The Relationship Between Time Spent Communicating and Communication Outcomes on a Hospital Medicine Service

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BACKGROUND: Quality care depends on effective communication between caregivers, but it is unknown whether time spent communicating is associated with communication outcomes.

OBJECTIVE: To assess the association between time spent communicating, agreement on plan of care, and patient satisfaction.

DESIGN: Time-motion study with cross-sectional survey.

SETTING: Academic medical center.

PARTICIPANTS: Physicians, patients, and nurses on a hospital medicine service.

MEASUREMENTS: Hospitalists' forms of communication were timed with a stopwatch. Physician–nurse agreement on the plan of care and patient satisfaction with physician communication were assessed via survey.

RESULTS: Eighteen hospitalists were observed caring for 379 patients. On average, physicians spent more time per patient on written than verbal communication (median: 9.2 min. vs. 6.3 min, $p < 0.001$). Verbal communication was greatest with patients (mean time 5.3 min, range 0–37 min), then other physicians (1.4 min), families (1.1 min), nurses (1.1 min), and case managers (0.4 min). There was no verbal communication with nurses in 30% of cases. Nurses and physicians agreed most about planned procedures (87%), principal diagnosis (74%), tests ordered (73%), anticipated discharge date (69%) and least regarding medication changes (59%). There was no association between time spent communicating and agreement on plan of care. Among 123 patients who completed surveys (response rate 32%), time physicians spent talking to patients was not correlated with patients' satisfaction with physician communication (Pearson correlation coefficient = 0.09, $p = 0.30$).

CONCLUSIONS: Hospitalists vary in the amount of time they spend communicating, but we found no association between time spent and either patient satisfaction or nurse-physician agreement on plan of care.

KEY WORDS: communication; hospital medicine; outcomes.

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INTRODUCTION

Hospital care in the 21st century is a complex endeavor, involving numerous healthcare providers and other professionals in the care of a single patient. In this setting, the hospitalist's role is that of team leader, coordinating the efforts of consultant physicians, nurses, case managers and others. Good teamwork, in turn, requires effective communication so that all the team members share a common understanding of the plan and goals of care. In addition, effective communication between physicians, patients, and their families is necessary to create a comfortable and trusting care environment.

Studies conducted at single institutions in the US^{1–3} and elsewhere^{4–6} have found that hospitalists generally spend little time communicating with their patients, and that there is often disagreement between doctors and both nurses and patients about the plan of care.^{7,8} However, it is not known how much time physicians actually spend communicating with nurses and other physicians, and more importantly, whether more time spent communicating is associated with higher levels of agreement regarding the plan of care or greater patient satisfaction.

We performed a time-motion study to determine how much time hospitalists spend communicating with nurses, patients, other physicians, and families, and to test whether the amount of communication was related to patient satisfaction, or to agreement on the plan of care among physicians, nurses and patients.

METHODS

Design, Setting and Subjects

During July and September of 2008, we conducted a time-motion study on the hospital medicine service at Baystate Medical Center, a 670-bed tertiary care teaching hospital in Springfield, MA. On each study day, one hospitalist volunteer was recruited to participate in the study; all were employees of the Baystate Medical Practices, and cared for approximately

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10–14 previously admitted, non-critically ill patients each day on a non-teaching service. Together with Baystate Medical Center, the Baystate Medical Practices are a wholly owned subsidiary of Baystate Health, a large integrated delivery system in Western Massachusetts. The study was approved by the Institutional Review Board of Baystate Medical Center.

Observation Methods, Communication Measures and Outcomes

To estimate the time hospitalist physicians spent communicating with their patients and other caregivers, two of the investigators shadowed participants over the course of at least one entire day shift (8 a.m. to 4 p.m.), using a stopwatch to measure the time each physician engaged in any written or verbal communication activities. The duration of each individual communication encounter was recorded at the patient level, so each physician could have multiple entries for each patient in each category; these were later summed to quantify communication time per patient for that category. For the purposes of the study, written communication was defined as placing orders, sending alphanumeric pages, and reading and writing notes in the written or electronic medical record. Verbal communication was defined as any verbal interaction with nurses, patients, their families, other physicians, and case managers either face-to-face or by telephone. Investigators also recorded whether the patient could speak, could speak English, the number of days the patient had been in the hospital, and whether the patient was assigned to the same geographic area (i.e., patient care unit) in the hospital as the physician. Most physicians were shadowed twice, weeks or months apart. Because more than one study physician might, on different days, care for an individual patient, a single patient could be represented in the study multiple times.

Our primary study outcome was the level of agreement between physicians and nurses and the level of agreement between physicians and patients on the “plan of care.” Questions designed to assess agreement about the plan of care were adapted from a study by O’Leary,⁷ and included the diagnosis, anticipated tests, treatments, medication changes and consultations, as well as the expected date of discharge. A secondary outcome of the study was the patients’ assessment of the quality of communication with their physicians, and their overall satisfaction with care. Both outcomes were assessed by means of a written survey (made available in both English and Spanish) that patients were encouraged to complete and place in a sealed envelope for pick-up each day. This survey consisted of 11 questions, including 4 about the communication skills of their physician, 6 about the plan of care, and an overall satisfaction rating for the hospital experience (Appendix 1 – available online). Questions about communication were derived from Hospital Consumer Assessment of Healthcare Providers and Systems Survey (HCAHPS) and included how frequently the physician treated the patient with courtesy and respect, listened carefully, explained things in a way the patient could understand, and involved the patient or family in the decision making.⁹ Answers were multiple choice (never, sometimes, usually or always) and scored on a 4-point scale with a total range from 4 to 16 with a higher score representing better communication. For every patient, the physician and day-shift nurse caring for the patient that day were asked to complete a brief 6-question survey about

the plan of care which mirrored that of the patient (Appendices 2 and 3 – available online). All surveys were collected at the end of the day. Agreement between a physician and a nurse when both answered the question (the physician–nurse dyad) was assessed by 2 independent reviewers and discrepancies were resolved by a third reviewer. For the question about expected discharge date, answers were categorized as today, tomorrow, or ≥ 2 days.

Analyses

We report means, standard deviations or medians, and interquartile ranges for the amount of time physicians spent engaged in each form of communication. The amount of time all physicians spent on written vs. verbal communication was compared using the sign test. We used the Pearson and Spearman correlation coefficients to examine the relationship between the duration of verbal communication with a patient and that patient’s perception of the quality of physician–patient communication. Similarly, we assessed the correlation between each physician’s mean time spent communicating and mean patient ratings of the quality of communications. We examined the association between patient characteristics, hospital day, and geographic assignment with time spent by hospitalists via Kruskal–Wallis tests. We also assessed the association between verbal communication times and the agreement on the plan of care for hospitalist–patient and hospitalist–nurse dyads via Kruskal–Wallis tests. Agreement analyses between the two independent reviewers are presented via Kappa statistics and overall percent agreement. After resolution of differences by a third reviewer, agreement of physician–nurse and physician–patient responses on aspects of plan of care were assessed by percent agreement among cases with paired assessments available. Time spent by the physician communicating with the nurse was compared by agreement status via Kruskal–Wallis. Differences in agreement between physician–nurse and physician–patient based on their geographical assignment were assessed via a chi-square test. All analyses are done using SAS 9.1.3 (SAS Institute Inc., Cary, NC, USA).

RESULTS

A total of 18 hospitalists who cared for 379 patients were observed over the course of 2 months. Twelve physicians were observed on two separate occasions, 5 were observed only once, and 1 was observed 3 times. Of the patients, 34 were included twice, 7 three times, and 1 patient 4 times. We observed substantial variation in communication practices among the physicians included in the study. All reported values are means, unless otherwise specified. On average physicians spent 20.4 minutes each day engaged in communication activities for each patient that was on their service, but the interquartile range was 10.8 to 26.4 minutes and the total range was 0 to 158 minutes (Table 1). Physicians spent more of this time communicating via written methods than verbally (median: 9.2 min. vs. 6.3 min., $p < 0.001$). Talking with patients (5.3 min) was the largest individual component of time engaged in verbal communication; conversation with other physicians (1.4 min), families (1.1 min), nurses (1.1 min), and case managers (0.4 min) occupied a smaller share (Fig. 1). The mean time spent by a hospitalist on direct verbal communication

Table 1. Time Physicians Spent Engaged in Different Forms of Communication, per Patient

Activity	Median (Mins)	IQR (Mins)	Total Range (Mins)
Total communication	17.2	10.8 – 26.4	0 – 158.0
Written communication	9.2	5.1 – 14.5	0 – 70.8
Reading notes	1.6	0.5 – 3.5	0 – 17.9
Writing notes	5.3	2.4 – 9.5	0 – 59.1
Placing orders	1.2	0 – 2.4	0 – 13.7
Verbal communication	6.3	3.7 – 12.1	0 – 146.9
Patients	3.8	2.0 – 7.2	0 – 37.0
Nurses	0.6	0 – 1.3	0 – 45.0
Family members	0	0 – 0	0 – 72.8
Physicians	0	0 – 1.5	0 – 67.8
Case managers	0	0 – 0.4	0 – 21.2

with all their patients ranged from 2.0 min to 12.4 min (Fig. 2). The amount of time spent speaking with individual patients ranged from 0 to 37 min per patient (median 3.9 min).

Hospitalists spent more time communicating with patients who were able to speak, than with those who could not (median: 4.0 min vs. 1.7 min, $p=0.005$). Hospitalists also spent more time with patients during the first 2 days of hospitalization than on subsequent days (median: 4.8 min vs. 3.7 min, $p=0.007$). There was no difference in the time spent speaking with patients according to whether or not the hospitalist was geographically assigned to the same patient care unit as the patient (median: 3.7 min. vs. 4.1 min., $p=0.76$) or according to the patient's ability to speak English (median: 4.0 min for English speakers vs. 3.1 min. for non-English speakers, $p=0.37$). There was limited verbal communication between the hospitalists and either nurses (median 0.6 min, IQR 0 to 1.3 min) or other physicians (median 0 min, IQR 0 to 1.5 min). Hospitalists did not engage in any verbal communication with nurses for 30% of the patients or with other physicians for 62% of the patients.

Agreement on Plan of Care

Of the 379 patients cared for by the hospitalists studied, 117 (31%) patients responded to one or more questions on the plan of

Figure 1. Hospitalist time spent per patient on different types of verbal and written communication. **Figure 2. Individual physicians' communication times per patient (median and interquartile ranges).**

care; hospitalists completed plan of care assessments on 186 (49%) patients, and nurses on 141 (37%) patients. There were 116 dyads of nurse-physician assessments (where the nurse and physician completed assessments on the same patient) and 49 dyads of patient-physician assessments. The two independent raters agreed >85% of the time on all comparisons except for physician-nurse assessments of medication changes, on which the agreement was 84%. All discrepancies were resolved by a third reviewer. Physicians and nurses agreed 74% of the time on the patient's principal diagnosis, 73% on tests ordered, 87% on planned procedures, 59% regarding medication changes, 74% for consultants, and in 69% of instances on the anticipated discharge date. The median time the physician and nurse spent communicating verbally was not higher for those cases where there was agreement than for cases of disagreement for diagnosis (0.6 min vs. 0.7 min, $p=0.82$), tests (0.7 min vs. 0.6 min, $p=0.04$), procedures (0.7 min vs. 0.7 min, $p=0.92$), medication changes (0.6 min vs. 0.7 min, $p=0.34$), consultants (0.6 min vs. 0.7 min, $p=0.90$), or discharge date (0.7 min vs. 0.4 min, $p=0.10$). Physicians and patients agreed 70% of the time about diagnosis, 67% on tests ordered, 51% on planned procedures, 55% regarding medication changes, 48% for consultants, and in 70% of instances regarding anticipated discharge date. In cases where patients and physicians disagreed about diagnosis, there was longer verbal communication than in cases where they agreed (median: 6.9 min vs. 2.8 min, $p=0.03$). For other dimensions of the plan of care, verbal communication times with patients were not higher for cases of agreement than for cases of disagreement. There was no difference in agreement based on geographical assignment, except that physicians and nurses in the same geographic area were less likely than those in other geographic areas to agree regarding medication changes (47.1% vs. 66.7%, $p=0.03$).

Communication Time and Patient Satisfaction

One hundred and twenty-three patients completed communication and satisfaction surveys on 16 physicians (response rate 32%). In general, communication ratings were high (median score 12, IQR 11 to 12). More time spent communi-

cating with a patient had a weak positive correlation with that patient's rating of overall physician communication but it was not statistically significant (Pearson correlation coefficient = 0.09, p -value=0.30). Similarly, there was no statistically significant correlation between time spent and any single component of the communication score. Physicians who spent more time with patients on average did not have significantly higher mean scores than physicians who spent less time (Pearson correlation coefficient = 0.27, p -value=0.31).

DISCUSSION

In this study of the communication practices of hospitalists employed by a large integrated delivery system, we found that on average, physicians spent very little time communicating directly with patients, nurses and other physicians. Instead, the majority of communication appeared to take place through reading and writing of notes and by placing and receiving patient care orders. We found that physicians and nurses disagree about the plan of care more than 25% of the time about key issues such as the admitting diagnosis and the anticipated discharge date. Agreement between physicians and patients about the plan of care was worse than between physicians and nurses. We also found a lack of correlation between the amount of time the physician spent communicating and the level of agreement between physicians and either nurses or patients about the plan of care. Finally, we observed no statistically significant correlation between the amount of time physicians spent communicating and patients' evaluations of the quality of the physicians' communication.

Previous studies describing how hospitalists spend their time have been conducted in various settings, yet report similar time spent in direct patient care (analogous to our verbal communication with patients and families), ranging from 10% to 18% of a shift.^{1-3,5,6} Similarly, we found that physicians spent 5.3 minutes per patient—about 13% of an 8-hour shift. We also found that communication times varied substantially by provider, from a mean of 2 minutes per patient to greater than 12 minutes per patient.

Other studies have measured duration of communication between doctors and nurses or communication outcomes, but none has linked the two. Tipping et al. found that doctors spent an average 2.2 minutes per patient communicating with nurses.³ O'Leary et al. has studied agreement on the plan of care, using the same metrics we employed.^{7,8,10} They found that agreement between physicians and nurses was greatest for procedures planned (89%) and least for discharge date (64%)—almost identical to the proportions we observed. Agreement between physicians and patients was also poor, and similar to what we observed.⁸ There was no communication reported between physicians and nurses 38% of the time; agreement was not associated with reported communication but duration of communication was not measured.⁷

Our study has a number of limitations. First, it was conducted at a single institution with a relatively limited number of hospitalists. Even so, the total amount of time spent communicating and the time spent on verbal communication with patients is similar to that reported by others, so the

amounts of time spent in other forms of communication (i.e., writing notes, speaking with nurses) may also be generalizable. Further, our hospitalists were not performing admissions during the shifts when they were observed. Hospitalists engaged in admitting patients may have different patterns of communication. Second, the scores we observed for communication satisfaction were uniformly high, making it difficult to differentiate among providers. We relied on questions from the HCAHPS survey, but an instrument with greater discrimination might have revealed an association between more communication and higher patient satisfaction. Alternatively, if we had observed a larger number of encounters, the observed association may have reached statistical significance. Third, our response rate was less than 50%, and there was substantial missing data about the plan of care for both nurses and patients who either could not or chose not to complete the forms. Their experiences may have differed from those nurses or patients who chose to complete them. Here, too, our findings were almost identical to studies with much higher response rates. Finally, the physicians in our study knew that they were being observed and this might have affected their behavior. We think it would be challenging for them to alter their clinical practice in the hectic hospital environment, but if they did so, they would likely have spent extra time in verbal communication. In that case, our findings may represent the upper limits of communication and agreement on plan of care.

In a recent poll of US adults aged 50 years and older, almost 75% said they wished their doctors talked to each other.¹¹ Our finding that hospitalists did not speak to any other physician involved in the patient's care in 62% of encounters is disappointing in this regard. Instead, doctors communicated via written notes without the opportunity to ask clarifying questions. Subsequent decisions may be made without complete information, and patients may receive contradictory information from different consultants unaware of each others' plans.

Presumably, patients would also like their doctors and nurses to speak with one another. Patients interact primarily with nurses and expect the nurse to be a knowledgeable member of the healthcare team. We suspect that many patients would be surprised to learn that their physician often did not speak to their nurse at all, and when they did, the median time was only 30 seconds. However, we found no correlation between physician–nurse communication times and agreement on the plan of care, so presumably this communication centers around something else. This same disconnect existed for physician–patient communication. Doctors who spent more time with patients did not receive higher ratings on communication skills, nor were their patients more likely to correctly understand the plan of care. If hospitalists wish to improve understanding, they cannot simply spend more time communicating, they have to communicate more effectively.

Communication is important for two reasons. First, hospital care is complex, requiring coordination of a therapeutic team, under the leadership of a hospitalist. Without effective communication, teamwork suffers and errors are likely to occur. Although 87% agreement between physicians and nurses on planned procedures may seem high, the 13% error rate would not be tolerated in other industries. For example, airlines' lost luggage rates are less than 0.3%. In contrast, medical procedures

are frequently postponed because a patient was allowed to eat due to a lack of communication. Second, although patients have always participated in their care, there is a growing belief that patients should be involved in shared decision making, and even to participate as an active member of the healthcare team. Such participation is not possible without consistent exchange of reliable information.

Efforts to improve communication will have to balance hospitalists' other responsibilities. Although physicians generally prefer synchronous communication (e.g., direct communication in person or by telephone), such communication is disruptive to work flow.¹² We found, however, that most communication took place through asynchronous means, such as alphanumeric paging, electronic notes, and orders. This lack of opportunity to clarify may partly explain the frequent disagreement about the plan of care. Communication might be improved through multidisciplinary rounding, which has been shown to improve care quality and decrease mortality in intensive care units.^{13,14} Such rounds also appear to improve communication between hospitalists and nurses, though implementation remains a challenge, and the effects on length of stay and costs are mixed.^{15,16}

In conclusion, we found that while hospitalists in one academic center spent limited time communicating directly with patients, nurses and other physicians, the quality of the communication, as reflected in agreement on the plan of care and patient satisfaction, was not associated with the amount of time spent communicating. Future studies should address ways to improve the effectiveness of communication without increasing the time burden on hospitalists.

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