

Feasibility and Validation of Real-Time Patient Evaluations of Internal Medicine Interns' Communication and Professionalism Skills

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Abstract

Background Residents receive little information about how they interact with patients.

Objective This pilot study assessed the feasibility and validity of a new 16-item tool developed to assess patients' perspectives of interns' communication skills and professionalism and the team's communication.

Methods Feasibility was determined by the percentage of surveys completed, the average time for survey completion, the percentage of target interns evaluated, and the mean number of evaluations per intern. Generalizability was analyzed using an (evaluator:evaluatee) $\times$ item model. Simulated D studies estimated optimal numbers of items and evaluators. Factor analysis with varimax rotation was used to examine the structure of the items. Scores were correlated with other measures of communication and professionalism for validation.

Results Most patients (225 of 305 [74%]) completed the evaluation. Each survey took approximately 6.3 minutes to complete. In 43 days over 18 weeks, 45 of 50 interns (90%) were evaluated an average of 4.6 times. Fifty evaluations would be required to reach a minimally acceptable coefficient (0.57). Two factor structures were identified. The evaluation did not correlate with faculty evaluations of resident communication but did correlate weakly ($r = 0.140$, $P = .04$) with standardized patient evaluations.

Conclusions A large number of patient evaluations are needed to reliably assess intern and team communication skills. Evaluations by patients add a perspective in assessing these skills that is different from those of faculty evaluations. Future work will focus on whether this new information adds to existing evaluation systems and warrants the added effort.

Editor's Note: The online version of this article includes the mean scores for intern communication and team-based communication items.

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Introduction

Communication and professionalism are important components of patient-physician relationships.¹ Effective communication improves patients' emotional health and contributes to symptom resolution, improved functional and physiologic status, better pain control, higher patient adherence and satisfaction, and a lower probability of malpractice suits.¹⁻⁵

Residents receive little information about how they interact with patients. Most feedback is provided by faculty who may observe a resident-patient interaction⁶; however, these observations tend to occur infrequently. Additionally, feedback from faculty may not take into account the patient's perspective of the interaction with the trainee. The patient's perspective of residents' communication skills is important given the fundamental role of patient-centeredness in high-quality care.⁷ Patients' evaluations provide a different perspective of residents' behavior, empower patients to contribute to medical education, and give insight into improving the patient-physician interaction.⁸⁻¹¹

Patients could have a unique view of the effectiveness of communication within teams. Patients interact not only

with their primary physicians but also with those physicians providing cross-coverage. As patient handoffs increase,¹² communication within a team is crucial to maintaining safe and effective care.¹³ While there is a growing body of literature on patient assessment of individual physicians, to our knowledge, no studies have assessed team communication from patients' perspectives. Patients' perceptions of communication among providers, as they relate to the care they receive during their hospitalization, may give a unique perspective in identifying maladaptive team dynamics.

The Accreditation Council for Graduate Medical Education (ACGME) mandates multisource assessment of all trainees¹⁴ that includes evaluations from faculty, other trainees, nonphysician colleagues, and patients. In internal medicine (IM), patient surveys such as the American Board of Internal Medicine's (ABIM) Patient Satisfaction Questionnaire (PSQ)¹⁵ and a portion of the National Committee for Quality Assurance survey¹⁶ have been used to assess physicians' communication skills. However, previous research of patient evaluations of residents is relatively limited and focused predominantly on the ambulatory setting.^{17–20} In a residency ophthalmology clinic, a patient satisfaction survey was able to detect differences in patients' perceptions of communication among individual residents.²⁰ Given that many trainees spend most of their time in the inpatient setting, it is important to assess trainees in that setting. However, only a few studies in inpatient pediatrics^{21–23} and IM²⁴ have evaluated residents in the inpatient setting. These studies have not demonstrated an efficient process or a validated tool.

A barrier to implementing patient assessments of resident communication skills is the large number of evaluations necessary to make assessment decisions.^{17,25} Strategies to overcome this barrier may include expanding evaluation collection to the inpatient setting to yield higher numbers of evaluations. Second, while electronic surveys using a tablet device have been shown to improve patient response rates,²⁶ it is not known whether using electronically completed, tablet-based evaluations while patients are still hospitalized can improve response rates. Third, as a high number of patient evaluations of residents are typically required and many programs have multiple trainees, an electronic format also may make data synthesis and reporting more feasible.

Given limited published experience of collecting electronic patient assessments of IM residents' communication skills and team communication skills in the inpatient setting, we developed a new iPad-based tool to assess patients' perspectives of their interns' communication and professionalism qualities. The tool was also created to assess patients' perspectives of the team's communication

What was known

Residents benefit from feedback on their developing interpersonal and communication skills.

What is new

A brief patient assessment of communication skills tapped into constructs different from faculty evaluation of trainees' skills, although a large sample of evaluations was needed to achieve acceptable reliability.

Limitations

Single-institution study may limit generalizability; items were read to patients, and responses may have differed in an anonymous administration of the tool.

Bottom line

Patient evaluations add a different perspective in assessing resident communication skills. Future research is needed to assess whether the additive value warrants the added effort.

qualities. A pilot study was designed to estimate feasibility and evaluate evidence-based validity on internal structure (reliability) and relationships with other variables.²⁷

Methods

Development of the Intern and Team Communication Instrument

An iPad application was built for a 16-item instrument assessing the patient's perspective of an intern's skills in communication and professionalism (12 items) and the communication of that intern's team with each other (4 items). Instrument content was based on a literature review of preexisting tools.^{15,16,21,28} Nine questions were adapted from the ABIM PSQ,¹⁵ 2 from the Consumer Assessment of Healthcare Providers and Systems,¹⁶ and 1 from the Physicians' Humanistic Behaviors Questionnaire Humanism scale.²⁸ Two items pertaining to team communication were adapted from an existing instrument,²¹ and 2 were novel. All items were rated on a 5-point scale (where 1 = poor, 2 = fair, 3 = good, 4 = very good, and 5 = excellent), with a sixth option of unable to answer/not applicable.

Obtaining Patient Evaluations

The study took place on 4 IM inpatient services between February and June 2012. Each team consisted of an attending physician, a resident, 2 interns (or 1 intern and 1 subintern), and 1 to 2 medical students. Fifty interns rotated on these services during the study period for 1 week to 4 weeks. On a daily basis, using the hospital electronic health record, a research assistant (RA) identified all patients cared for by an intern, who were being discharged that day and patients being cared for by an intern on the

day the intern was rotating to another service. Patients cared for by rotating interns from other residency programs or medical student subinterns were excluded. On the day of discharge or intern switch day, the RA asked patients to complete the survey. A photograph of the intern being evaluated was presented to confirm correct identification. The RA read the survey items and possible answers. Patients were excluded if their primary language was not English or if they could not participate due to altered mental status.

Approval was obtained from the Institutional Review Board of the Perelman School of Medicine at the University of Pennsylvania.

Performance of the Instrument

To determine feasibility, descriptive statistics were used to determine the percentage of surveys completed, the average time for survey completion, the percentage of target interns evaluated, and the mean number of evaluations per intern. Frequencies for all items were computed. To assess internal structure, homogeneity was assessed using Cronbach's alpha. Generalizability was analyzed using an (evaluator: evaluatee) $\times$ item model. This method determines how much of the observed variation is explained by the evaluator, evaluatee, or the instrument items. Simulated D studies, which provide theoretical statistics for how the score precision would change if items were added or deleted from the instrument, estimated optimal numbers of items and evaluators. Factor analysis with varimax rotation examined the structure of the 16 items. The average scores were compared from patients who were in an isolation room to those who were not and from patients who were admitted by the intern being evaluated compared to patients not admitted by the intern.

Validity Evidence for the Instrument

The scores of the patient evaluations were correlated with other measures: evaluations by faculty and a standardized patient (SP) examination. In our program, faculty members are required to complete an electronic evaluation of each intern with whom they work for at least 1 week. These end-of-rotation evaluations provide a summative assessment of a trainee based on the 6 ACGME core competencies. Three items assess the trainee's communication skills and professionalism, and 1 assesses teamwork. Each item is scored on a Likert scale of 1 (lowest) to 9 (highest). Patient evaluation scores of communication skills were correlated with faculty ratings on communication. Patient scores of interteam communication were correlated with faculty ratings on teamwork.

Interns at our institution are required to complete an SP examination during the second half of their intern year.

This examination assesses their communication skills and professionalism in 4 different counseling scenarios. Interns were assessed by the SP using case-specific checklists with 7 to 10 yes/no items indicating whether key counseling elements had been performed. Six interpersonal skills (eliciting information, listening, giving information, respectfulness, empathy, and professionalism) were rated on a 4-point scale (1 = poor/almost never, 2 = fair/somewhat less, 3 = good/somewhat more, 4 = very good/almost always). An additional item asked, "How comfortable would you feel referring a family member or friend to this doctor?" (1 = not at all, 2 = somewhat, 3 = comfortable, 4 = very comfortable). Interns received feedback if they required remediation. We assessed the correlation between trainees' scores on SP interpersonal communication assessment and the results of the patient evaluations of intern communication.

Results

Obtaining Patient Evaluations

Of 305 patients approached, 225 surveys were completed (74%) over 18 weeks. Thirty-four patients (11%) refused to complete the survey. The main reasons for refusal included inconvenient timing prior to discharge or during a meal, inadequate pain management, or not desiring participation. Twenty-four patients (8%) were unable to complete the survey due to language or cognitive barriers. Twenty-two patients (8%) did not recognize the intern being evaluated or believed they had not spent enough time with him or her. An indeterminate amount of surveys were not completed due to factors such as network connectivity, technical issues with the iPad application, and inability to identify all patients being discharged. Each survey took on average 6.3 minutes to complete (range = 6, SD = 2.36). Of 50 interns, 45 (90%) received at least 1 evaluation. On average, interns were evaluated 4.6 times (range = 10, SD = 3.2).

Performance of the Instrument

Mean scores for intern communication and team-based communication items were 4.2 (range = 3.5) and 3.6 (range = 3.8), respectively (provided as online supplemental material). Survey items and the intern being evaluated explained 9.2% and 1.5% of variation, respectively (TABLE 1). The reproducibility coefficient for 5 evaluations per intern was 0.12. Increasing the number of evaluations to 12 or 15 boosted the coefficient to 0.25 or 0.29, respectively. Fifty evaluations would be required to reach a coefficient close to acceptable (0.57) and 165 evaluations to reach an ideal coefficient (0.80). The scores on the patient evaluations did not significantly differ

TABLE 1 GENERALIZABILITY ANALYSIS AND SIMULATED D STUDIES OF PATIENT EVALUATIONS

Generalizability Analysis								
Evaluatee	0.015							
Item	0.092							
Evaluatee item	0.009							
Evaluator (evaluatee)	0.521							
Simulated D Studies								
No. of Items	16	16	16	16	16	16	16	16
No. of Evaluators	5	10	12	15	20	30	40	50
Standard error	0.34	0.25	0.23	0.21	0.18	0.16	0.14	0.13
Coefficient	0.12	0.21	0.25	0.29	0.35	0.44	0.51	0.57
Simulated D Studies (continued)								
No. of Items	16	16	16	16	16	5	10	15
No. of Evaluators	75	100	125	150	165	165	165	165
Standard error	0.12	0.11	0.10	0.10	0.10	0.15	0.12	0.10
Coefficient	0.66	0.71	0.75	0.78	0.80	0.73	0.78	0.79

Generalizability analysis determines how much of the observed variation is explained by the patient (evaluator), intern (evaluatee), and item (evaluation). D studies show how the precision would change if the number of items would change.

whether the patient was in isolation ($n = 53$, $P = .33$) or whether the patient was admitted by the intern being evaluated ($n = 58$, $P = .47$).

A principal component factor analysis with varimax rotation revealed 2 factor structures (TABLE 2). The first factor of 12 items reflected individual physician communication with factor loadings ranging from 0.685 to 0.865. The second factor (team communication) consisted of 4 items with factor loadings ranging from 0.646 to 0.852.

The average of the trainee's score on interpersonal communication on our required SP assessment of interns showed a weak correlation ($r = 0.14$) with the results of the patient evaluation questions related to intern communication.

Validity Evidence for the Instrument

The Cronbach's alpha measure of reliability for all questions on the instrument used was 0.961, with values of 0.970 and 0.816 for the individual physician communication and team communication items, respectively, indicating a high level of reliability. The average of the trainee's SP examination interpersonal communication score was significantly correlated with the patient evaluation individual physician communication factor ($r = 0.140$, $P = .04$). The patient evaluation of individual physician communication and team communication did not significantly correlate with faculty evaluations (TABLE 3).

Discussion

A 16-item patient evaluation assessing interns' communication and professionalism skills and team communication was developed. Most patients (74% [225 of 305]) were able to complete the evaluation. Factor analysis confirmed that the evaluation did indeed assess 2 separate factors. Although each evaluation took only approximately 6 minutes to complete, at least 50 evaluations would be required per intern to evaluate each reliably. This replicates the method used by other studies that have been found to require at least 50 patient evaluations.^{15,17,24,25}

Patient evaluations did not correlate with measures of communication from faculty but did weakly correlate with scores obtained from an SP exercise. This correlation may reflect the fact that patients see a different aspect of communication that cannot or was not observed by faculty, although additional validity testing should be performed to test this hypothesis. Most physicians and educators agree that patients' evaluations add a unique perspective to physician assessment and can empower patients.^{11,29,30} The lack of correlation with evaluations by faculty may mean that patient evaluations add to the overall assessment of communication and professionalism. Faculty assessment of teamwork also did not correlate with patient evaluation of teamwork. It is not clear that a patients' assessment of team cohesiveness measures the same skills that an attending uses to assess the ability of a trainee to function within a team.

TABLE 2 **FACTOR STRUCTURE OF TABLET-COMPLETED PATIENT EVALUATION OF INTERNAL MEDICINE INTERNS' COMMUNICATION SKILLS AND TEAM COMMUNICATION**

Question	Factor Loading	
	1	2
Individual physician communication		
How is this doctor at letting you tell your story; listening carefully; asking thoughtful questions; not interrupting you while you're talking?	0.865	0.244
How is this doctor at showing interest in you as a person; not acting bored or ignoring what you have to say?	0.864	0.281
How is this doctor in treating you like you're on the same level; never "talking down" to you or treating you like a child?	0.844	0.203
How is this doctor in greeting you warmly; calling you by the name you prefer; being friendly, never crabby or rude?	0.844	0.228
How is this doctor at arranging for adequate privacy when examining or talking with you?	0.840	0.243
How is this doctor at warning you during the physical exam about what he/she is going to do and why; telling you what he/she finds?	0.825	0.273
How is this doctor at using words you can understand when explaining your problems and treatment; explaining any technical medical terms in plain language?	0.818	0.206
How is this doctor at respecting your thoughts and beliefs; putting himself/herself "in your shoes"?	0.799	0.420
How is this doctor at encouraging you to ask questions; answering them clearly; never avoiding your questions or lecturing you?	0.792	0.368
How is this doctor at explaining what you need to know about your problems, how and why they occurred, and what to expect next?	0.772	0.465
How is this doctor at discussion options with you; asking your opinion; offering choices and letting you help decide what to do; asking what you think before telling you what to do?	0.740	0.454
Patients often see multiple doctors during their hospital stay. How well did this doctor seem informed and up to date about the information/care you got from other health care providers (doctors, nurses)?	0.685	0.458
Team communication		
Sometimes one doctor will say one thing and then another will say something very different. How were your physicians in giving you the same information?	0.219	0.852
Sometimes patients see multiple doctors and specialists during their hospital stay. How well did your medical care team (your doctors and nurses) seem informed and up to date about any tests, test results, or therapies that you were to have or had?	0.216	0.813
Sometimes patients often get mixed information from members of their medical care team during their hospital visit. How well did your doctors and nurses recognize, clear up, and explain any confusion or misinformation you received?	0.391	0.752
How well were you able to identify different members of your health care team, specifically your primary intern, resident and attending, nurses?	0.207	0.646

Further validity testing is required. Reasons for patients' refusal to complete evaluations may provide useful information. For example, 8% (25 of 305) of patients were unable to identify who their primary provider was while hospitalized or stated they felt they did not spend enough time with the intern to assess their skills. This qualitative information may be able to identify outliers and may in itself suggest a deficit in communication skills. Alternatively, it may provide information about the structure of

care delivery in the era of duty hour regulations and patient care discontinuity secondary to increased handoffs.¹² Further exploration of the impact of increased handoffs on patients' perceptions of communication with their intern providers would be beneficial.

Our study highlights the fact that the feasibility of using patient evaluations for summative feedback during training in the inpatient setting is questionable. Although each evaluation took only approximately 6 minutes to complete,

TABLE 3 CORRELATION OF PATIENT EVALUATIONS OF INTERNS' COMMUNICATION SKILLS AND TEAM COMMUNICATION AND FACULTY AND STANDARDIZED PATIENT EVALUATIONS OF INTERNS		
Evaluation	Tablet Patient Evaluation	
	Individual Physician Communication	Team Communication
Faculty evaluation		
Communication	$r = 0.161, P = .06$	—
Teamwork	—	$r = -0.042, P = .63$
Standardized patient evaluation		
Communication	$r = 0.140, P = .04$	—

at least 50 evaluations would be required per intern to evaluate each reliably. Our instrument was adopted primarily from the ABIM PSQ, which demonstrated reliability with a reproducibility coefficient of 0.7 when obtaining 20 evaluations and 0.8 with 35 or more evaluations.¹⁵ In our study, at least 50 evaluations were required per trainee to achieve acceptable reliability. Differences between the ambulatory and the inpatient settings could account for the larger number of evaluations needed in our study. Despite longer exposure to trainees in the inpatient settings, patients see multiple providers during a hospital stay and may not develop long-term relationships. Other inpatient studies have demonstrated that at least 50 evaluations are required for a coefficient of 0.67.²⁴ For large residency programs, even 20 to 35 evaluations may not be feasible. Additional research is needed to determine whether patient evaluations collected electronically are associated with a higher response rate and validity compared to paper-based evaluations and telephone surveys that may be limited by low response rate. If electronically based evaluations improve response rate and assist in data synthesis, this assessment modality may help collect information about trainees in residency program settings with fewer resources. Given the weak correlation of the patient evaluations with the SP evaluation of trainees, future investigations should explore the possibility of using an SP exercise without the need to obtain a large number of patient evaluations.

There are several limitations. This study was conducted at a single institution. The items on the tool were read by the RA. Patient responses might vary if they were given privacy to report answers.²⁴ Additional research is needed to determine whether the individual collecting the data needs to be disassociated from the patient care team to promote honest feedback. The survey also collected only quantitative data with no option for qualitative information. Narrative patient feedback may explore what

patients view as important in communication and professionalism.^{31,32}

Conclusion

A 16-item patient evaluation assessing interns' communication and professionalism skills, and team communication was developed. A large number of evaluations are required to provide a reliable patient assessment of trainee communication skills, and this may be prohibitive for the implementation of such evaluations during training. If patient evaluations continue to be a required component of trainee assessment in IM, or if there is interest in expanding patient input in other specialties, future research will need to focus on effectively collecting such feedback to benefit physicians in training and continuing medical education.

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