwarded and not omitted or overlooked when received?
- How can handoff contributors to medication errors be addressed and decreased?
- What are the critical data elements that should be transferred by type of service, specialty, profession, and setting?

Basic to the provision of quality health care is the ability to communicate with one another and safely handoff patient care in a seamless manner so every patient can benefit from each phase of care through a well-executed handoff. This is a process that is ubiquitous but also a high-risk endeavor in many settings. More research is needed in this critical patient safety arena to promote interdisciplinary approaches to patient safety throughout the continuum of care.

Table 4. Factors, Problems, and Strategies Cited in the Literature

External & internal factors that contribute to errors	Problem/barrier associated with patient safety issues	Practice implications (strategies for reducing errors and improving safety)	References
Handoff communication	Language problems may contribute to problems during handoffs in several ways. Different dialects, accents, and nuances may be misunderstood or misinterpreted by the nurse receiving report. Abbreviations and acronyms that are unique to certain settings may be confusing to a nurse working in a different setting or specialty. Medications may have similar sounding names, increasing risk for confusion.	• Face-to-face handoff is preferred[31, 35] to allow verbal and nonverbal exchanges and interactive communication and questions.[47, 48] • Standardize forms, checklists, or tools (customized as agreed to by clinicians for specific practice areas) so that all users will understand the information from the same context.[34] • Allow opportunity for questions and clarification during the handoff.[2, 34, 47, 48] • Use a "read back" "repeat back" to decrease communications errors.[34, 47, 49] • Use phonetic and numeric clarifications.[136] • Verify information.[47] • Implement safe practice recommendations for communicating critical test results[50] • Speak in simple, clear, straightforward manner and be specific in description of patient and situation.[34] • Avoid the use of abbreviations and jargon, which may not be understood.[34, 151] • Provide definition of ambiguous terms. • Allow receiver of handoff to review relevant summary and data (history, treatments, and services) and current information.[48] • Allow for oncoming and offgoing clinicians to assess situation.[35] • Include anticipated problems or changes in report.[31]	Arora 2005[31] Barenfanger 2004[49] Haig 2006[45] Hanna 2005[50] ISMP 2005[151] Joint Commission[47, 48] Joint Commission International Center for Patient Safety 2005[34] Simpson 2005[35] Yates 2005[136]
Distractions	Situational factors during a handoff can contribute to distractions.	• Provide handoff in a location/environment that minimizes distractions.[157]	White 2004[157]
Interruptions	Interruptions are reported to occur frequently in the health care setting.	• Limit and discourage interruptions.[2, 4, 34, 48, 108] and provide coverage of other duties during handoff to support focused transition	Beach 2006[4] Currie 2002[108] Joint Commission 2008[48] Joint Commission International Center for Patient Safety[34] Patterson 2004[2]

External & internal factors that contribute to errors	Problem/barrier associated with patient safety issues	Practice implications (strategies for reducing errors and improving safety)	References
Noise	Background noises such as pagers, phones, overhead paging, equipment noise, alarms, and talking contribute to increased difficulty in hearing report and can lead to inaccurate interpretation of information.	• Provide handoff in a location/environment that allows those involved in the handoff to clearly hear the information.[3] • Use a "read back" to decrease communications errors.[47, 49] • Use phonetic and numeric clarifications.[136]	Barenfanger 2004[49] Joint Commission[47] Solet 2005[3] Yates 2005[136]
Fatigue	Increased errors are noted in nurses working prolonged shifts.	• Limit the amount of hours worked to reduce fatigue and errors associated with fatigue.[58, 153, 154, 155]	Hughes & Rogers 2004[153] Institute of Medicine 2004[58] Rogers 2004[154] Scott 2006[155]
Memory	Short-term memory is limited and lapses may occur when large amounts of information are communicated during a handoff.	• Design systems to reduce reliance on memory.[76, 157] • Use preprinted patient information forms for accuracy and completeness of information in handoff.[55] • Provide health care providers with access to data to reduce reliance on memory in handoff.[55, 157]	Gosbee & Gosbee 2005[76] Parker & Coiera 2000[152] Pothier 2005[55] White 2004[157]
Knowledge/ experiences in handoffs	Novice nurses and expert nurses have different needs.[158] Novice nurses may encounter issues with handoffs. Novice nurse may need supplemental information during the handoff. Staff may not have been educated on strategies for an effective handoff and discharge planning.	• Support novice nurses with orientation and preceptor programs. • Provide continuing education programs on effective handoff strategies.[45] • Provide experienced consultants to less-experienced nurses as they may not have skills in their repertoire for advanced problem-solving.[37, 84] • Provide comprehensive, pertinent information, but avoid overload during handoff.[78]	Benner 1984[158] Ebright 2004[37] Haig 2006[45] Kerr 2002[78] Taylor 2002[84]
Written communication	Trying to interpret illegible notes from another provider may create errors in communication.	• Use electronic strategies to decrease problems with illegibility.[159] • Use standardized processes (customized to a clinical area, practice setting) to assure critical information is communicated in handoff.[34, 35]	Joint Commission International Center for Patient Safety 2005[34] Simpson 2005[35] Upperman 2005[159]

External & internal factors that contribute to errors	Problem/barrier associated with patient safety issues	Practice implications (strategies for reducing errors and improving safety)	References
Variation in processes	There may be wide variance in the way a handoff is conducted that may lead to omission of critical information and contribute to medical and medication errors.	• Adopt a standardized, consistent approach to the handoff to decrease errors.[33,34] • Adopt and use behavior-based expectations to reduce risks and promote patient safety. Tools to use during handoffs include the 5 Ps for Patient/Project, Plan, Purpose, Problems, Precautions[136] and Situation, Background, Assessment Recommendation (SBAR).[34, 44, 45] • Communicate essential patient care information.[34] • Develop and implement a systematic process for the reconciliation of patient's medications to decrease risk associated with transfers and transitions to other levels of care.[130, 131, 132]	Bomba & Prakash 2005[33] Joint Commission 2006[132] Joint Commission International Center for Patient Safety 2005, 2006[34] Haig 2006[45] Leonard 2004[44] Massachusetts Coalition for the Prevention of Medical Errors 2005[131] USP 2005[130] Yates 2005[136]

Table 5. Issues, Problems, and Strategies Cited in the Literature

Organizational/system issues that contribute to errors	Problem/barrier associated with patient safety issues	Practice implications (strategies for reducing errors and improving safety)	References
Culture	In a culture that lacks sufficient focus on safety and learning, staff may be reluctant to report problems or may not feel comfortable asking questions.	• Support the development of a culture of safety where reporting of errors and problems is accepted and encouraged.[58, 133, 134] • Encourage the development of a "learning culture"[134] and a "just culture."[133, 134]	Institute of Medicine 2004[58] Marx 2001[133] Reason 1997[134]
Hierarchy	Hierarchical structure may impede open communication. The nurse may not feel comfortable asking questions to clarify information or may feel intimidated.	• Promote culture of safety where open communication is supported.[58, 160, 161] • Develop protocols or policies that support a culture of respect, collaboration, and collegiality among all nurses and health care providers.[161] • Provide education for all health care providers on effective communication strategies such as the use of SBAR (situation, background, assessment and recommendation) to enhance communication.[44, 45, 144]	American Association of Critical-Care Nurses 2005[161] Haig 2006[45] Institute of Medicine 2004[58] Leonard 2004[44] McFerran 2005[144] White 2004[160]

Organizational/system issues that contribute to errors	Problem/barrier associated with patient safety issues	Practice implications (strategies for reducing errors and improving safety)	References
Systems support	Lack of time to access information and complete report will reduce time for questions and answers.	• Assure that there is time to complete the handoff report. • The receiving health care provider needs to have access to pertinent, accurate, timely patient information.[34, 48] • Recognize that a handoff requires the opportunity for interactive questions and answers.[34, 48] • Develop systems that support efficient operations in the retrieval of data in a timely manner to allow updated, current, accurate information to be provided to the receiver of the handoff.[34, 138, 141]	Joint Commission 2008[48] Joint Commission International Center for Patient Safety 2005[34] Sidlow & Katz-Sidlow 2006[141] Van Eaton 2005[138]
Infrastructure	There may be inadequate staff, tools, or equipment for effective handoffs.	• The leadership needs to promote the design and implementation of systems within an environment to provide safe patient care.[58] • Provide adequate human resources, equipment, technology, and educational opportunities to promote optimal handoffs.[58] • Involve nurses in the design of work environments.[58]	Institute of Medicine 2004[58]
Transfer of patients (within health care organization)	Increased number of transfers increases the need for handoffs.	• Consider health care delivery design models in which patient transfers are minimized.[28] • Include nursing staff in the design of handoff processes.[58]	Hendrich 2004[28] Institute of Medicine 2004[58]
Physical space limitations for handoffs	Environment may not be conducive to conducting a handoff (interruptions, noisy).	• Include health care providers in the design of work environments so adequate space requirement and configurations are identified.	Institute of Medicine 2004[58]
Technology limitations and use of manual reports and records/ difficulty accessing essential information	Lack of technology may create voluminous paper records (medication records, lab reports) with multiple reports to be referenced for handoffs to another unit, setting, or facility.	• Design electronic systems that support the easy retrieval of accurate and timely data[34, 141, 163] • Provide for adequate planning processes, infrastructure, human resources, and education to successfully implement electronic support.[139, 162]	Ash 2003[162] Joint Commission International Center for Patient Safety 2005[34] Karsh 2004[139] Sidlow & Katz-Sidlow 2006[141] Van Eaton 2004[163]
Different cultures or organizations	Organizations may have different goals, focus, and resources.	• Develop processes between sending and receiving organizations to assure both organizations are aware of requirements for handoff.[44, 73] • Plan resource allocation to meet the patient needs.[44]	Davis 2005[73] Leonard 2004[44]

Organizational/system issues that contribute to errors	Problem/barrier associated with patient safety issues	Practice implications (strategies for reducing errors and improving safety)	References
Intra- or extra-system transfers	Transfers to a setting/facility within a single system may create fewer problems than a transfer to a different system/health care provider in which different forms and technologies are used. Transfers require efforts to assure continuity of care as the patient transitions to another level of care.	• Seek to design systems, processes, and policies that allow for collaboration and efficient transfer of essential information between organizations during handoff.[68, 69, 73, 111, 112, 115] • Complete medication reconciliation process.[129, 132] • Remove barriers to communication. • Assure a bidirectional communication process between health care providers.[110] • Communication involves verbal, written, and electronic means. • Monitor process for opportunities for improvement.[44]	Anderson & Helms 1993[69] Anderson & Helms 2000[68] Coleman & Boult 2003[110] Cortes 2004[114] Davis 2005[73] Hansen[112] Institute for Safe Medication Practices 2005[129] Joint Commission International Center for Patient Safety 2006[132] Leonard 2004[44] Nicholson 2003[74] Satzinger 2005[111] USP 2005[129] Wachter & Shojania 2004[11]
Staffing limitations	Staffing shortages may contribute to gaps in transmission of information in handoff.	• Allocate adequate human resources to support handoffs and meet patient care needs/functions.[58, 111]	Institute of Medicine 2004[58] Satzinger 2005[111]
Equipment failures	A number of devices are used in a handoff. Critical information may not be transmitted if electronic devices fail.	• Follow up on critical information to assure it was received.[2] • Monitor, replace equipment, supplies to reduce contributors to communication failures.[53] • Upgrade equipment to improve communication processes.[2]	Patterson 2004[2] Prouse 1995[53]
Lines of responsibility	Persons entering into a handoff situation may not be clear on when responsibility of patient/situation is transferred, which can lead to a "fumbled" handoff, if the responsibility for care of patient and of followup is not clearly delineated.	• Use a forcing function[2, 44] to indicate the transfer of responsibility such as by passing a pager indicating that the receiving nurse is accepting responsibly for the patient and confirming the transfer of responsibility.[2,] • Unambiguous transfer of responsibility.[2] • Clearly define responsibility at transition.[4]	Beach 2006[4] Leonard 2004[44] Patterson 2004[2]
Tight time constraints	Time constraints during handoffs (e.g., pressure to increase patient flow across the system) may contribute to a report that is rushed and incomplete.	• Assure there is time for interaction and question and answer during a handoff.[34] • Allow receiver of information to review relevant information.[48]	Joint Commission International Center for Patient Safety 2005[34] Joint Commission 2008[48]

Table 6. Issues, Problems, and Strategies Cited in the Literature

Special Issues	Problem/barrier associated with handoff	Practice implications (strategies for reducing errors and improving safety)	References
Emergency situations/critical activities	Handoffs in a critical situation present a number of challenges.	• Remain for the completion of handoff until it is clear that critical information has been received and the transfer of responsibility has occurred by the accepting health care provider team.[35] • It may be necessary to delay handoff in critical situation to assure concerns are addressed.[2,4 35] • Exercise caution and situational awareness in emergency situations to assure all information is transmitted and received and continuity of care is provided.[4]	Beach 2006[4] Patterson 2004[2] Simpson 2005[35]
Code status	Code (Do Not Resuscitate (DNR)) status may be omitted from handoff report and not documented in medical record, or information may not be accessible.	• DNR status needs to be documented and communicated so members of the health care team are aware of status.[164] • Communicate code status in handoffs.[31, 164]	Arora 2005[31] Goldstein 2006[164]
Critically ill or labile patient	Offgoing and oncoming shifts may perceive patient situation differently, and the patient situation may change during the actual shift transition.	• Bedside report, walking rounds afford both the offgoing and oncoming shifts the opportunity to observe the patient together; address and problem-solve together; clarify issues; answer questions; and assure continuity of care.[17, 22, 35]	Perry 2004[17] Richard 1988[22] Simpson 2005[35]
Variable resources on, off shifts	Transfer handoff may occur after normal business hours when resources are less available, increasing the possibility information will be omitted.	• Assure critical information is documented and transmitted. In addition allow for an interactive report so that questions can be answered and issues addressed.[44] • Assure that all medication information is documented for the receiving facility. • Reconcile medications.[129, 130, 131, 132] • Design "forcing functions" to reduce ambiguity and confirm acceptance of assignment.[2, 44] • Coordinate adequate staff coverage to support patient care handoffs.[44] • Communicate to and confirm acceptance of transfer and allow exchange of essential information.[35, 44]	ISMP 2005[129] Joint Commission International Center for Patient Safety 2006[132] Leonard 2004[44] Patterson 2004[2] Simpson 2005[35] USP 2005[130]

Search Strategy

To retrieve pertinent literature on the topic of handoffs, the following databases were reviewed: Academic Search Premier, CINAHL, Pre-CINAHL, EMBASE, Ovid's Medline, PubMed, and PsychInfo. The databases were searched for variants of the words "handover" and "handoff," "shift report," and "changeover." Additionally, the databases were searched for groups of subject terms representing the concepts of patient transfer, communication, and continuity of care. The use and combination of subject headings varied depending on the characteristics of each database. Searches for the concept of patient transfer used the following subject headings: transfer, discharge; transfer, intrahospital; patient discharge; transportation of patients; and patient transfer. The concept of communication was represented by terms such as "communication barriers," "communication," "communication skills," "communication theory," and "interpersonal communication." Subject headings focusing on the concept of overall health care delivery or quality included quality of care, health care delivery, continuity of patient care, patient safety, and medical care.

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Evidence Table. Selected Sources on Handoffs—Nursing Handoffs, Quality Improvement Activities, Interdisciplinary Handoffs

Source	Safety issue related to practice	Type	Study outcome measures	Setting & study population	Intervention	Key findings
Anderson & Helms 1993[69]	Handoff between hospital and home health agency (HHA)	Descriptive retrospective study	Inventory Referral Information (IRI) 40 items. Score 0–40 Monitor type, amount of information the HHA received from the hospital	Illinois, Iowa 300 patient records 1988–1990 Referrals of 6 hospitals to 4 HHAs	No intervention	• Scores ranged from 7 to 35 items completed • Hospital affiliated HHA received more data than nonaffiliated HHA • More information transmitted between hospital and HHA when a standard form used
Atwal 2002[122]	Discharge planning	Qualitative	Interview of nurses utilizing critical incident technique Observation of nurses and other health care providers	19 nurses Interviewed Observation at multidisciplinary meetings	No intervention	• Miscommunication of information • Observed other priorities precluded attendance at multidisciplinary meetings • Strained "interprofessional relationships"
Australian Council for Safety and Quality in Health Care 2005[1]	Handoffs	Literature review	Retrieval of literature that addresses handover and safety in both health and nonhealth literature The literature review report includes sources from 1993–2004.	777 papers reviewed Only 27 met inclusion criteria 8 non-health care 19 health care Another 21 papers did not meet criteria but were termed useful.	Studies with interventions reviewed included computerized documentation system, interdisciplinary rounds, Other reports included observational studies cases studies	• Quality of evidence on clinical handoffs deemed "extremely poor" (p. 5). • Majority are descriptive studies. • Three domains identified. • System design factors: 17 papers • Organizational/culture: 6 papers • Individual factors: 4 papers • Recommendations for each of the three domains are provided.

Source	Safety issue related to practice	Type	Study outcome measures	Setting & study population	Intervention	Key findings
Bruce & Suserud 2005[107]	Experiences of emergency nurses receiving patients who are attended by ambulance nurses	Qualitative descriptive	Four themes were identified: prehospital reporting, symbolic handover, ideal handover, nonideal handover.	Sweden 6 nurses	No intervention Analyze experiences of emergency nurses and the handover and triage process	• Reportedly the first study of ambulance nurse to emergency nurse handover. • Interface between prehospital and hospital is critical. • The researchers recommend "the handover process needs to be structured and made uniform" (p. 208). • The ideal handover was described as one that was patient focused and the problems were communicated "clearly." • Authors identify questions to be asked during the handoff.

Behara 2005[106]	Emergency department (ED) transitions	Qualitative ethnographic	Observation of shift changes, and additional types of exchanges and investigations. Content analysis and grounded theory. Development of conceptual framework.	United States and Canada
				
				5 EDs:
				3 inner city
				1 private tertiary center
				1 community
					No intervention	• Variety in types of handovers observed
						• "Nearly universal" attributes of ED handoffs identified.
						• Conceptual framework included four attributes:
						  1. Type of process
						  2. Content
						  3. Structure
						  4. Dynamic

Cahill 1998[52]	Bedside handoff (patient perceptions)	Qualitative design using a grounded theory approach	Three major categories emerged from the interviews with patients: • 'Maintaining a professional distance' • 'Establishing professional sharing' • 'Maintaining patient safety'	Nursing Unit 10 patients	No intervention	• Maintaining patient safety identified as "primary purpose" • Patients expressed concern not always understanding the terms used by nurses in report. • The patients reported handoffs were short in duration, lasting no longer than 2 minutes. • Some patients did wish to be involved in the handoff process, but not all patients did.

Source	Safety issue related to practice	Type	Study outcome measures	Setting & study population	Intervention	Key findings
Currie 2002[108]	The handoff in an ED setting	Survey/ Questionnaire	Questionnaire addressed 12 topics in handoff (examples include; patient name & age, medical history & medications, vital signs, plan of care, and other topics.) Also included problems with handoff and preference for bedside or nurses' station handoff.	Emergency admissions and assessment unit. 28 nurses	No intervention	• Problems with handoffs included missing information, distractions, and lack of confidentiality. • High-priority topics included reason for admission, treatment, name, age, restrictions, plan of care, and medical history. • Recommended a standard handoff and use of clinical guideline • Suggested a strategy for handoffs using an acronym of confidential, uninterrupted, brief, accurate, and named nurse (CUBAN); however, it has not been evaluated.
Dowding 2001[95]	Shift report	Experimental factorial design	Two independent variables: 1. Type of shift report (retrospective, prospective) 2. Schema-type information (consistent, inconsistent) Dependent variables: amount of information documented, recalled and the plan of care.	Scotland Two hospitals Medical and surgical wards 48 nurses	Manipulation of a handoff (shift report). Explore the effect of manipulating information on nurse's care planning. The nurses were randomly assigned to one of the four experimental conditions.	• Type of shift report had significant effect on plan of care score. • Type of schema did have a significant effect on documentation and recall, but no effect on plan of care. • Recall of information ranged 20.1% to 34.2% depending on type of report and schema. • The study conditions used an audiotape and did not allow for "'normal' shift report" with interaction and questions. • Further research is needed in a more natural setting.

Source	Safety issue related to practice	Type	Study outcome measures	Setting & study population	Intervention	Key findings
Footitt 1997[91]	Evaluation of a pilot of telephone method for shift report	Piloting a new system Quality improvement	Communications and cost effectiveness of handoff process using new telephone-based system.	United Kingdom Gynecology department of hospital Sample size not specified	Implementation of Nurse Communicator System (telephone system for reports) in spring 1995	• Reported system reduced time spent in the report (handoff) • Deemed "affordable" • Allowed reinvestment of resources • Need adequate number of phone lines to support the handoff process

Greaves 1999[90]	Bedside handoff (patient perceptions)	Qualitative	Patients were interviewed and asked questions about the handoff process. Aspects explored included likes, dislikes, privacy, experience with past handoffs, areas for improvement.	Hospital
				
				Four patients
				
				Assess patient perceptions of handoffs at the bedside
					No intervention	• Four themes emerged from interviews and analysis of data
						  1. Access to information and a desire to be included in the handoff
						  2. Confidentiality of patient information
						  3. Continuity— the communication of information from one shift to another
						  4. Neglect— the staff need to be available during a handoff to care for patients so patients are not at risk for "neglect"

Haig 2006[45]	Communication	Quality Improvement	Use of SBAR <u>Outcome Measures</u> Medication reconciliation Adverse events	Bloomington, Illinois Medical center	Effort to implement situation, background, assessment and recommendation (SBAR) communication tool.	• SBAR use increased to 96% in 2005. • Use of SBAR in discharge medication reconciliation increased from 53% to 89%. • Adverse events decreased.

Source	Safety issue related to practice	Type	Study outcome measures	Setting & study population	Intervention	Key findings
Hardey 2000[87]	Communication of information	Qualitative ethnographic	Communication process, specifically the use of "scraps" examined. "Scraps" are "personalized recordings of information" (p. 209) on paper or in notebooks by nurses. Grounded theory analysis.	England 5 wards (geriatric) Observation of 23 handovers Observation of interactions Interviews with 34 nursing personnel Written records	No intervention	• Scraps are used for a variety of purposes such as a 'to do' list, and record information about the patient's clinical status. • Scraps were used by nurses to augment documentation due to "perceived inadequacies." • Three themes were identified related to the use of scraps: construction and content of scraps, role and use of scraps, confidentiality and disposal.
Hendrich 2004[28]	Impact of acuity-adaptable rooms on transfers, medical errors, satisfaction	Pre-post method	12 outcomes-based questions (seven addressed in article). Outcomes studied: patient complications & mortality, sentinel events, clinician satisfaction, patient satisfaction, recruitment and retention of nurses, market impact, costs	United States Hospital 2 years baseline data 3 years postimplementation data	Use of acuity-adaptable rooms	Postimplementation • 90% decrease in patient transports • 70% decrease in medication errors • Decrease in number of patient falls • Decrease in patient dissatisfaction

Hopkinson 2002[83]	Handover related to the dying patient	Qualitative phenomenological approach	Nurses were interviewed and asked to discuss caring for a dying patient.	United Kingdom
				
				Two hospital trusts
				
				Eight hospital medical wards
				
				28 nurses
					No intervention	• Two major functions of the handoff:
						  1. Seen as supportive as allowed nurses a venue to discuss opinions and express feelings
						  2. Exchange information in order to provide care
						.

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Kassean & Jagoo 2005[57]	Handoff process	Quality improvement project Use of force field analysis	Evaluation of bedside handover using 6 criteria based on observation Perceptions of patients' regarding bedside handoff using a 6-item, semistructured interview	Mauritius 28-bed ward 10 nonparticipant observation handovers Semistructured interviews of 40 patients	Implementation of bedside handoff	• Observation of 10 handoffs revealed a compliance rate ranging from 90% to 100% for individual criteria. • 40 patients interviewed,100% indicate confidentiality handled with sensitivity at the beside handoff. • The "targeted" goal of 80% was exceeded on this unit.
Kelly 1999[85]	Handoff process in the critical care unit	Qualitative Ethnomethodo-logical approach	The components of the handoff were examined, including the initiation, content, the handing over to the next shift.	Critical care unit 2 handover transcripts (2 handoffs)	No intervention	• Examples of the text of the shift report are provided, and interaction of the nurses is examined in depth. • Fourteen "specimens" observed related to the handoff are delineated.
Kennedy 1999[54]	Nonverbal handoff	Qualitative Study Quality improvement	Pre Non-Verbal Handoff Nonparticipant observation of bedside handoff Post nonverbal handoff Qualitative data obtained via semistructured interview of staff, Eight months post implementation of nonverbal handoff an audit of documentation was conducted	28-bed ward 41% (9) members of nursing team Stratified sample Documentation	The implementation of a nonverbal handoff system	Post nonverbal handoff: • The documentation of information addresses reporting that one "didn't hear information in the handoff. • Disadvantage: "forgetting" to document and quality of some reports. • Team preferred the nonverbal handoff • However, interviews indicated all nursing team members still passed on information verbally in addition to the nonverbal report. • Audit results indicate there was a 60% improvement in documentation 8 months post-implementation of nonverbal handoffs.

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Kerr 2002[78]	Shift "handover" (handoff)	Qualitative	The handoff was observed by researchers. An interview guide was used and focused on three issues: practice (7 questions), functions (3 questions), and problems and effectiveness (9 questions).	2 pediatric units 20 handovers per unit 12 individual per unit and 2 group interviews per unit Participants included nurses, support worker, students	No intervention	• Four main functions of handoff: informational, social, organizational, educational • Three phases of handoff: pre-handover, intershift (meeting), post-handover. • A number of tensions were identified inherent in the handoff process, including tension between being comprehensive versus information overload; confidentiality issues versus family-centered care.
Lally 1999[81]	Intershift handoff	Qualitative Observation	Research question: To what extent does the intershift handover involve social cohesion of the group/team? Observation Audiotaped the handovers, used field notes, transcribed the data, and conducted qualitative analysis.	United Kingdom One ward in a hospital in the 6 shift handovers	No intervention	• The study of shift handoff revealed 16 themes within 5 categories: nursing process, learning the ropes, them and us, model in action, foreword and appendices • A number of functions were identified in the handover, including transfer of information, teaching, and enhancement of group cohesion.

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Lamond 2000[21]	Shift report	Two-by-two design comparing 2 hospitals Content analysis used on audio and written data	Multidimensional scalogram analysis (MSA) of content comparing shift report and documentation Types of information in report and documentation analyzed included general, physical, physical measures (i.e., pulse, blood pressure, etc.), psychological, social, family, nursing interventions, medical treatment, global judgments, management issues.	England 2 hospitals 2 medical 2 surgical wards 5 consecutive shift handoff reports on each ward, total of 20 reports Records documentation (medical notes, kardex, care plans, etc.) from 15 patients per ward, total of 60 patients	No intervention	• Shift reports ranged from 15 to 55 minutes in duration, average 34 minutes. • Correlation between information in documentation and report was r = 0.47, *P* < 0.001.(D.Dowding, personal communication January 3, 2008) • Shift report was provided in a certain sequence on each ward. • More information recorded in records than transmitted via report • The most frequently reported aggregated items were patient name, age, consultant, diagnosis, date of admission, surgical interventions.
Leonard 2004[44]	Communication	Quality improvement	Patient transfer to skilled nursing facilities (SNFs), communication of data checklists, Employee satisfaction scores. Turnover Wrong site surgery	Kaiser Permanente	Implementation of standardized communication process (SBAR), checklists for patient transfers, briefings	Checklist: • Improvement in communication between hospital and SNF • Improvement in patient having correct medication when transferred to SNF Briefings: • Improvement in employee satisfaction by 19% • Nursing turnover decreased • No wrong site surgeries reported after briefing implemented

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Lingard 2005[103]	Communication in the operating room (OR)	Qualitative	Ethnographic observation of implementation of checklist Informal interviews to assess the benefits and disadvantages of checklist Grounded theory approach	OR of teaching medical center 33 OR staff (surgeons, nurses, anesthesiologists, residents) 18 procedures 11 interviews	Implementation of a Preoperative Team Checklist	• Checklist used successfully
						• Checklist discussion duration 1–6 minutes
						• Some inconvenience noted
						• Discussions were perceived as efficient by participants
						• Benefits outweighed inconvenience
						• 6 functions of checklist identified:
						  1. detailed, case-related information
						  2. confirmation of case-specific details
						  3. articulation of concern or ambiguity
						  4. decisionmaking
						  5. team building
						  6. education

Liukkonen 1993[77]	Handoff content	Content analysis qualitative and quantitative	Identified type of information discussed in the shift handoff; a total of 28,891 statements were placed in 5 content classes.	2 wards in 2 geriatric homes Audio recording of shift reports Transcripts 1,034 pages	No intervention	• Handoff reports lasted 30–90 minutes. • Most of the content related to physical needs of the patients followed by medical treatment.
Manias & Street 2000[86]	Communication practices of nurses in a handoff	Qualitative Critical ethnography	Focus on issues and activities related to handoff, including nurses' interactions. The data was analyzed using textual analysis followed by more in-depth analysis using a 4-question guide	Australia 16 bed critical care unit 6 nurses Professional journaling, observation 3 focus group interviews 2 interviews per participant	No intervention	• First a "global" handoff was presented to all nurses. Second, after assignments of nurses to patients, bedside handoff occurred, focused on individual cases • Complex communication practices emerged. • Five specific practices were identified: global handover, examination, tyranny of tidiness, tyranny of busyness, and sense of finality.

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McKenna & Walsh 1997[88]	Shift handoffs	Action research model	Four goals were identified: 1. Assess present handoff processes, trial a handoff method. 2. Complete handoffs within 30 minutes. 3. Continue care during handoff. 4. Care continuity between shifts.	Australia 44 wards medical, surgical, high dependency unit, oncology/ palliative care Audit of duration of handoff and comments from the staff	• A variety of handoff methods were trialed on the 4 wards. • Handoff methods included bedside, verbal and bedside, verbal by nurse in charge, verbal, tape recorded.	• On average handoff length decreased to less than 30 minutes. • Challenges were encountered on different units in changing the handoff process. • Different handoff processes may be suitable for some nursing wards (units) and not for others.
Menke 2001[140]	Computerized clinical documentation system (CDS)	One group pretest–post-test design	Pre- and post-test time study of nursing care /charting, medication delivery, clinical decisionmaking, documentation quality; continuity of care (shift-to-shift report)	Pediatric intensive care unit Schedule and delivery time of medications, chart review, lab values, computer record review, and questionnaire	Implementation of a computerized CDS	• After implementation of a computerized CDS, no change in time for patient care or documentation, • Improved quality of documentation. • Unable to analyze related lab normalization information due to missing information from "paper chart." • Improved access to medical record • Increase in reimbursement

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Miller 1998[13]	Continuity of care, types of handover (handoff)	Literature review	Review of articles addressing four types of shift handoffs: recorded, bedside, written, and verbal. Literature review included other components related to the handoff, ritual, "what to say," and quality.	Literature review nursing handoffs spanning a 15-year period (1983–1998)	Literature review	• The literature addresses the "ritual" of the handover, suggestions for the content, quality of the handover. • Issue noted with the "inconsistency of information" in the handover. • Three recommendations provided: - Formal reviews of handoffs - Develop guidelines for content of handoffs - Utilize an approved "handover sheet" for nurses
O'Connell & Penney 2001[41]	Shift handover	Qualitative Grounded theory approach	Assess how nursing care is 1. determined 2. delivered 3. communicated in the hospital Three handoff methods were studied: 1. face-to-face verbal in office 2. face-to-face at the bedside 3. tape recorded	Teaching hospital 1.Semistructured interviews (n = 27) nurses, patients, relatives 2. Field observation (5 sites) 3. Informal interviews (n > 40 nurses)	No intervention	• Strengths and limitations identified for all 3 types of handoff reports. • Handoff is forum to communicate about patient. • Forum for nurses to debrief and seek clarification. • Recommendations include develop forms to guide handoff.

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Parker 1992[14]	Shift handover	Qualitative observation	Observing the process, method, and content of handovers	Critical care unit, burn unit, step down unit, medical unit, surgical units, 12 handovers	No intervention	• Handovers lasted 15–45 minutes.
						• A variety of processes and methods were used in the handover (e.g., use of notes, computer printout, or no notes).
						• Four dimensions of handover:
						  1. Clinical: transmission of information, including treatments, and addressing problems
						  2. Management: addressing "deployment" of unit resources to provide care
						  3. Professional: includes "peer assessment"
						  4. Personal: allow for debriefing

Patterson 1995[64]	Continuity of care during patient transfers	Descriptive	59-item survey of nurses, addressing patient transfers	Medical Center, 197 Nurses, 21 units	No intervention	• 68% satisfied with information received. • 82% received patient information via phone, but not all units use telephone report. • Critically important content items identified.
Patterson 2004[2]	Handoffs in high-risk settings	Qualitative	Observation of handoffs in four different settings based on previous research findings; 21 handoff strategies listed	4 studies: NASA mission control, nuclear power plant, railroad dispatch center, ambulance center	No intervention	• Handoffs were reported to be interactive and face to face. • Commonalties in efforts to improve handoffs' effectiveness were identified across industries. • 19 handoff strategies were observed

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Payne 2000[80]	Handover	Qualitative Ethnographic	Observation of information exchanged in handover Audio taping of handovers Interviewed staff, Review of documentation	England 5 wards in geriatric unit in hospital Observation 146 hours 23 handovers 34 interviews with nursing personnel Written records; Kardex, care plans, "scraps"	No intervention	• Reports on 20–30 patients lasted about 20 minutes. • Use of jargon and abbreviations. • Reports given quickly. • Student nurses reported difficulty understanding handover reports. • Three levels of documentation observed: 1. formal/public documents, Kardex, and care plans 2. Semiformal: ward diary 3. "Personal nursing records" 'scraps' " (p. 282) *Note: related study (Hardey, 2000[87])
Petersen 1998[16]	Computerized sign-out	Pre- and Post-Intervention Quality improvement	Patient data included sociodemographic, severity of illness, comorbidity. Outcome Measures: adverse events.	Urban teaching hospital Boston Admissions: 3,146 baseline 1,874 Pre-intervention 3,747 intervention period	Computerized sign-outs	Decrease in the rate of adverse events reported after the implementation of computerized sign-out program when compared with the baseline information.
Priest & Holmberg 2000[94]	Illustration of ineffective shift report	Qualitative Synthesized case study	Incomplete assessment on admission, ineffective shift report, adverse drug reaction, and the consequence for patient in a psychiatric setting	Synthesized case study	Nursing care rendered is examined and critiqued in synthesized case study.	• Several deficits in shift report presented and analyzed. • Need for focus on the patient and factual information during a handoff.

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Pothier 2005[55]	Data loss in the handover	Quasi-experimental	Assess three methods for handoff and the differences in information retention Retention of data (total data points) Omission of data Insertion of incorrect data	Hospital 5 nurses Handoffs of 12 fictional patients	Type of handover 3 techniques studied : • Verbal only • Written—verbal with written notes • Sheet—use of preprinted sheet with patient information and verbal exchange at handover	• 96% to 100% of information was retained using the preprinted sheet containing patient information and verbal report. • 31% to 58% of the data was retained using the note-taking style and verbal report. • 0-26% data retained with "verbal only" style.
Prouse 1995[53]	Taped shift reports	Quality Improvement Project	Pilot study Study reported on staff description of taped recorded handover postimplementation	Hospice nursing ward Early and late shift handovers Sample size not specified	• Implementation of taped handovers • Evaluated at 1 and 3 months postintervention	• After implementation of taped reports handovers, described as "organised, concise, and wholly relevant."(p. 41) • Suggestion for taping and its benefits are described. • Disadvantages of taping presented briefly
Richard 1988[22]	Congruence between patient condition and shift report	Descriptive	Handoff study for incongruence, omission, omission resulting in incongruence Data Collection of 11 items	Western U.S. 19 medical surgical units of an 800-bed hospital 57 shift reports 584 patients 2,952 entries	No Intervention	• Discrepancies were noted between the reported and actual patient condition. • Overall congruence of 70% (range 68–72%) between the patient's condition and the shift report. • Overall omission rate of information was 12% (range 9–16%). • Incongruence was 12% (range 11–14%). • Significant relationship between type of reports and lack of congruence.

Source	Safety issue related to practice	Type	Study outcome measures	Setting & study population	Intervention	Key findings
Sexton 2004[42]	Handover shift report	Qualitative	Observation of handover Analysis of data from audiotaped handovers Compare handoff information with documentation Information in nursing handover categorized to where information documented	Australia 30-bed medical unit in 200-bed hospital 23 handovers	No intervention	• Shift report lasted 15–50 minutes. • Some of the handovers were reported to "promote confusion." • Nurses usually did not use care plans or other formal sources in the handover. • 84.6% of information could be communicated via documentation.
Sidlow & Katz-Sidlow 2006[141]	Electronic sign-out system	Descriptive	Surveyed nurses regarding impact on nursing care after implementation of sign-out program. Likert scale survey with option for comments	New York General medical unit, in medical center 19 nurses	• Nurses given access to computerized sign-out used by physicians • Training • Provided with computer printouts and requested to use reports	• Implementation of program rated positively by nurses. • Nurses reported improved communication between nurses and physicians. • Advantages cited integration of record used by nurses and physicians
Sherlock 1995[43]	Handover	Qualitative	Observation of handovers and interviews of nursing students to study "quality and effectiveness" (p. 33)	2 medical wards 3 nursing students	No intervention	• Handovers lasted 10–61 minutes. • Variance noted in the handover process. • Teaching did not occur in the handovers observed. • Practice implications provided

Source	Safety issue related to practice	Type	Study outcome measures	Setting & study population	Intervention	Key findings
Spee 2000[93]	Handover report	Quality improvement	Handoff shift report option trialed, staff asked to document concerns during the trial. Evaluated at staff meeting. Professional practice leader reviewed documentation on census sheets during trial period.	Nursing home Two 34-bed units	Introduction of a change process to the shift handoff. Nurses were provided with 6 shift report options. One option trialed for 3 weeks	• One method chosen initially. • Another option was chosen subsequently and adopted for use. • Nurses sought to adopt option associated with decreased report time, improved documentation, and increased patient satisfaction.
Strange 1996[82]	Handover report	Qualitative	Ethnographic analysis of the handover process	One ward	No intervention	• Practices within the handover are examined. • Technical functions of handoff include transmission of information. • The ritual in handover is described.
Strople & Ottani 2006[89]	Intershift report	Literature review	Shift report purpose, methods, formats described.	Review spans 1988–2005 63 citations	Literature review	• Analysis of deficiencies and problems with shift communication presented. • Alternate methods of communication, such as computer technology, to importance of patient safety are discussed.

Source	Safety issue related to practice	Type	Study outcome measures	Setting & study population	Intervention	Key findings
Taylor 2002[84]	Handover	Qualitative	Student nurses and RNs were observed conducting patient care procedures. Taped, transcribed interviews were analyzed and coded.	Hospitals Observation and interview Three groups students year 1 students year 3 RNs 18 student (novice) nurses 15 RNs (expert) nurses	No intervention	• All sought information from at least one source prior to patient procedure. • Sources of information included: handoff, documentation, knowledge of patient, other sources • Difference in how nursing students and expert nurses accessed data • Problems that novices encounter during handoff are discussed.
Timonen & Sihvonen 2000[165]	BedsideHandoff	Descriptive	Patient and nurses perceptions of report Participation by patients in report Identification of factors that influence patient participation	Finland Six hospitals 118 nurses 74 patients 76 "bedside reporting session"	No Intervention	• Reports approximately three minutes in length • Differences in patient and nurses of perceptions bedside report • Patient reported various reasons for not participating in reports including tiredness, and not being encouraged to participate
Webster 1999[56]	Bedside handoff	Action Research Quality improvement	Questionnaire used at 3 and 6 months postimplementation. 3 months: 13 questions; 6 months: 9 questions. Access to information, patient/client orientation, confidentiality, communication (quantitative & qualitative)	Medical unit 3 months: 22 surveys 6 months: 24 surveys	Change from traditional handover to bedside handover.	6 month evaluation: • 100% reported access to resuscitation status • 92% reported could access patient information. • 58% had enough time to access information, 21% not enough time, 21% unsure. • 21% confidential information discussed at bedside (area of concern). • 67% reported enough communication of information.

Source	Safety issue related to practice	Type	Study outcome measures	Setting & study population	Intervention	Key findings
Van Eaton 2005[138]	Computerized sign-out	Randomized crossover	Observation Self-reported Patients missed in rounds Time spent in rounds Assessment of intervention on continuity of care 16-question survey administered three times to assess continuity of care.	2 teaching hospitals 14 resident teams 6-surgery 8-medicine 161 residents	Computerized sign-out system	• Decrease in patients missed on rounds. • Decrease in time spent in rounds • The majority surveyed reported an improvement in continuity of care and sign-out quality.