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# Developing a Standardized and Sustainable Resident Sign-Out Process: An AIAMC National Initiative IV Project

**Jacob Breaux, MD,[1] Roneisha McLendon, MD, MS,[2] Robin B. Stedman, MD, MPH,[2,5] Ronald G. Amedee, MD, FACS,[3,5] Janice Piazza, MSN, MBA,[4] Robert Wolterman, MHA, MBA[6]**

*[1]Department of Internal Medicine, Ochsner Clinic Foundation, New Orleans, LA*
*[2]Department of Anesthesia, Ochsner Clinic Foundation, New Orleans, LA*
*[3]Department of Otolaryngology, Ochsner Clinic Foundation, New Orleans, LA*
*[4]Department of Graduate Medical Education, Ochsner Clinic Foundation, New Orleans, LA*
*[5]The University of Queensland School of Medicine, Ochsner Clinical School, New Orleans, LA*
*[6]Ochsner Medical Center, Ochsner Clinic Foundation, New Orleans, LA*

## ABSTRACT

**Background:** Duty hour restrictions imposed upon training physicians have led to increased handoffs and the potential for discontinuity in patient care. Research has demonstrated a significant opportunity for decreasing errors with a standardized handoff process. Thus, we designed a project to implement a standardized approach to handoffs, specifically resident-to-resident handoffs.

**Methods:** We performed an initial assessment of the tools, practices, and policies currently in use to facilitate handoffs institutionally. Subsequently, we created a template within our electronic medical record and paired it with a verbal handoff process. We developed a plan to build department champions to disseminate information and provide mentorship. We intend to evaluate this process at designated intervals to ensure sustainability.

**Results:** Survey results were obtained from 45 faculty and 61 residents from a wide representation of specialties. We found that although a subjective sense of satisfaction was present, there was substantial variability between processes. Seventy-two percent of faculty reported at least once identifying a patient safety issue that occurred as a result of the handoff process, but 77% of faculty sometimes or never supervised the process. Eighty percent of residents reported sometimes or never receiving feedback on their handoffs.

**Conclusions:** Based on medicine's evolving environment and an apparent opportunity to optimize resident training and patient safety, we developed a plan to standardize, implement, and evaluate resident handoffs within our system. The results thus far have resulted in a gap analysis that will serve as the basis for reporting finalized data at the conclusion of this prospective study.

*Address correspondence to*
*Ronald G. Amedee, MD, FACS*
*Department of Otolaryngology*
*Ochsner Clinic Foundation*
*1514 Jefferson Hwy.*
*New Orleans, LA 70121*
*Tel: (504) 842-4080*
*Email: ramedee@ochsner.org*

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## INTRODUCTION

Restrictions placed on the duty hours of training physicians have led to increased handoffs, defined as the transfer of patient information and responsibility from one physician to another. Each of these events represents a vulnerable point in the exchange of data, understanding, and responsibility between physicians. Therefore, it is no surprise that groups governing medical practices have recommended the measurement and guarantee of patient safety, with a focus on the standardization of handoff communication being a key emphasis.[1,2] This recommendation is imperative because communication failures are the most common root cause of sentinel events in US hospitals.[3] Additionally, studies have shown that the number of potentially preventable adverse events doubled when patients were under the care of a physician who was cross-covering, and resident discontinuity has been linked with increased laboratory testing, longer lengths of stay, and increased medication errors.[4] We must evolve in this changing environment of more

frequent handoffs in an effort to maintain patient care standards.

Intuition suggests that standardized, efficient, and goal-oriented sign-out systems would help to mitigate the potential for adverse events, but we are in the early stages of perfecting this process. Other high-risk fields in which effective communication is essential to safety can aid in system development. For example, in the field of aviation, a standardized process of information transfer is used that incorporates checklists, designated content, and read-backs to ensure understanding. Direct observation of data transfer at NASA, in the railway industry, and in nuclear power plants helped to identify specific strategies, such as standardizing the information transferred, ensuring up-to-date information is used, limiting interruptions, and having a structured face-to-face verbal exchange. Based on what has been gathered from other fields and what is evident in the medical profession, healthcare providers must identify and cultivate this process.

At our institution, we have identified a significant need to formalize a process for transitions of care between inpatient settings based on findings from internal and external, formal and informal, and clinical and operational metrics. This need was further elucidated during our Clinical Learning Environment Review (CLER) visit on July 23-24, 2013. The visitors noted a lack of standardization in patient care handoffs between various programs and service areas. Furthermore, faculty mentorship varied in manner and degree among specialties. For these reasons, we are focusing our efforts on creating, implementing, and evaluating a standardized approach to transitions of care at Ochsner Clinic Foundation based on an integrated multidisciplinary approach to care.

## METHODS

This project was reviewed by the Ochsner Institutional Review Board and received a qualifying exemption. We performed an initial assessment of the tools, practices, and policies currently in use to facilitate transitions of care at our institution. Based on these data and information from recent literature, we created a survey that we distributed to residents and faculty to assess current perceptions and practices surrounding transitions of care.[3,5,6]

Next, we met with program directors and residents from multiple specialties represented within our hospital to review the published importance of sign-out standardization and our goals at the institutional level. We discussed the dynamics of implementing a standardized verbal and written handoff process and hosted an interactive didactic session at which we introduced the document and gauged the responses and needs of the individual programs. Feedback during this meeting focused on the customization of this process for each specialty while maintaining a standardized process to ensure quality, consistency, and sustainability. Additionally, we made plans to educate champions in each department so dissemination of a communication-rich culture could accompany this process.

For our written sign-out process, we utilized elements from the mnemonic ANTICipate, written by authors from 3 major teaching hospitals and presented in the *Journal of Hospital Medicine* in 2006 (Table 1).[4] The ANTICipate mnemonic for written handoffs includes A – administrative data, N – new information (clinical update), T – tasks (what needs to be done), I – illness, and C – contingency planning/code status. The goal of this document is to elicit information from residents that is regularly, selectively, and carefully updated with the most pertinent cross-cover issues and patient information. The information is not meant to replace the chart but should provide details essential for a safe transition of patient care. This document should embody the events and discussions of the day so patient care is a continuous loop and continuity of care is preserved. With the use of our electronic medical record (EMR), we created a written document to be tested as a standardized and up-to-date sign-out tool. Information automatically imported from the chart includes primary care team, patient name, age, sex, date of birth, medical record number, room number, allergies, code status, admit date, and chief complaint/reason for admission. The tool prompts the resident to give information about illness level; a brief history of the present illness, including the pertinent past medical history and diagnosis or differential diagnosis; hospital course (updated, brief assessment by system or problem, significant events); tasks (specific, using if-then statements); and contingency plan (anticipated special circumstances and plans). A list of current medications and administration times is easily accessible within this program. This note can be edited daily to ensure accurate up-to-date information and to allow closed-loop feedback between cross-covering providers. Mentorship of this sign-out process is planned to ensure both standardization and effectiveness. Finally, the EMR tool will be incorporated into iPads distributed to all incoming interns to further enhance the efficiency and acceptance of this process.

EMR systems have improved the efficiency and effectiveness of written handoff documents, but verbal communication is an essential factor. The literature has shown that these encounters should occur face-to-face

**Table 1. Checklist for Elements of a Safe and Effective Written Sign-Out Using the Ochsner Handoff Template**

- √ **Demographics**
  - ○ Primary team
  - ○ Name, age, sex
  - ○ Medical record number
  - ○ Allergies
  - ○ Code status
  - ○ Body mass index
- √ **Illness Level**
  - ○ Is the patient sick?
- √ **Reason for Admission**
  - ○ Admitting diagnosis
  - ○ Chief complaint
- √ **Brief History of Present Illness**
  - ○ Details pertinent to current admission
  - ○ Pertinent past medical history
  - ○ Differential diagnosis
- √ **Hospital Course**
  - ○ Current baseline status
  - ○ Updated, brief assessment by system or problem
  - ○ Recent procedures and significant events
- √ **Tasks**
  - ○ Advise of to-do items specific to this shift
  - ○ Advise of incoming information using if-then statements
- √ **Contingency Plan**
  - ○ Anticipated special circumstances and plans
  - ○ Concerning family or psychosocial situations

in a quiet location with limited interruptions.[7] Additionally, the conversation should be goal oriented, interactive, and unambiguous, and the level of detail provided should be based on the specific clinical situation. For example, if the receiving physician already knows about the patient, then organized and concise details about any changes are sufficient. Conversely, if information is being transferred at the end of a resident's rotation, a more thorough transfer of information should occur. Illness severity is another central factor for guiding the detail level of the conversation. For the verbal encounter, using a standardized model with appropriate goals and expectations should allow the sign-out process to be both useful and productive. The process for verbal sign-out has been modeled after the mnemonic I-PASS that was developed at Boston Children's Hospital to address concerns regarding handoff miscommunications. The I-PASS structure for verbal handoffs includes I – illness severity, P – patient summary, A – action list, S – situational awareness and contingency planning, and S – synthesis by receiver. The I-PASS verbal mnemonic will have a visual tool to further facilitate its use in verbal handoffs.[6] Additionally, we used elements from the mnemonic SIGNOUT. This standardized format for verbal sign-out modeled on the Situation, Background, Assessment, and Recommendation (SBAR) mnemonic was tested at Yale-New Haven Hospital (Table 2).[8]

As part of the education and implementation process, we will distribute printed note cards for both the written and verbal handoff processes to all staff and residents within our institution. Additionally, we will have posters made illustrating the processes and place them in locations where patient handoffs by residents take place. The education and training phase will include interactive sessions conducted by the development team during visits to various departments within our institution. We plan to have several meetings with each department during the first 6-8 months to ensure all residents gain familiarity with the process. These sessions will consist of a 10-15 minute presentation on the importance and goals of the project. Included in this session will be video examples of common handoff mistakes as well as efficient and effective handoffs. The last 40-45 minutes of the hour-long sessions will consist of the development team breaking the residents into groups of 4-5 to discuss the handoff elements in depth with examples of real patient scenarios. At the conclusion of these scenarios, we will ask for feedback on their perception, confidence, and ability to perform effective handoffs thereafter.

We have facilitated ongoing feedback and discussion surrounding specialty-specific requirements and considerations for the handoff process. This ongoing feedback is imperative as research shows that standardized models should also provide additional tailoring for specific disciplines.[9] Following hospital-wide implementation of our process, we will again survey involved entities to quantify improvement and evaluate sustainability. The I-PASS handoff bundle includes evaluation forms to rate written and verbal handoffs. Evaluation and feedback are crucial because research shows that although residents are often confident in their handoff skills, formal evaluations elucidate deficiencies in accuracy and competency.[5] We plan to create a digital version of these forms so data can be compiled in a database immediately after collection. With this information, we hope to gain objective insight to help us continually improve both the process and its implementation strategies. These evaluations will ideally take place at least 1 week every month, with adjustment in the amount and frequency based on observed findings. Feedback about the observations will be given to the evaluated resident within 24 hours of the handoff session to provide an opportunity for both critique and improvement. We

**Table 2. Format for Oral Communication Handoff**

| | |
|---|---|
| √ **Illness Level**<br>○ Is the patient sick?<br>○ Code status | Listen closely; this is the sickest patient on the service. He is full code. |
| √ **Demographics**<br>○ Name, age, sex<br>○ Allergies<br>√ **Reason for Admission**<br>○ Admitting diagnosis<br>○ Chief complaint | Mr. Smith is a 72-year-old gentleman admitted for sepsis secondary to postoperative wound infection.<br>No allergies. |
| √ **Brief History of Present Illness**<br>○ Details pertinent to current admission<br>○ Pertinent past medical history<br>○ Differential diagnosis | He presented 3 days ago, hypotensive, tachycardic, and febrile, with purulent drainage from the abdominal surgical wound. He had a hemicolectomy 3 weeks ago for colon cancer. His past history is also significant for 2-vessel coronary bypass 1 year ago and type 2 diabetes. |
| √ **Hospital Course**<br>○ Current baseline status<br>○ Updated, brief assessment by system or problem<br>○ Recent procedures and significant events | He is responsive, on broad-spectrum antibiotics, IV fluids, and requiring no vasopressor support at this time. The hypotension and tachycardia have been responsive to IV fluids.<br>He was taken to the OR this morning for wound debridement and was stable upon return to the unit. He has been without chest pain since admission, blood glucose levels fairly controlled with insulin therapy. |
| √ **Tasks**<br>○ Advise of to-do items specific to this shift<br>○ Advise of incoming information using if-then statements | Wound cultures pending – no action needed.<br>If patient develops a fever, then order 1 gram of acetaminophen.<br>If blood glucose levels are >200, then increase sliding scale coverage. |
| √ **Contingency Plan**<br>○ Concerning family or psychosocial situations<br>○ Questions<br>○ Anticipated special circumstances and plans | Daughter has the healthcare power of attorney; please call her if condition changes or consent needed.<br>Do you have any questions? |

IV, intravenous; OR, operating room.

plan to observe the first and last few days of a rotation to gauge improvement and residents' insight about the process.

## RESULTS

Initial survey results were obtained from 45 faculty members and 61 residents from a wide representation of specialties within our institution. The faculty survey results show an overwhelming 90.7% of respondents reported being satisfied with the current handoff process sometimes to most of the time (Figure 1). While only 59% of faculty surveyed reported sometimes supervising the process and 18% reported never supervising the process, 72% reported at least once identifying a patient safety issue that occurred as a result of the handoff process. Eighty-five percent

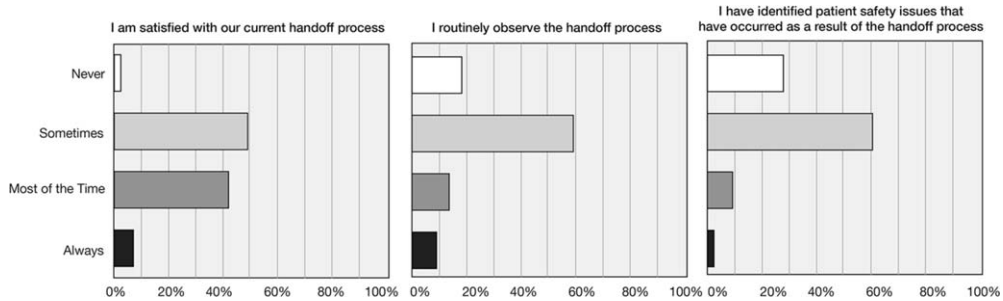


**Figure 1. Pertinent faculty survey results.**

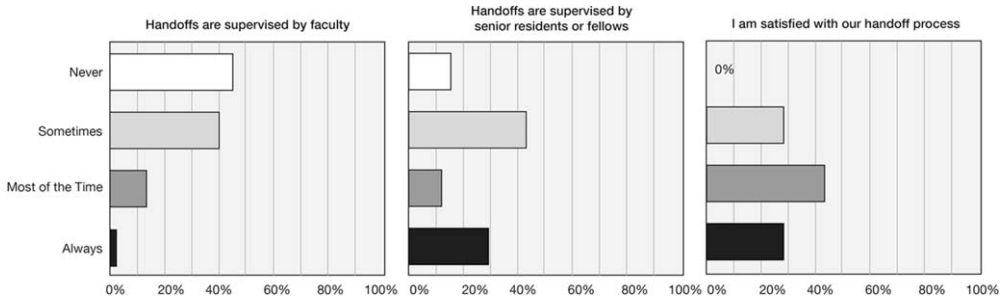


**Figure 2. Pertinent resident survey results.**

of residents surveyed reported sometimes to never having the handoff process supervised by faculty, and 84% reported having been supervised at least by a senior resident or fellow sometimes to always (Figure 2). Eighty percent of residents sometimes to never received feedback on their handoffs. With regard to perceived satisfaction, 71.7% of residents reported being mostly to always satisfied with the handoff process, and 71.2% reported using a standardized handoff process on their service most of the time to always.

## CONCLUSION

Fueled by medicine's changing environment and an apparent opportunity to optimize resident training and patient safety, we developed a plan to standardize, implement, and evaluate handoff systems within our institution. We conducted literature research and discussed our ideas with colleagues within the Alliance of Independent Academic Medical Center's National Initiative IV teams.

The stark contrasts displayed in the initial survey results further confirmed our institution's need for a standardized process. Following implementation, we will repeat the surveys to compare perceived performance prior to and after the dissemination of a handoff model. During the development stage, ideas for tangible metrics may include the number of laboratory tests ordered by residents, changes in lengths of stay, and occurrences of medication errors. We are attempting to ascertain whether we can feasibly gauge these parameters to complement our data from observer evaluations.

The results from an initial survey of our training programs indicate that although there is a sense of satisfaction among faculty and residents with the handoff process, substantial variability in the manner in which handoffs are conducted remains. It was somewhat surprising to find more than 70% of faculty identified patient safety issues related to the handoff process yet they were satisfied with the current process. Residents report that senior residents and fellows more often supervise them than staff during the handoff process. Another important issue to address is that 80% of residents sometimes to never receive feedback on their handoffs. Feedback and guidance are essential to a process of this magnitude, and we plan to continuously evaluate all of the dynamic aspects involved.

Implementation of the pilot version of a handoff template will provide an idea of the document's ease of use, reliability, and potential concerns or pitfalls. Following the pilot study period, we plan to resurvey faculty and residents to compare perceived performance in the handoff process using the standardized document. Once the program has been tested and fine tuned, we will educate residents and faculty on the proper use of the document. As part of the educational component, faculty will mentor handoffs. Furthermore, a shift in culture with an emphasis on sustainability and consistency can only be achieved by promotion from the top down within a program. Our goal for March 2015 is to have developed, tested, and implemented a standardized tool and a sustainable process for facilitating transfers of care throughout Ochsner Health System. Use of this standardized process will ensure quality patient care in the safest of environments.

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