Handoffs serve many functions, from social bonding, to coaching and teaching, to team building, but the most important function of handoffs is information processing: making sure that essential data are transferred for patient safety. Substandard or variable handoffs have contributed to errors, care omissions, treatment delays, inefficiencies from repeated work, inappropriate treatment, adverse events with minor or major harm, increased length of stay, avoidable readmissions, and increased costs. The Institute of Medicine reported that communication failures account for most adverse outcomes in hospitals. Indeed, communication breakdowns were the primary root cause of more than 60% of 2000 sentinel events analyzed by the Joint Commission.

In 2006, the Joint Commission released a National Patient Safety Goal aimed at improving the effectiveness of communication among caregivers. Specifically, this goal required organizations to implement a standardized approach to communication during handoffs, incorporating an opportunity for staff to ask and respond to questions. A handoff is the “transfer and acceptance of responsibility for patient care that is achieved through effective communication. It is a real-time process of passing patient-specific information from one caregiver to another or from one team of caregivers to another to ensure the continuity and safety of that patient’s care.” Recognized as points of vulnerability, handoffs occur within and across clinical settings and disciplinary boundaries—on units at change-of-shift and to accommodate breaks, as well as when patients transfer between units or are transported to or from other departments for tests or procedures. Let’s take a hospital with an average daily census of 400, for example, where registered nurses work 12-hour shifts. In this practice environment alone, 2.9 million change-of-shift handoffs would occur each year (not to mention the numerous unit or interdepartmental handoffs!). As Haig et al stated, the intent of this National Patient Safety Goal was to create a shared mental model about the condition of the patient, because without this collective understanding, caregivers lose situational awareness. Thus, handoffs are designed to ensure the safe passage of information to increase the effectiveness of the actions of the receiving nurse, thereby enhancing continuity of care. The purpose of this review is to address the following PICO question: What effect do standardized nursing handoffs have on patients’, clinicians’, and financial outcomes?

Method
A search in CINahl and MEDLINE, limited to the 5 years from 2007 to 2012, was conducted by using these terms: “nursing handoff”, “interdepartmental handoff”, “change-of-shift”, and “shift report.”

Results
Formal research and quality improvement studies were retrieved: 4 quality improvement, 1 prospective observational, 1 interventional study, and 1 systematic review. Reviewed evidence was limited to handoffs involving nurses in acute/critical care settings. Table 1 summarizes findings from evaluations of nursing handovers at shift change and interdepartmental transfers.

Recommendations for Practice
Available evidence, albeit weak “level C” (Table 2), demonstrates that standardized change-of-shift and interdepartmental handoffs have a positive impact on many processes and outcomes:

- Clinician performance
- Improved communication—Increased conciseness (written shift report), reduced
### About the Author

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<table>
<thead>
<tr>
<th>Reference</th>
<th>Population (N)</th>
<th>Design and interventions</th>
<th>Findings</th>
<th>Level of evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jukkala et al⁷</td>
<td>Medical intensive care unit (N = 77)</td>
<td>Pre-post quality improvement evaluation: Standardized tool</td>
<td>Improved total/subscale shift report communication scores⁸ after implementation</td>
<td>C</td>
</tr>
<tr>
<td>Thomas and Donohue-Porter⁸</td>
<td>7 hospitals within system</td>
<td>Pre-post quality improvement evaluation: I PASS the BATON inter-shift report process at bedside with patient participation</td>
<td>Improved satisfaction of nurses Report time Pertinent information Patient's condition matches report Good intershift relationships Questions answered Staff accountable for completing care Overall satisfaction Increased satisfaction of patients 3 indicators in 1 hospital improved from 4th-49th percentile (baseline) to 61st-92nd percentile (1 year after implementation)</td>
<td>C</td>
</tr>
<tr>
<td>Blouin⁷</td>
<td>10 hospitals</td>
<td>Pre-post quality improvement evaluation: Standardized SHARE tool</td>
<td>Reduced defective handoffs by 52%</td>
<td>C</td>
</tr>
<tr>
<td>Riesenberg et al³</td>
<td>Varied (small samples: 10-54 nurses)</td>
<td>Systematic review: 20 studies • 15 interventional • 4 cross-sectional • 1 qualitative</td>
<td>Fifty percent of studies identified effective handoff features: Face-to-face reports (vs taped) reduced omission of information Walking rounds (with nurse introductions/explanations of plan of care) reduced overtime, heightened positive response from patients Parent participation in bedside shift report reduced overtime, increased understanding of child's needs/condition Information binders outside room improved documentation Written shift reports (vs oral) increased conciseness of reports and perceptions of effective use of report time Nurses' access to medical resident's electronic sign-outs improved nurse-physician communication and nurse's knowledge and ability to identify anticipated changes Written emergency department transfer reports eliminated admission delays; improved documentation compliance/accuracy, patient satisfaction (speed of admission), staff satisfaction; saved nursing time</td>
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*Continued*

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*P < .05.*

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omission (structured face-to-face), less need to reverify information (structured tool), better communication between nurses and physicians (electronic sign-outs)
- Greater knowledge—Of essential information (structured tool), anticipation of status changes (electronic sign-outs)
- Fewer technical errors (structured tool)
Higher satisfaction—Patient’s condition matched information (structured tool), general satisfaction (written emergency department reports)

- Patients’ outcomes
  - Advanced along clinical pathway (structured face-to-face)
  - Reduced complications—Falls (standardized interdepartmental tool), adverse outcomes (structured face-to-face)

- Patients’ satisfaction
  - Higher satisfaction (structured face-to-face, walking rounds)
  - Eliminated admission delays (written emergency department reports)
  - Improved understanding of health conditions (parent participation)

- Financial outcomes
  - More effective use of time (written shift reports)
  - Shorter handoff duration (structured tool)
  - Less overtime (walking rounds, parent participation)

Overall, although these handoff practices are “promising,” they are in need of rigorous evaluation to

- Better documentation—Compliance/accuracy (written emergency department reports; information binders)

**Table 1 (Continued)**

<table>
<thead>
<tr>
<th>Reference</th>
<th>Population (N)</th>
<th>Design and Interventions</th>
<th>Findings</th>
<th>Level of evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Roberts et al9</td>
<td>Housewide (medical/surgical to progressive care units, or ancillary departments)</td>
<td>Pre-post quality improvement evaluation: Standardized interdepartmental ticket (SBAR-Q format)</td>
<td>Reduced fall rates: from 4.62-5.01 (before implementation) to 1.55-2.64 (1 year after implementation)</td>
<td>C</td>
</tr>
<tr>
<td>Agarwal et al10</td>
<td>Operating room to pediatric intensive care unit</td>
<td>Prospective observational: Verbal telephone handover (2 year evaluation) Structured face-to-face handover (1 year evaluation)</td>
<td>Enhanced communication quality Reduced loss of information for every clinical category (patient, preoperative, anesthesia, operative, postoperative, laboratory tests) with structured vs verbal processa Improved knowledge of operative/perioperative informationa Reduced 3 of 4 major complicationsa (cardiopulmonary resuscitation, mediastinal reexploration, metabolic acidosis) Increased early extubationsa</td>
<td>C</td>
</tr>
<tr>
<td>Catchpole et al11</td>
<td>Postsurgery handovers (N = 50, 23 before and 27 after intervention)</td>
<td>Pre-post interventional: Handover protocol</td>
<td>Reduced technical errors from mean 5.42 (95% CI, ±1.24) to 3.15 (95% CI, ±0.71) Reduced information omissions from mean 2.09 (95% CI, ±1.14) to 1.07 (95% CI, ±0.55) Before intervention, 39% of handover patients had &gt;1 technical/information error vs 11.5% with new process Higher team performance correlated with fewer technical/information omission errorsa Reduced handoff duration from 10.8 to 9.4 minutes</td>
<td>B</td>
</tr>
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</table>

Table 2

**American Association of Critical-Care Nurses evidence-leveling system**a

<table>
<thead>
<tr>
<th>Level</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Meta-analysis of multiple controlled studies or metasynthesis of qualitative studies with results that consistently support a specific action, intervention, or treatment</td>
</tr>
<tr>
<td>B</td>
<td>Well-designed controlled studies, both randomized and non-randomized, with results that consistently support a specific action, intervention, or treatment</td>
</tr>
<tr>
<td>C</td>
<td>Qualitative studies, descriptive or correlational studies, integrative reviews, systematic reviews, or randomized controlled trials with inconsistent results</td>
</tr>
<tr>
<td>D</td>
<td>Peer-reviewed professional organizational standards, with clinical studies to support recommendations</td>
</tr>
<tr>
<td>E</td>
<td>Theory-based evidence from expert opinion or multiple case reports</td>
</tr>
<tr>
<td>M</td>
<td>Manufacturer’s recommendation only</td>
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</tbody>
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*From Armola et al,12 with permission.*
examine handoff features that lead to the best performance by clinicians and the best outcomes for patients. Additional research is necessary to determine which type of protocols are most effective in varied settings and for different purposes.\textsuperscript{3,6} For instance, results of 1 study\textsuperscript{7} indicated that overall communication improved with structured change-of-shift handoff procedures, but openness and quality of information did not. Other authors reported that face-to-face structured handoffs produced less omission than taped handoffs but were more likely to lead to incongruent information.\textsuperscript{1} These unexpected findings warrant more systematic investigation.

In order to achieve improved processes and outcomes, barriers that impede effective handoffs (Table 3) must be proactively addressed. These barriers include cultural aspects of our units/organizations, patient/staffing issues, human factors, time constraints, and educational issues. Deeply understanding that patients expect to be safe in our care, high-reliability organizations purposefully design human interactions that promote teamwork, structured communication, and situational awareness. Reliability refers to a failure-free operation over time from the viewpoint of the patient. In reference to handoffs, reliability means patient information flows consistently during transitions of care to enable safe, timely, and high-quality patient care.\textsuperscript{14}

Preventing communication failures begins with structured communication. Standard protocols identify necessary information for reliable handoffs and thus reduce clinicians’ use of their discretion, which often leads to variability and lower safety margins.\textsuperscript{14} Highly reliable handoffs incorporate 3 key elements: (1) face-to-face, 2-way communication, (2) structured written forms, templates, or checklists that allow clinicians to agree on minimum essential data that create a shared mental model, and (3) content that “captures intention,” meaning clinicians share problems and hypotheses with a predictive diagnosis of the patient’s clinical situation (foresight), rather than listing events and completed tasks (hindsight), which has been associated with handoff errors.\textsuperscript{3,5,13} Mnemonic devices such as SBAR (Situation, Background, Assessment, Recommendation) or “I PASS the BATON” (Introduction, Patient, Assessment, Situation, Safety concerns, Background, Actions, Timing, Ownership, Next) provide a format that can be tailored for different clinical areas and/or purposes. Such written tools introduce redundancy, helping nurses organize large amounts of information to convey complex issues related to patient care in a complete and meaningful way.\textsuperscript{3,4,16,17} Consistently discussing information in a standardized sequence or order also aids pattern recognition for clinicians.\textsuperscript{16} Other recommendations for standardization include interactive

### Table 3

<table>
<thead>
<tr>
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| Communication sender     | Little knowledge of patient  
                         Amount of information—too little, or too much  
                         Quality of information—incomplete, inaccurate, inconsistent |
| Both                     | Varied communication styles  
                         Interrupting one another, chatting  
                         Different tasks and expectations  
                         Failure to communicate or understand significance of data/events |
| Receiver                 | Asks for information to be repeated  
                         Lack of responsiveness/attention lapses  
                         Little knowledge about patient after handoff |
| Culture                  | Lack of teamwork/mutual respect, culture of blame |
| Time                     | Inadequate time allowed, misuse of available time  
                         Limited availability to ask questions  
                         Inability to follow up to share/obtain additional information |
| Staffing                 | Inadequate staffing at certain times of day  
                         (unavailable to provide or receive up-to-date information at time of handoff)  
                         Agency nurses or large number of nurses involved in patient’s care (lack in-depth knowledge of patient)  
                         Competing priorities of receiving nurse (unable to focus on patient) |
| Patient-related factors  | New admissions, emergent patient conditions around shift change  
                         Timing of physical transfer not in sync with handoff  
                         Complexity, high volume caseloads  
                         Exclusion of patient |
| Standardization          | Disorganized (lack of structure/standardization)  
                         Lack of leadership, limited resources to implement processes  
                         Staff resistance to handoff process |
| Equipment                | Limitations of communication methods (recorded, verbal, bedside, written/computer-based) |
| Human factors            | Sex, culture, hierarchy/power distance  
                         Interruptions/distractions  
                         Multitasking  
                         Information overload, limited memory capacity  
                         Fatigue, sensory/information overload |
| Environmental            | Background noise  
                         Chaotic environment at shift change |
| Education                | Lack of handoff training |

\textsuperscript{4 Based on information from Patterson and Wears,\textsuperscript{1} Blouin,\textsuperscript{1} Riesenberg et al,\textsuperscript{1} Haig et al,\textsuperscript{1} and Welsh et al.\textsuperscript{16}}
questioning, as well as closed-loop verification to confirm that information has been received and understood.1,3,18

In addition to structured tools, bedside rounds at the end of change-of-shift handoffs serve many functions. Nurses can introduce the oncoming nurse and address patients’ concerns, giving them an opportunity to be involved in their care.6,17,19 and perform vital quality checks on equipment, alarms and settings, intravenous catheters and infusions, and so on. Receiving nurses can check for any missing information and ask final questions to create a shared baseline of the patient’s condition.3,16 Red flags on unexpected findings compared with the information relayed can be discussed and rectified in real time. Thus, handoff procedures create informed situational awareness.

The role of education in standardizing handoffs in practice cannot be overemphasized. During initial and refresher education, nurses can practice standardized handoff procedures by role-playing real-life scenarios, while at the same time honing the whole family of human factor skills—teamwork, structured communication, situational awareness, assertiveness, and critical language. Posters and pocket cards may be useful to reinforce expectations for practice. More research is needed to determine the effectiveness of various educational and implementation strategies in reliably embedding standardized handoff procedures in practice.1

FINANCIAL DISCLOSURES

None reported.

REFERENCES


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