ORIGINAL RESEARCH

Quantification of Bedside Teaching by an Academic Hospitalist Group

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BACKGROUND: Medical educators have raised serious concerns about the decline in bedside teaching and the effect of this decline on trainee skills. We investigated the fraction of time hospitalist attending physicians spend at the bedside during teaching rounds and how often physical examination skills are demonstrated.

METHODS: In a prospective, observational study, the authors investigated the rounding behavior of members of Brigham and Women's Hospitalist Service. For 5 weeks from December 2007 to January 2008, interns and residents rotating on the hospitalist service reported in a daily e-mail (1) total time spent with their attending during attending rounds, (2) time spent inside patient rooms during attending rounds, and (3) whether or not a physical examination finding or technique was demonstrated by their hospitalist attending.

RESULTS: A total of 61 observations were reported (66% response). Hospitalists spent an average of 101 minutes on teaching rounds and an average of 17 minutes inside patient rooms or 17% of their teaching time at the bedside. Bedside teaching occurred during 61% of teaching sessions and physical examination teaching occurred during 38% of teaching sessions. Rounds that included time spent at the bedside were longer on average than rounds that did not include time spent at the bedside (122 vs. 69 minutes, $P < 0.001$).

CONCLUSIONS: Bedside teaching makes up approximately 17% of the time that hospitalists at this medical center spend on teaching rounds. Physical examination teaching has become infrequent. Research to clarify optimal strategies to improve bedside teaching and its value in patient care is needed. ***Journal of Hospital Medicine*** **2009;4:304–307**. © *2009 Society of Hospital Medicine.*

KEYWORDS: bedside teaching, graduate medical education, physical examination.

Bedside teaching, defined as teaching in the presence of a patient, has been an integral, respected part of medical education throughout the history of modern medicine. There is widespread concern among medical educators that bedside teaching is declining, and in particular, physical examination teaching.[1-5] Learning at the bedside accounted for 75% of clinical teaching in the 1960s and only 16% by 1978.[2] Current estimates range from 8% to 19%.[1]

The bedside is the ideal venue for demonstrating, observing, and evaluating medical interviewing skills, physical examination techniques, and interpersonal and communication skills. Role modeling is the primary method by which clinical teachers demonstrate and "teach" professionalism and humanistic behavior.[6] The bedside is also a place to develop clinical reasoning skills, stimulate problem-based learning,[7] and demonstrate teamwork.[4] Thus, the decline in bedside teaching is of major concern for more than just the dying of a time-honored tradition, but for the threat to the development of skills and attitudes essential for the practice of medicine.

With the rapid growth in the number of hospitalists and their presence at most major U.S. teaching hospitals, internal medicine residents and medical students in their medicine clerkships receive much of their inpatient training from attending physicians who are hospitalists.[8] Little is known about the teaching practices of hospitalist attending physicians. We investigated the fraction of time hospitalist attending physicians spend at the bedside during attending teaching rounds and the frequency of the demonstration of physical examination skills at 1 academic teaching hospital.

Patients and Methods

The Brigham & Women's Hospitalist Service, a 28-member academic hospitalist group who serve as both the teaching attendings and patient care attendings on 4 general medicine teams, was studied in a prospective, observational fashion. Internal medicine residents at Brigham & Women's Hospital rotating on the hospitalist service were identified by examining the schedule of inpatient rotations during the

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2007-2008 academic year and were asked to participate in the study via an e-mail invitation. The Institutional Review Board of Brigham & Women's Hospital approved the study.

Teams were made up of 1 senior resident and 2 interns. Call frequency was every fourth day. Over a period of 23 sequential weekdays, medical residents and interns from each of the 4 hospitalist teams observed and reported the behavior of their attendings on rounds. Their reports captured the fraction of time spent at the bedside during rounds and the frequency of physical examination teaching. Residents and interns were asked to respond to 3 questions in a daily e-mail. Respondents reported (1) total time spent with their hospitalist attending during attending rounds, (2) time spent inside patient rooms during attending rounds, and (3) whether or not a physical examination finding or skill was demonstrated by their hospitalist attending. When more than 1 team member responded, time reported among team members was averaged and if there was a discrepancy between whether or not a physical examination finding or skill was demonstrated, it was defaulted to the positive response. Hospitalist attendings remained unaware of the daily observations.

Hospitalist attendings were independently invited to complete a baseline needs assessment survey on bedside teaching. Surveys addressed attitudes toward bedside teaching, confidence in ability to lead bedside teaching rounds and teach the physical examination, and adequacy of their own training in these skills. Respondents were asked to comment on obstacles to bedside teaching. Residents were surveyed at the completion of a rotation with a hospitalist attending regarding the value of the time spent at the bedside and their self-perceived improvement in physical examination skills and bedside teaching skills. The survey solicited the residents' opinion of the most valuable aspect of bedside teaching. The survey questions used a 4-point Likert scale with response options ranging from 1 = "strongly disagree" to 4 = "strongly agree."

The fraction of time spent at the bedside during attending hospitalist rounds was calculated from the average time spent in patient rooms and the average time of attending rounds. The frequency of physical examination teaching was expressed as a percent of all teaching encounters. Interrater reliability was calculated using the intraclass correlation coefficient with the Spearman-Brown adjustment. Differences between groups were calculated using the Fisher's exact test for counts and the Wilcoxon rank-sum test for continuous data. Significance was accepted for $P < 0.05$.

Results

Thirty-five residents provided observations on 61 of 92 potentially observed attending rounds (66% response rate) over 23 weekdays, including observations of the rounding behavior of 12 different hospitalists. The interrater reliability was 0.91. The average patient census on each team during this time period was 12 (range 6-19).

Residents reported that their attendings went to the bedside at least once during 37 of these 61 rounds (61%), and provided physical examination teaching during 23 of these 61 (38%) encounters. Hospitalists spent an average of 101 minutes on rounds and an average of 17 minutes (17%) of their time inside patient rooms.

Rounds that included time spent at the bedside were significantly longer on average than rounds that did not include time spent at the bedside (122 vs. 69 minutes, $P < 0.001$). During rounds that included bedside teaching, teams spent an average of 29 minutes (24% of the total time) in patient rooms, and rounds were significantly more likely to include teaching on physical diagnosis (23/37 rounds vs. 0/24 rounds, $P < 0.001$). Physical examination teaching did not significantly prolong those rounds that included bedside teaching (124 vs. 119 minutes, $P = 0.56$), but did significantly increase the amount of time spent at the bedside (32 vs. 22 minutes, $P = 0.046$).

Eighteen hospitalists (64% response) with a mean of 5.9 years of experience as attending physicians completed a needs-assessment survey (Table 1). Fourteen of the 18 hospitalists (78%) reported that they prioritize bedside teaching and 16 (89%) requested more emphasis on bedside teaching in the residency curriculum. Twelve hospitalists (67%) indicated that they were confident in their ability to lead bedside teaching rounds; 9 (50%) were confident in their ability to teach physical examination. Eleven (61%) of the respondents felt poorly prepared to do bedside teaching after completing their residency, and 12 (67%) felt that they had received inadequate training in how to teach the physical examination. Of the obstacles to bedside teaching, time and inadequate training and skills were the most frequently noted, present in 11 and 6 of the reports, respectively. Lack of confidence and lack of role models were also cited in 4 and 2 of the reports, respectively.

Seventeen medical residents (49% response) completed a survey regarding their general medical service rotation with a hospitalist upon its completion (Table 2). Sixteen of the respondents (94%) agreed that time spent at the bedside during hospitalist attending teaching rounds that specific rotation was valuable, and 15 (82%) of the residents sought more emphasis on bedside teaching in the residency curriculum. Four of the respondents (24%) reported that their physical examination skills improved over the rotation, 5 (29%) felt better prepared to teach the physical examination, and 9 (53%) felt better prepared to lead bedside teaching rounds. Only 3 (18%) of the respondents reported that they had received helpful feedback on their physical examination skills from their attending. Responding residents noted physical examination teaching, communication and interpersonal skills, focus on patient-centered care, and integrating the clinical examination with diagnostic and management decisions as the most valuable aspects of bedside teaching.

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TABLE 1. Hospitalist Survey

	Strongly Disagree (%)	Disagree (%)	Agree (%)	Strongly Agree (%)
I make bedside teaching a priority	0	22	56	22
More emphasis on bedside teaching in the residency curriculum is needed	0	11	39	50
I feel confident in my ability to lead bedside teaching rounds	11	22	50	17
I was well-prepared to do bedside teaching after residency training	22	39	28	11
I feel confident in my ability to teach the physical exam	11	39	33	17
I have received adequate training in how to teach the physical exam	17	50	22	11

NOTE: n = 18.

TABLE 2. Resident End of Hospitalist Rotation Survey

	Strongly Disagree (%)	Disagree (%)	Agree (%)	Strongly Agree (%)
Time spent at the bedside during teaching rounds was valuable	0	6	65	29
More emphasis on bedside teaching in the residency curriculum is needed	0	18	53	29
I feel better prepared to lead bedside teaching rounds	6	41	53	0
My physical exam skills improved over the rotation	6	71	24	0
I feel better prepared to teach the physical exam	6	65	29	0
I received helpful feedback on my physical exam skills	18	65	18	0

NOTE: n = 17.

Discussion

Bedside teaching is highly valued by clinicians and trainees, though there is little evidence supporting its efficacy. Patients also enjoy and are accepting of bedside presentations[7,9,10] if certain rules are adhered to (eg, avoid medical jargon) and benefit by having a better understanding of their illness.[9] This study supports previous views of medical residents, students,[1,5,7] and faculty[11] of the value and need for greater emphasis on bedside teaching in medical education.

This study of rounding behavior found that hospitalists in this academic center go to the bedside most days, but 39% of attending teaching rounds did not include a bedside encounter. Physical examination teaching is infrequent. Though time spent at the bedside was only a small fraction of total teaching time (17%) in this practice, this fraction is at the high end of previous reports. Teaching rounds that did not include bedside teaching most likely occurred in the confines of a conference room.

Many factors appear to contribute to the paucity of time spent at the bedside: time constraints, shorter hospital stays, greater work demands,[11] residency duty-hour regulations,[12] declining bedside teaching skills, unrealistic expectations of the encounter, and erosion of the teaching ethic.[3] A decline in clinical examination skills among trainees and attending physicians leads to a growing reliance on data and technology, thereby perpetuating the cycle of declining bedside skills.[4]

The hospitalists in this study identify time as the most dominant obstacle to bedside teaching. On days when hospitalist attending physicians went to the bedside, rounds were on average 53 minutes longer than on those days when they did not go to the bedside. This time increase varied little whether or not physical examination teaching occurred. The difference in rounding time may be partially explained by the

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admitting cycle and patient census. Teaching attendings are likely to go to the bedside to see new patients on postcall days when the patient census is also the highest.

Many members of this hospitalist group indicated that they felt inadequately prepared to lead bedside teaching rounds. Of those who responded to the survey, 67% did not feel that they received adequate training in how to teach the physical examination. Consequently, only one-half of responding hospitalists expressed confidence in their ability to teach the physical examination. Not surprisingly, physical examination skills were a component of a minority of teaching sessions and only one-quarter of the medical residents perceived that their physical examination skills improved during the rotation with a hospitalist attending. The paucity of feedback to the house-staff likely contributed to this stagnancy. Residents who become hospitalists ill-prepared to lead bedside teaching and teach the physical examination will perpetuate the decline in bedside teaching.

Though a substantial portion of the hospitalists in this study lacked confidence, an overwhelming majority of medical residents found their time spent at the bedside with a hospitalist to be valuable. More than one-half of residents reported that they were better prepared to lead bedside teaching after the rotation. Residents recognize that bedside teaching can include communication and clinical reasoning skills. Hospitalists should be made aware that a broad range of skills and content can be taught at the bedside.

Hospitalists have an increasing influence on the education of medical residents and students and are appropriate targets for faculty development programs aimed at improving bedside teaching. As a newer, growing specialty, hospitalists tend to be younger physicians, and are therefore more reliant on the education attained during residency to support their bedside activities. Many residencies have developed resident as educator programs in an attempt to create a future generation of attendings better able to teach.[13]

Several limitations should be acknowledged when interpreting the results of this study. The study was limited to a hospitalist group at a single academic medical center and relied on resident recall. Though the response rate to the daily e-mails was relatively low, the interrater reliability was high, and a broad range of residents and attendings were represented. Residents with greater patient censuses may have been too busy to respond, but it is unclear in which direction this would bias the results.

Conclusions

This study provides additional evidence that bedside and physical examination teaching are in decline. Time is an increasingly precious commodity for hospitalists; though many commentators echo the sentiments of the respondents in this study that more time at the bedside is needed, the amount of time that should be optimally spent at the bedside remains unclear. Research to improve the quality of bedside learning and its influence on patient care outcomes is needed.

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