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Nursing Handoffs:

A Systematic Review of the Literature

SURPRISINGLY LITTLE IS KNOWN ABOUT WHAT CONSTITUTES BEST PRACTICE.

ABSTRACT

Objective: Handoffs of patient care from one nurse to another are an integral part of nursing practice; but there is abundant evidence that poor communication and variable procedures result in inadequate handoffs. We sought to conduct a systematic review of articles that focused on nursing handoffs, conduct a qualitative review of barriers to and strategies for effective handoffs, and identify features of structured handoffs that have been effective.

Methods: We conducted a systematic review of English-language articles, published between January 1, 1987, and August 4, 2008, that focused on nursing handoffs in the United States. The search strategy yielded 2,649 articles. After title review, 460 of these were obtained for further review by trained abstractors.

Results: Ninety-five articles met the inclusion criteria; of these, 55 (58%) were published between January 1, 2006 and August 4, 2008. Content analysis yielded identification of barriers to effective handoffs in eight major categories and strategies for effective handoffs in seven major categories. Twenty articles involved research on nursing handoffs. Quality assessment scores for the research studies ranged from 2 to 12 (possible range, 1 to 16). The majority of the research studies on nursing handoffs (17 studies; 85%) received quality scores at or below 8 and only three achieved scores above 10. Ten (50%) of the studies included measures of handoff effectiveness.

Conclusion: Despite the well-known negative consequences of inadequate nursing handoffs, very little research has been done to identify best practices. There is remarkable consistency in the anecdotally suggested strategies; but there is a paucity of evidence to support them. We call for high-quality studies of handoff outcomes that focus on systems factors, human performance, and the effectiveness of structured protocols and interventions.

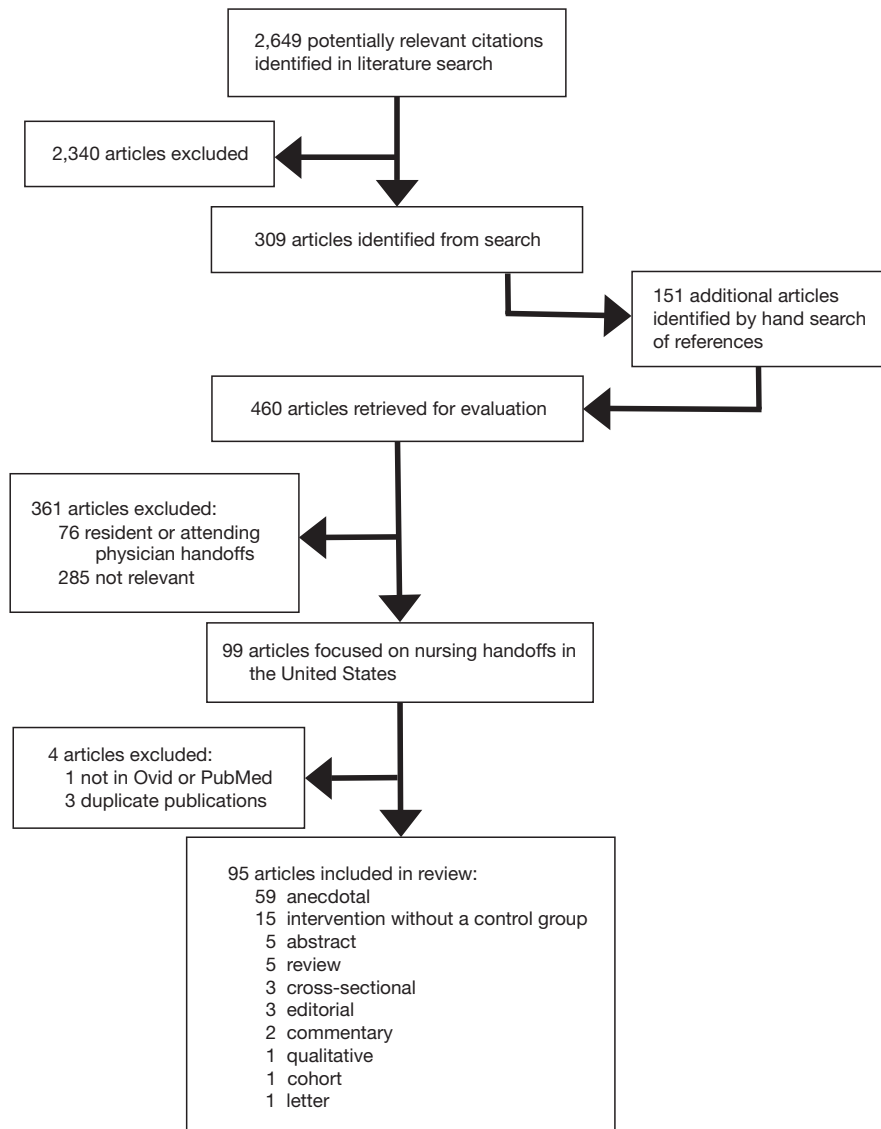
Key words: handoff, hand off, handover, signout, sign out, shift report

Handoffs are an integral part of clinical practice. They're so important that the Joint Commission has seen fit to define them: standardized handoff communication is "a process in which information about patient/client/resident care is communicated in a consistent manner" from one health care provider to another.¹ And they're certainly common enough—nursing handoffs typically occur at change of shift, and shifts change two, three, or more times daily, seven days a week. But nurses receive little formal training in this critical responsibility. Moreover, nurses may be found legally liable for failing to report necessary information during handoffs.² Clearly it's essential that effective handoff procedures be developed and that nurses be adequately trained in them.

Yet clinicians' handoffs are known to be vulnerable to communication failures, and inadequate communication is an often-cited factor contributing to medical errors. In an Australian study of more than 14,000 admissions, 17% were associated with an adverse event; in 11% of those events, communication problems were found to be a contributing factor.³ And in 2005 the Joint Commission on Accreditation of Healthcare Organizations (now the Joint Commission) reportedly found in reviewing a decade's worth of data that "breakdowns in communication [were] implicated in two-thirds of all types of sentinel events."⁴ Simply put, as one expert said, "errors in communication give rise to substantial clinical morbidity and mortality."⁵

Researchers exploring the nature and causes of human errors in the intensive care setting found that verbal communication between physicians and nurses was cited as a factor in 37% of errors.⁶ Among their recommendations was "formalizing . . . the content and

FIGURE 1. Nursing Handoffs Literature Search and Study Selection Process



mode of information transfer” during shift changes. And although it didn’t specifically look at handoffs, another study conducted in two EDs found that 31% of communication events were interruptive in nature; the researchers warned that interruptions combined with multitasking could produce clinical errors.⁷ Indeed, the verbal style of handoffs, whether between nurses or nurses and other clinicians, has been characterized as “partial, cryptic,”⁸ and “remarkably haphazard.”⁹

Variability in handoff procedures may also introduce error. In one experimental study, researchers varied handoff style (task-centered versus patient-centered)

and content (consistent versus inconsistent) to test recall.¹⁰ They reported low recall rates ranging from 20% to 34% at best. In one quasi-experimental study, researchers tested three handoff styles (solely written, solely verbal, and a combination of these); although the combination style yielded good recall rates (96% or higher), the solely verbal and written styles did not, with rates varying from 0% to 58% at best.¹¹ And Ebright and colleagues studied novice nurses’ near misses and adverse events and found that in seven of eight cases, inadequate handoffs—characterized by either a lack of information or confusion—were involved.¹²

Many clinicians recognize that current handoff practices are inadequate. In a 2009 Agency for Healthcare Research and Quality survey, almost half (49%) of the 176,811 hospital staff respondents reported that “important patient care information is often lost during shift changes.”¹³ Bernstam and colleagues studied after-hours calls made by nurses to physicians and

concluded that tailoring handoff procedures to address common problems (such as the need for orders clarification) would improve handoff quality and result in fewer such after-hours calls.¹⁴

Numerous national patient safety organizations, including the Institute for Healthcare Communication (www.healthcarecomm.org), have focused on

BARRIERS TO EFFECTIVE HANDOFFS

Identified in articles on U.S. nursing handoffs in the English-language literature, January 1, 1987, to August 4, 2008.

Barrier Categories

Communication barriers

General communication problems

- Omissions (missing or incomplete information)
- Errors (incorrect, extraneous, duplicate, or irrelevant information)
- Miscommunication (misunderstood information)
- Inaccurate recall of information
- Inability to contact handoff nurse if follow-up questions arise
- Failure to communicate the importance of certain items
- Failure to understand which information is essential
- Report becomes too routine; attention lapses occur
- Disorganized report
- Report relies only on documentation; patient’s current status isn’t shared
- Report includes judgmental statements
- Staff members interrupt each other
- Idle chatting during handoffs
- Illegible handwriting

Social and hierarchical problems

- Relational problems (such as those caused by a lack of peer support, a lack of mutual respect)
- Problems associated with the hierarchical structure of the health care team
- A “culture of blame” that inhibits questioning
- Confusion about roles and responsibilities of team members
- Problems communicating with physicians

Cultural issues

- Language barriers (difficulty understanding each other; culturally different uses of a word or phrase)
- Ethnic barriers (ethnic differences in communication patterns)

Problems associated with standardization

- Lack of standardization (for example, forms in use aren’t standardized; shifts or units use different forms, processes, or documentation systems)
- Problems with the standardized tools or systems used
- Lack of adequate policies and procedures relevant to handoffs
- System in use isn’t clearly defined or understood
- Staff resistance to changes in handoff system
- Lack of handoffs research and of data to support best practices
- Lack of financial resources to implement recommended changes
- Lack of leadership support

Problems associated with mnemonics (more than one handoff mnemonic in use; inadequate training in or reinforcement for using the mnemonic)

Equipment issues

Limitations associated with the communication medium (telephone, e-mail, paper, computerized system, audio- or videotape)

Environmental issues

- Interruptions
- Distractions
- Multitasking during report
- Chaotic environment where report is given
- Too much noise
- Poor lighting
- A lack of privacy; difficulty ensuring confidentiality

A lack of or misuse of time

- Time constraints (insufficient time allotted for handoffs)
- Process used is too time consuming
- Report is too long

Difficulties related to complexity of cases or high caseloads

- High-acuity patients or those with severe illnesses (more complex handoffs)
- Too many patients (less time for handoffs)
- Increasing volume of patient information
- Increasingly complex care environment
- Workforce structure doesn’t support adequate handoffs
- Emergent patient condition occurs during handoff

A lack of training or education

Staff receives inadequate or no training in handoffs

Human factors

- Too few nurses on a shift or unit
- Stressful or overlong shifts (can cause fatigue, forgetfulness)
- Shift changes are busy times; reports may be rushed
- Human limitations (such as the limits of human memory)
- High nursing turnover, resulting in less stable or less cohesive teams, poor team dynamics
- Quality of information can be affected by emotion (such as feeling overwhelmed)
- Sensory and information overload

improving health care communication. In 2006 the Joint Commission named a new National Patient Safety Goal for hospitals: implementing “a standardized approach to ‘hand off’ communications, including an opportunity to ask and respond to questions.”¹⁵ As of 2009 that goal remains unchanged, although in 2008 the Joint Commission elaborated on it, adding five “elements of performance” by which hospitals could achieve it.¹⁶

of barriers to and strategies for effective handoffs and for identification of handoff mnemonics. Using an iterative process, an abstraction form was developed to confirm eligibility for full review, assess article characteristics, and extract data relevant to the study questions. This iterative process started with an initial form, which was used by two reviewers (JL and LAR) independently to abstract data from five articles. The reviewers then met to discuss whether the abstraction

We set out to identify features of structured handoffs that have been shown to be effective.

We set out to review the literature on nursing handoffs and to identify features of structured handoffs that have been shown to be effective. To that purpose, we sought to identify all articles on nursing handoffs in the United States, conduct a systematic review of research studies, identify the mnemonics used, and conduct a qualitative review of barriers to and strategies for effective handoffs that were mentioned in any of the articles.

METHODS

We conducted a systematic literature search for English-language articles published on the subject of handoffs, using Ovid MEDLINE, Ovid MEDLINE In-Process & Other Non-Indexed Citations, CINAHL, HealthSTAR, and Christiana Care Full Text Journals@Ovid (January 1, 1987, to August 4, 2008). The search terms used were hand-off\$, handoff\$, signout\$, sign out\$, sign-out\$, handover\$, hand-over\$, signover\$, sign-over\$, intershift report, and shift report. (The wildcard character \$ ensured that the search also yielded articles containing plurals of these terms.) A total of 2,649 articles were identified. All titles were reviewed for possible inclusion and 460 articles were obtained for further review (Figure 1). Reference sections of all obtained articles were reviewed for additional articles.

Inclusion criteria. Articles meeting the following criteria were eligible for review of barriers to and strategies for effective handoffs and for identification of handoff mnemonics: they were in English; were indexed in OVID, PubMed, or both; were published between January 1, 1987, and August 4, 2008; and focused on nursing handoffs in the United States. Articles included in the systematic review could have any research design. Published abstracts were not included in the systematic review.

Trained reviewers (JL and LAR) determined that 95 articles met the inclusion criteria for the initial review

form served to collect all relevant data. A second, more detailed abstraction form was then created. Two reviewers (JL and JMC) independently abstracted all data from the 95 articles. A third reviewer (LAR) resolved abstraction disagreements, which were minor and occurred infrequently.

Development of the Quality Scoring System. In 1998 Downs and Black created a valid and reliable scale designed to assess both experimental and observational studies.¹⁷ Since then two systematic reviews of published systems (scales and checklists) designed to assess study quality have ranked their scale as one of the best.^{18,19} Both reviews went on to suggest that some modifications might be useful, depending on the specific topic and study designs. We developed a quality assessment form—the Quality Scoring System—using the original Downs and Black scale as a starting point, with revised and added items that seemed most relevant to our study. We used the Quality Scoring System in an earlier study of residents’ and attending physicians’ handoffs.²⁰ For the current study, we modified one item on the form, revising the description of participants from one relevant to physicians to one relevant to nurses.

The Quality Scoring System yields scores ranging from 1 to 16, with 16 being the highest score. The form contains two items related to study type and sample size, five items related to reporting, and five items related to internal validity. To view the form used in this study, see Figure 2 online: <http://links.lww.com/AJN/A6>.

Quality scores were independently obtained from two reviewers (JL and LAR). The interrater reliability (agreement between two or more reviewers) was assessed for all identified research studies ($n = 20$). The overall agreement was 97.5%; Cohen’s (another measure of interrater reliability) was 0.95, $P < 0.001$. All differences were resolved through discussion to yield a final quality score for each study.

Qualitative analysis of barriers to and strategies for effective handoffs. Conventional content analysis is a qualitative research technique used when existing theories on the phenomenon of interest are either limited or absent.²¹ Such analysis involves an iterative process that allows themes and patterns to arise from the data. Researchers “immerse themselves in the data to allow new insights to emerge.”²¹

initiative projects. The majority of the research studies (17 of 20 studies; 85%) received quality scores at or below 8, with nine receiving scores between 2 and 5, and eight receiving scores between 6 and 8. Only three studies achieved quality scores above 10, with scores of 10.5, 11, and 12.

Just 10 of the 20 research studies identified features of handoffs that have been shown to be effective.^{96,98}

Among the barriers to effective handoffs, communication barriers were noted most frequently.

Using this technique and working independently, two of us (JL and LAR) identified all references to the barriers to and strategies for effective handoffs in the reviewed articles and listed them in phrase format in two lists, one for strategies and another for barriers. The two of us then met to compare lists and, through discussion, agree on the final contents. In our previous study of residents' and attending physicians' handoffs, we used an inductive iterative process to create categories of barriers and strategies.²⁰ For the current study we used the same category labels, moving each phrase to the appropriate category or subcategory. The final, categorized lists were reviewed by the third author (JMC) for coherence and consistency.

RESULTS

Ninety-five articles describing nursing handoffs were identified. Fifty-five (58%) were published between 2006 and 2008. Five articles were excluded because they were abstracts²²⁻²⁶; 59 because they presented anecdotal data²⁷⁻⁸⁴; six because they were letters, commentaries, or editorials⁸⁵⁻⁹⁰; and five because they provided circumscribed reviews.⁹¹⁻⁹⁵ The remaining 20 articles described research studies on nursing handoffs and were analyzed in depth.⁹⁶⁻¹¹⁵ For details, see Table 1 online: <http://links.lww.com/AJN/A6>.

Thirty-three (35%) articles included the use of a handoffs mnemonic. Fourteen different mnemonics were identified, with SBAR (for **S**ituation, **B**ackground, **A**ssessment, **R**ecommendation) cited most frequently (25 of 33 articles; 76%; for details, see Table 2 online^{24, 29, 30, 33, 35-38, 45-48, 51, 56, 58-60, 62, 63, 65, 66, 71, 74-77, 84, 86, 88, 90, 103, 104, 109}; <http://links.lww.com/AJN/A6>). Content analysis yielded identification of barriers to effective handoffs in eight major categories (see *Barriers to Effective Handoffs*) and of strategies for effective handoffs in seven major categories (see *Strategies for Effective Handoffs*).

Quality assessment scores for the 20 research studies ranged from 2 to 12 (possible range, 1 to 16). Many, though not all, of the studies concerned quality

^{99, 101, 109-114} At one children's hospital, parents reported that participating in bedside shift reports helped them understand their child's condition and needs.⁹⁹ At another hospital, walking rounds that invited patient participation replaced tape recorded and oral shift reports; the adult patients interviewed said they felt “very positive” about nurses coming to their rooms at the start of shift to introduce themselves and explain planned care.¹¹⁰ Various studies also found that overtime decreased in association with the implementation of walking rounds,¹¹⁰ bedside shift reports,⁹⁶ or a customized telephone-based system.¹⁰⁹

In a study by Richard, the investigator listened to taped and face-to-face shift reports and checked the actual condition of patients, then analyzed the data for congruence, omissions, and omissions leading to incongruence.¹¹² (An omission was defined as information that if left out of shift report could increase inefficiency; incongruence was defined as occurring when information given during report “was different from the actual condition and the difference could have medicolegal consequences.”) The taped reports were significantly more likely than face-to-face reports to produce omissions, although taped reports were less likely to produce incongruence. In another study, Barbera and colleagues eliminated taped reports and instituted a system whereby all relevant information for each patient was recorded in a binder located directly outside her or his room.⁹⁸ Comparing the old system with the new one, the investigators demonstrated that the recording of medical histories improved from 55% to 100%, compliance with flow-sheet documentation increased from 45% to 100%, and the recording of iv catheter insertion dates improved from 75% to 95%.

An initiative at one hospital replaced telephoned reports with written reports for patients transferring from the ED to a unit; this yielded a 95% success rate for process completion and accuracy in the first year and a 97% success rate in the second.¹⁰¹ Admission

STRATEGIES FOR EFFECTIVE HANDOFFS

Identified in articles on U.S. nursing handoffs in the English-language literature, January 1, 1987, to August 4, 2008.

Strategy Categories

Communication skills

General communication

- Maintain patient and family confidentiality
- Be concise but thorough in conveying essential information
- Convey information clearly; ask questions if something isn't clear
- Keep report patient centered

Preparation

- Manage your time so that you're prepared to give report
- Gather necessary materials (such as patient charts, your own shift notes)

Transfer of responsibility

- Verify that the person receiving report understands and accepts transfer of responsibility
- Delay such transfer if there are concerns about patient status or stability

Language

- Speak clearly and at a moderate pace
- Use clear, specific language
- Keep all remarks objective; avoid judgmental statements
- Avoid the use of jargon, acronyms, or abbreviations

Standardization strategies

Standardize the process

- Provide opportunity to ask and respond to questions
- Develop guidelines, tools (templates, forms, checklists, scripts), policies, and procedures
- Use a tool to ensure that essential information is consistently included
- Tailor report tools as appropriate for different areas or situations (such as change of shift, patient transfer between units)
- Report information in the same order every time
- Use a verification process (such as reading back) to ensure that information is both received and understood
- Develop a teamwork contract and have team members sign it
- Use a mnemonic

During face-to-face communication

- Use interactive questioning

During walking rounds or bedside report

- Check equipment
- Check for missing information or ask additional questions
- Include patient and family in discussion of plans and goals

Monitor, evaluate, or audit the process

- Create an evaluation tool
- Use spot checks
- Provide direct feedback as soon as possible
- Modify the process as needed
- Focus on system problems

Technologic solutions

Use an electronic (computerized) handoff system

- Give report in front of computer (makes it easy to look up relevant information)

Use an audio- or videotaped report

- Plan ahead what you want to say
- Report information in the same order every time
- Stop the recorder when necessary to cut out distractions
- Listen to your taped reports occasionally to identify areas for improvement
- Ask a respected colleague to critique your report

Use a telephone-based voice technology system

Environmental strategies

- Limit interruptions and distractions
- Create a specific place for report that's well lit and quiet
- Maintain patient and family privacy
- Allow sufficient time

Training and education

- Use real-life examples (scenarios, stories) in class and "what-if" scenarios during practice
- Use role-playing to teach effective handoff skills
- Teach assertiveness and listening skills
- Address hierarchical and social issues (for example, by discussing how to communicate effectively with those above and below you in the hierarchy, how social and cultural norms affect communication)
- Discuss and address human factors (such as stress, fatigue, sensory or information overload)
- Provide adequate refresher training or education
- Create posters, pocket cards, Web-based resources, and other tools to reinforce handoff skills

Staff involvement

- Involve staff in the development of guidelines, tools (templates, forms, checklists, scripts), policies, and procedures
- Involve staff in the development of a training program

Leadership

- Have consistent expectations for compliance
- Facilitate nurse-physician dialogue to identify problems and find solutions
- Allow adequate time to plan an implementation strategy for a new handoff process
- Find early adopters and champions to help demonstrate effectiveness
- Link the shift handoff process to performance evaluation

“delays related to telephone report were eliminated,” and inpatient surveys showed a 20% improvement in satisfaction regarding “speed of admission.” At another hospital, researchers found that using a standardized, written report for patients transferring from the ED to the telemetry unit yielded increased staff and patient satisfaction, improved compliance with documentation of essential information, and saved nurses time.¹¹³ In a demonstration project at a third facility, oral shift reports were replaced with a written, problem-oriented report form.¹¹¹ After four months, 94% of staff reported that shift reports were more concise and 92% “felt that they were using time previously spent on report more effectively.”

be effective. Although American hospitals have long provided patient care and nursing handoffs have long been a part of that process, there’s little empirical evidence delineating what constitutes best handoff practices. Ten (50%) of the research studies included some outcome measure that might be linked to effectiveness.

In evaluating handoffs, several studies considered the format. For example, two studies noted that bedside shift reports or walking rounds were viewed positively by patients.^{99,110} And the use of bedside shift reports, walking rounds, or a customized telephone-based system¹⁰⁹ was shown to decrease overtime. But although patient satisfaction and decreased over-

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And in another study, researchers gave nurses access to medical residents’ electronic sign-outs; participants reported improved physician–nurse communication, increased knowledge of essential patient data (such as reason for admission, known drug allergies, and active clinical problems), and improved nurses’ ability to identify anticipated clinical status changes.¹¹⁴

DISCUSSION

We identified 95 articles describing nursing handoffs in the United States. Of those, 20 (21%) described research studies, none of which was a randomized controlled trial. Fifteen (75%) of the research studies involved an intervention,^{96-98, 100-104, 107, 109-111, 113-115} four (20%) were cross-sectional,^{99, 105, 108, 112} and one (5%) was qualitative.¹⁰⁶ Seven research studies didn’t provide sample sizes, and 11 had sample sizes that were relatively small, ranging from 10 to 54. Two studies reviewed shift report accuracy, involving 262¹¹⁵ and 584¹¹² patient reports, respectively.

More than half (55; 58%) of the 95 articles were published recently—between January 1, 2006, and August 4, 2008—which isn’t surprising in light of the Joint Commission’s creation of the National Patient Safety Goal on handoffs, first issued in 2006. However, as the quality scores demonstrate, there’s a remarkable lack of high-quality studies of nursing handoff outcomes. Indeed, the three studies with the best quality scores achieved scores of just 10.5, 11, and 12, respectively, out of a possible 16.

One purpose of the current study was to identify features of nursing handoffs that have been shown to

time are important outcomes, it’s not clear to what degree those are features of more effective handoffs.

In the study that compared taped with face-to-face shift reports, the taped reports were found to produce more omissions but were less likely to produce incongruence.¹¹² Therefore, neither format was shown to be completely accurate.

While the use of a written, problem-oriented form was found to be more concise and to save nurses time,¹¹¹ the accuracy of the content was not measured. In comparison with taped shift reports, having nurses record all relevant information in a binder located directly outside each patient’s room resulted in increased compliance with the recording of predetermined elements.⁹⁸ But such compliance, though valuable, isn’t necessarily indicative of an effective handoff.

The use of a standardized written report for transfers of patients from the ED to a unit was shown to yield greater accuracy,^{101,113} increase patients’ and nurses’ satisfaction,^{101,113} and save nurses time.¹¹³ Considered together, these results seem to indicate that a standardized format will increase compliance and might result in greater accuracy. But it’s also likely that no one format will suffice across all units in a facility or across all facilities. Rather, the format and its requisite elements will have to be adapted for each nursing area.

Barriers to effective handoffs. We identified numerous barriers to effective handoffs that could be organized into eight major categories (see *Barriers to Effective Handoffs*). Of these categories, communication barriers were noted most frequently, with general communication problems including such things as

lapses in communication or failures to communicate, lengthy or irrelevant content, and inaccurate recall of communicated information. Because effective communication is an essential component of effective handoffs, this is an important finding. Other communication problems included language barriers, illegible handwriting, and poor communication between nurses and physicians. Communication barriers related to social structures and hierarchies constituted a less intuitive grouping. Here we included such things as a lack of supportive behaviors among nurses and poor peer relationships. An understanding of the complex social structures and hierarchies in which nurses work, as well as the unwritten rules that govern handoff of patient responsibilities, will be required to improve the quality of handoffs.

Strategies for effective handoffs. We identified numerous strategies that could be organized into seven major categories (see *Strategies for Effective Handoffs*). Of these, strategies for standardization were noted most frequently. Technologic strategies, such as the use of computerized handoff systems, constituted the next most frequently mentioned group. Communication strategies included addressing hierarchical issues and those associated with organizational culture that were noted as barriers. Providing training or education and addressing environmental problems such as poor lighting and excessive noise make intuitive sense and were readily identified. A less obvious strategy was that of ensuring recognition that a transfer of responsibility had occurred. (For the raw data on barriers and strategies, please contact Lee Ann Riesenber: lriesenberg@christianacare.org.)

Limitations and strengths. Handoffs were studied in a variety of health care environments. Information

about barriers to and strategies for effective handoffs might not apply to every handoff situation; a strategy that's effective on a medical-surgical unit might not serve in the faster-paced, chaotic ED setting.

We abstracted data on barriers and strategies from all sections of articles, including introductions. This might have resulted in an overemphasis on some barriers or strategies. In addition, all of these barriers and strategies were described anecdotally, and our interpretation was dependent on the authors' views and use of repetition.

The current study was also limited by the search strategy, in that our search terms might not have included all relevant terms. We improved the likelihood that we would identify all articles meeting inclusion criteria by also reviewing the reference sections of all obtained articles. Although that strategy minimized the likelihood that we would miss germane studies, it didn't eliminate that possibility.

Another issue is publication bias. Because publication tends to favor studies with positive results, it's possible that high-quality studies with negative results haven't been published. Davidoff and Batalden observed that the results of many quality improvement projects aren't published.¹¹⁶ Furthermore, we noted that the results of some quality improvement projects are announced in newsletters but are not subsequently submitted to peer-reviewed journals. So there may be studies of nursing handoff outcomes that haven't been published in the peer-reviewed literature. These limitations notwithstanding, the explicit search strategy, clear inclusion criteria, and systematic processes used to identify and evaluate articles strengthened the quality of this review.

AREAS FOR FURTHER NURSING HANDOFFS RESEARCH

Outcomes data are needed in the following content domains.

Knowledge

- Document the accuracy of the description of the handoff protocol.
- Document the accuracy of examples of the use of the protocol.

Attitudes

- Report level of satisfaction with the handoff system.
- Report level of comfort with using the handoff system.
- Report level of satisfaction with handoffs received.

Skills

- Demonstrate ability to use the handoff system.
- Document the accuracy of information provided during handoffs.
- Document the extent to which received handoffs contain all needed information.

Process outcomes

- Record usage of handoff system.

- Describe details of the handoff process.
- Document the accuracy of information (its content and quality).
- Using process outcomes, answer the question "What are the best educational and implementation strategies?"

Clinical outcomes

- Describe errors related to handoffs (rates and types of errors).
- Document reduction of handoffs-related errors as a surrogate measure for improved safety.
- Define the elements of handoffs that lead to the best patient outcomes.
- Compare different protocols, educational strategies, or implementation strategies (or a combination of these) to determine which is most effective in which setting.

Our Quality Scoring System was based on a validated methodology developed to assess both experimental and observational studies. It had high interrater reliability, and reviewers of various educational backgrounds and experience found it straightforward and easy to use. The Quality Scoring System also provides a reproducible template for the assessment of handoffs articles. But our system hasn't been validated across multiple settings or with other investigators. Further, the relative weightings on the Quality Scoring System may require refinement and there may prove to be additional relevant categories.

Recommendations. Evidence-based practice is practice informed by high-quality research. Yet, as we stated earlier, there's little empirical evidence for what constitutes best nursing handoff practices. Our research on physicians' handoffs demonstrated a similar dearth.²⁰ And there are risks involved in implementing interventions for which evidence of effectiveness is lacking: valuable resources can be wasted, clinicians might become reluctant to implement other measures. Winters and colleagues, studying the use of rapid response teams, found that such teams were being widely implemented despite a lack of high-quality evidence for their effectiveness; they cautioned that "[n]ational efforts to improve patient safety should be supported by sufficiently strong evidence to warrant such a commitment of resources."¹⁷

Recently, publication guidelines on research on patient safety and quality improvement initiatives have been developed. The Standards for Quality Improvement Reporting Excellence (SQUIRE) guidelines (www.squire-statement.org/guidelines) establish a framework "for reporting studies that formally assess the nature and effectiveness of interventions designed to improve the quality and safety of care."¹¹⁸ And as Stevens observed, by extension having such guidelines should also improve study design¹¹⁹; they would have improved many of the studies reviewed here. We recommend that, in the future, researchers conducting and reporting on handoffs studies follow the SQUIRE guidelines.

The Joint Commission is calling for structured handoffs; yet we found very little evidence to support the use of any specific structure, protocol, or method. Based on our review of the U.S. nursing handoffs literature, we have developed a list of areas for further research, grouped into the content domains of knowledge, attitudes, skills, process outcomes, and clinical outcomes (see *Areas for Further Nursing Handoffs Research*).

High-quality outcomes studies that focus on systems factors, human performance, and the effectiveness of protocols and interventions are urgently needed. We call for rigorous outcomes studies that are designed to assess the effectiveness of nursing handoffs, determine which elements lead to improved patient outcomes, and identify the best implementation

strategies. We also recommend that these studies be reported using the SQUIRE guidelines. ▼

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