

An Interactive Handoff Workshop to Improve Intern Readiness in Patient Care Transitions

MICHAEL AYLWARD, MD
LEMUEL VAWTER, MD
CRAIG ROTH, MD

Abstract

Introduction Patient handoffs are common during residency and are often performed with little or no training. We devised a simple intervention to improve the readiness of interns to perform handoffs.

Methods We administered a 90-minute interactive workshop during intern orientation in 2009 and 2010. It consisted of a discussion, a case presentation, and a trigger video, followed by debriefing and a role-play exercise. The workshop required minimal technology and materials. Interns were surveyed on their readiness to perform handoffs before and after

the workshop as well as 3 to 6 months after the workshop.

Results Eighty-nine interns participated in the workshop during a 2-year period. Seventy-four survey responses were collected. Self-reported readiness to perform a handoff increased by 26%. A total of 91% and 81% of respondents in 2010 and 2009, respectively, reported using aspects of the workshop up to 6 months later.

Conclusion A brief workshop can improve interns' readiness to perform handoffs.

Editor's Note: The online version of this article contains a handoff workshop overview. Curriculum materials are available from authors upon request.

Introduction

Patient handoffs in the hospital setting are an important and complex communication process. These transitions of care are becoming increasingly frequent owing to increased availability of hospitalists and resident duty hour restrictions. Residents perform the largest number of patient care handoffs in teaching hospitals, where complexity and acuity are high.¹⁻³ They also have little formal training for handing off and little experience. Because preventable adverse events are directly proportional to resident discontinuity, it is imperative to find ways to improve their handoff skills.⁴

Most internal medicine residency programs do not provide training around handoffs.⁵ Finding practical ways

to increase the handoff skills of residents is crucial because they are expected to give or receive the largest number of handoffs, and most are not supervised directly or given instruction or feedback about how they perform them.⁶ We sought to design an efficient, effective way to increase interns' knowledge about and readiness to perform patient handoffs between covering teams.

Methods

Participants and Study Period

All medicine and medicine-pediatrics interns who attended a required half-day workshop on communication skills during residency orientation week at the University of Minnesota in 2009 and 2010 were included in this study. The study was approved by the University of Minnesota's Institutional Review Board.

Description of the Workshop

Workshops began with an interactive discussion among 14 to 16 interns about the definition and key components of a handoff, and evidence from High Reliability Organizations about key elements of safe and effective handoffs.⁷⁻¹¹ Communication skills such as active listening, dynamic skepticism, and closed loop communication were emphasized. Environmental factors, such as noise and distraction, and how they influence the handoff process, and ways to mitigate these effects were discussed. The content discussion combined a "prioritize, tell the story, details on demand" model taken from Patterson¹⁰ with a review of the elements of the handoff that were supported by the electronic medical record systems the residents work with.

Michael Aylward, MD, is Assistant Professor of Medicine and Pediatrics at University of Minnesota Medical Center; at the time of writing, **Lemuel Vawter, MD**, was an Internal Medicine Resident; he is now a Hospitalist, HealthPartners Medical Group; and **Craig Roth, MD**, is Professor of Medicine at the Veterans Affairs Medical Center in Minneapolis.

Funding: The authors report no external funding source for this study.

The authors would like to acknowledge James Hodges, PhD, Biostatistics, University of Minnesota.

Corresponding author: Michael Aylward, MD, MMC 913, 420 Delaware Street SE, Minneapolis, MN 55455, 612.424.8043, Aylwao02@umn.edu

Received March 15, 2011; revision received August 9, 2011; Accepted August 9, 2011.

DOI: <http://dx.doi.org/10.4300/JGME-D-11-00067.1>

Clear “if...then” contingency planning was emphasized, as was the importance of the transfer of responsibility. The interns were encouraged to question the conditional statements to better understand the patient’s situation. This allowed the giver and receiver of the handoff to reach a common understanding of the patient’s condition.^{12,13}

A video of a physician-to-physician handoff was shown and then deconstructed by the group. Interns highlighted things done effectively, such as active listening and contingency planning, as well as aspects of the encounter that were not ideal, such as distractions and poorly structured communication.

A morning-report-style case was then used to evaluate resident-to-resident cross-cover elements of a handoff, and to emphasize shared responsibility for a patient, highlighting the “if...then” theme. The case discussions focused on a patient who was admitted with abdominal pain and later developed a perforated peptic ulcer. The interns learned that signing out serial examinations and requesting reevaluation of a patient are legitimate and necessary “to do” items.

A role play, using groups of 2 to 4 interns, imitated the flow of a patient through a day, and emphasized the interactive nature of handoffs. In each role-play session the receiver of the handoff had preexisting knowledge that, if shared effectively, could improve the patient outcome.

The workshop closed with a wrap-up and debriefing session. A handoff guide that contained a summary of the workshop was provided for future reference.

At a regularly scheduled morning report 1 month later, interns discussed a case that was designed specifically to reinforce handoff knowledge and skills contained in the original workshop.

Materials

Instructional materials included a laptop with projector, marker board or flip-chart, packets for a practice handoff exercise, and a handoff best practices pocket guide. Faculty preparation time was 1 to 2 hours and consisted of review of the script and handoff literature best practices.

Assessment

The primary outcome measure of our intervention was self-reported readiness to perform an effective handoff. A secondary outcome was determining if and what skills or knowledge learned in the workshop had been incorporated into interns’ handoff practices.

Interns’ perceived knowledge of components of the handoffs and their readiness to enact what was learned from the session was anonymously assessed with a pretest/posttest questionnaire the day of the workshop, and an anonymous e-mail survey 3 to 6 months later. Readiness

What was known

The inpatient handoff is an important element of ensuring continuity of care under duty hour limits and increasing use of hospitalists to provide care.

What is new

A 90-minute interactive workshop (discussion, case presentation, a trigger video, debriefing and a role-play exercise) resulted in a 26% increase in interns’ self-reported preparedness for handoffs.

Limitations

Small sample size, self-reported data, single institution and limited specialties, lack of a control group.

Bottom line

The simple intervention required minimal technology and was able to improve intern preparation for handoffs. Participants reported using aspects of the workshop up to 6 months later.

was self-rated by using a 5-point Likert scale with the anchors “Not ready” to “Very ready.” In a follow-up survey interns were asked if they had incorporated anything from the workshop into their own handoffs in clinical practice, and, if so, to describe any changes.

The assessment tool was piloted and modified on the basis of results of the pilot. The questionnaire and follow-up survey were created on the basis of readiness to change paradigm.¹⁴

Statistical Analysis

Follow-up survey data were compiled into a Microsoft Excel (Redmond, WA) spreadsheet. Percentages were obtained with number of respondents in each year as the denominator. To determine percentages for the “worst-case scenario” (ie, if no nonrespondents found the workshop to be useful at all), we used the number of all interns participating as the denominator. Answers to the question, “Have you incorporated anything you learned in the workshop into your handoffs? If so, what?” were coded in binary form: “yes” if they mentioned any topic related to the workshop they had incorporated, or “no” if left blank or they specifically mentioned that they did not incorporate anything. Change after participation in the workshop was assessed by using paired *t* tests. We evaluated the qualitative data with a constant comparative analysis associated with the grounded theory approach.

Results

Eighty-nine interns completed the workshop, and 74 completed pretest and posttest surveys (TABLE 1). The remaining 15 completed only the posttest survey, and were not included in the analysis.

Reported aspects of the workshop incorporated into interns’ handoffs and themes reported appear in TABLES 2 and 3. Assuming a worst-case scenario—if all nonrespon-

TABLE 1 **INTERNS' READINESS TO CHANGE BEHAVIOR PREWORKSHOP TO POSTWORKSHOP**

Measure (Readiness to...)	Pretest	Posttest	Change	Change, %
Modify environment ^a	3.03	3.85	0.82	27
Communicate contingency plans ^a	2.93	3.61	0.68	23
Use proven methods to insure effective communication ^a	2.86	3.76	0.89	31
Effectively handoff patients ^a	2.86	3.49	0.74	26

^a For all measures, the change, pre to post, tested significantly different from zero ($P < .001$).

dents did not incorporate anything from the workshop—49% of respondents in 2009 and 50% in 2010 still incorporated something they learned into their handoffs.

Discussion

Our 90-minute workshop increased interns' self-reported knowledge, behavior, and readiness to conduct handoffs during their first 6 months of residency. Since it took place during orientation, all interns participated, and key points were easily reinforced in a follow-up morning report. It required minimal materials and technology, was interactive, and allowed for a variety of adult learning styles.

Previous handoff training techniques published in the literature have used didactic techniques, simulation, or attending physician oversight.¹⁵⁻¹⁷ Simulation strategies and physician oversight are excellent ways to reinforce and perpetuate best practices. Our training intervention was highly interactive, did not require specialized facilities or paid actors, was inexpensive, and conveniently inserted into orientation and existing teaching activities, and could be replicated with minimal materials and faculty.

Our workshop created a flexible framework for interns to understand the content, communication, and environmental factors influencing handoffs.⁷⁻⁹ It emphasized interpersonal skills such as active listening, questioning assumptions, and delegating responsibility for patient care. Specifically, we framed handoffs as a dialogue between team members and highlighted the important roles of both the giver and receiver of the handoff in the creation of a shared mental model. The workshop allowed interns to

practice skills and apply lessons learned in a selective and thoughtful manner. In addition, we provided them with scripts for dealing with common situations. For example, when a nurse interrupts a handoff with a question about a patient, we suggested the resident say, "I'm handing off a patient right now, as soon as I'm done I'll find you." Contingency planning and active listening were commonly mentioned as becoming a new part of handoff practice among workshop participants.

Studies suggest a correlation between confidence and self-assessment and the likelihood of attempting to apply knowledge and skills.¹⁸⁻²⁰ We believe participants in our workshop who said their readiness had increased are more likely applying the skills they learned in real-world settings.^{21,22} Self-reported behaviors after a commitment to change statement, following a continuing medical education workshop, have been shown to be accurate representations of subsequent behavior.²³ Our follow-up survey data support this conclusion, since most participants said they incorporated aspects of the workshop into their handoffs.

Our study had several limitations. First, we did not measure patient safety outcomes, in part because linking adverse events to deficient handoffs is difficult. We did bring awareness, general knowledge, and understanding of handoffs to a common level, which is a necessary first step in any patient safety intervention. Second, assessment of the workshop was done using a pretest/posttest methodology, which could cause bias in the direction of more readiness after training. Third, although nearly all the interns

TABLE 2 **WORKSHOP SKILLS AND KNOWLEDGE INCORPORATED INTO INTERNS' HANDOFF PRACTICES**

Year	Response Rate, No. (%)	Incorporated Anything Learned Into Handoffs, No. (%)	Specific Themes From Workshop Incorporated Into Handoffs			
			Contingency Planning, No. (%)	Environment, No. (%)	Pertinence and Efficiency, No. (%)	Active Listening, No. (%)
2009	22 (54)	20 (91)	9 (41)	5 (23)	3 (14)	2 (9)
2010	26 (62)	21 (81)	12 (46)	5 (19)	4 (15)	2 (8)

TABLE 3 THEMATIC ANALYSIS AND SAMPLE QUOTATIONS FROM SURVEY 3 TO 6 MONTHS AFTER THE WORKSHOP

Contingency Planning	Environment	Pertinence and Efficiency	Active Listening
"Try to predict problems that will happen and incorporate specific contingency plans. This is very helpful for the covering person."	"Try to make it quiet environment. Include if/then (but could be better). When I am taking sign out I try to be an active listener."	"I always make the handoff pertinent and use 'if...then' statements."	"I've tried to be more active in receiving sign outs, not sure if I would have done that initially if not for the workshops."
"Making sure the if/then comments are clear."	"Including events of the day on sign outs. Refusing to sign out amidst busy situations."	"Being brief and trying to limit interruption during the handoffs insofar as answering pages, having nurses interrupt, etc."	"Looking for eye contact, having a plan in place, answering 'what if...,' assessing possible issues that may come up."

reported incorporating techniques learned in the workshop into practice, the low response rate may have introduced respondent bias. Fourth, our measurement of the workshop's effectiveness was by self-report and may differ from interns' performance in practice. Fifth, our follow-up period was relatively short and the positive effect may not have been sustained or may be superseded by the prevailing culture around handoffs.

Our next steps are to further define best handoff practices and directly observe the handoff skills of workshop participants by using a scoring rubric at some time after training, and to provide additional handoff training in the second or third years of residency. We want to include more senior residents in the teaching and assessment process to further improve their skills with patient handoffs.

Our results show that a brief interactive workshop can improve resident's self-reported readiness and behavior around handoffs.

References

- Whang EE, Mello MM, Ashley SW, Zinner MJ. Implementing resident work hour limitations: lessons from the New York State experience. *Ann Surg.* 2003;237(4):449–455.
- Ratanawongsa N, Bolen S, Howell EE, Kern DE, Sisson SD, Larriviere D. Residents' perceptions of professionalism in training and practice: barriers, promoters, and duty hour requirements. *J Gen Intern Med.* 2006;21(7):758–763.
- Reed DA, Levine RB, Miller RG, Ashar BH, Bass EB, Rice TN, et al. Effect of residency duty-hour limits: views of key clinical faculty. *Arch Intern Med.* 2007;167(14):1487–1492.
- Petersen LA, Brennan TA, O'Neil AC, Cook EF, Lee TH. Does housestaff discontinuity of care increase the risk for preventable adverse events? *Ann Intern Med.* 1994;121(11):866–872.
- Horwitz LI, Krumholz HM, Green ML, Huot SJ. Transfers of patient care between house staff on internal medicine wards: a national survey. *Arch Intern Med.* 2006;166(11):1173–1177.
- Cleland JA, Ross S, Miller SC, Patey R. "There is a chain of Chinese whispers ...": empirical data support the call to formally teach handover to prequalification doctors. *Qual Saf Health Care.* 2009;18(4):267–271.
- Arora VM, Johnson JK, Meltzer DO, Humphrey HJ. A theoretical framework and competency-based approach to improving handoffs. *Qual Saf Health Care.* 2008;17(1):11–14.
- Arora VM, Manjarrez E, Dressler DD, Basaviah P, Halasyamani L, Kripalani S. Hospitalist handoffs: a systematic review and task force recommendations. *J Hosp Med.* 2009;4(7):433–440.
- Arora V, Johnson J. A model for building a standardized hand-off protocol. *Jt Comm J Qual Patient Saf.* 2006;32(11):646–655.
- Patterson ES. Structuring flexibility: the potential good, bad and ugly in standardisation of handovers. *Qual Saf Health Care.* 2008;17(1):4–5.
- Patterson ES, Woods DD. Shift changes, updates, and the on-call architecture in space shuttle mission control. *Comput Support Coop Work.* 2001;10(3–4):317–346.
- Larson JR Jr, Christensen C, Abbott AS, Franz TM. Diagnosing groups: charting the flow of information in medical decision-making teams. *J Pers Soc Psychol.* 1996;71(2):315–330.
- Larson JR Jr, Christensen C, Franz TM, Abbott AS. Diagnosing groups: the pooling, management, and impact of shared and unshared case information in team-based medical decision making. *J Pers Soc Psychol.* 1998;75(1):93–108.
- Parker K, Parikh SV. Applying Prochaska's model of change to needs assessment, programme planning and outcome measurement. *J Eval Clin Pract.* 2001;7(4):365–371.
- Farnan JM, Paro JA, Rodriguez RM, Reddy ST, Horwitz LI, Johnson JK, et al. Hand-off education and evaluation: piloting the observed simulated hand-off experience (OSHE). *J Gen Int Med.* 2010;25(2):129–134.
- Chu ES, Reid M, Schulz T, Burden M, Mancini D, Ambardekar AV, et al. A structured handoff program for interns. *Acad Med.* 2009;84(3):347–352.
- Horwitz LI, Moin T, Green ML. Development and implementation of an oral sign-out skills curriculum. *J Gen Intern Med.* 2007;22(10):1470–1474.
- Bandura A. Self-efficacy: toward a unifying theory of behavioral change. *Psychol Rev.* 1977;84(2):191–215.
- Bandura A, Adams NE, Beyer J. Cognitive processes mediating behavioral change. *J Pers Soc Psychol.* 1977;35(3):125–139.
- Davis DA, Mazmanian PE, Fordis M, Van Harrison R, Thorpe KE, Perrier L. Accuracy of physician self-assessment compared with observed measures of competence: a systematic review. *JAMA.* 2006;296(9):1094–1102.
- Green ML, Gross CP, Kernan WN, Wong JG, Holmboe ES. Integrating teaching skills and clinical content in a faculty development workshop. *J Gen Intern Med.* 2003;18(6):468–474.
- Jones DL. Viability of the commitment-for-change evaluation strategy in continuing medical education. *Acad Med.* 1990;65(9 suppl):S37–S38.
- Curry L, Purkis IE. Validity of self-reports of behavior changes by participants after a CME course. *J Med Educ.* 1986;61(7):579–584.