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## Attending Rounds and Bedside Case Presentations: Medical Student and Medicine Resident Experiences and Attitudes

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### Abstract

**Background**—Attending rounds have transitioned away from the patient's bedside toward the hallway and conference rooms. This transition has brought into question how to best teach on medicine services.

**Purpose**—The purpose is to describe learner experiences and attitudes regarding bedside attending rounds at an academic medical institution. Method: Cross-sectional Web-based survey of 102 medical students and 51 internal medicine residents (75% response rate).

**Results**—The mean time spent at the bedside during attending rounds was 27.7% ( $SD = 20.1\%$ ). During 73% of the rotations, case presentations occurred at the bedside 25% of the time or less. Learners experiencing bedside case presentations were more likely to prefer bedside case presentations. Despite their stated concerns, learners believe bedside rounds are important for learning core clinical skills.

**Conclusions**—Time spent at the bedside is waning despite learners' beliefs that bedside learning is important for professional development. Our findings suggest the necessity to re-examine our current teaching methods on internal medicine services.

### INTRODUCTION

Attending rounds have been and continue to be a vital aspect of housestaff and medical student training on internal medicine inpatient services at teaching hospitals. Learning medicine at the bedside through patient interaction with physician guidance was begun in the mid-17th century by Franciscus Sylvius.<sup>1</sup> In the early 20th century, William Osler pioneered medical education reform by advocating that the focus and primary method of clinical learning by future physicians be performed at the bedside with an attending physician. Osler believed medicine could not be learned only in the classroom, prompting students with the following: “Use your

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five senses. Learn to see, learn to hear, learn to feel, learn to smell and know by practice alone you can become expert.”<sup>2,3</sup>

Bedside teaching rounds became the primary method of teaching students in the initial half of the 20th century. In the 1960s, it was reported that 75% of attending rounds occurred at the bedside, but this had declined to 16 to 20% by the late 1970s.<sup>4,5</sup> More recent data on actual time spent at the bedside during attending rounds are lacking.

Studies suggest bedside teaching has declined because of teacher apprehension, teacher/learners’ perceptions of patient preferences, and logistics within the hospital setting.<sup>6–12</sup> Studies concerning learners’ attitudes toward case presentations are scarce. One study found that 95% of medical students and residents preferred case presentations away from the bedside.<sup>9</sup> However, another study in the ambulatory setting found that students with increased in-room case presentation experience were more likely to prefer future in-room case presentations.<sup>13</sup> To our knowledge, whether experience with bedside case presentations affects learner preference or their perceptions of patient preference for bedside case presentations in the inpatient setting has not been evaluated.

Learner experiences and attitudes regarding bedside attending rounds have not been examined recently. In this study, we sought to describe the amount of time spent at the bedside, percentage of cases presented at the bedside, and amount of physical diagnosis teaching occurring during attending rounds. We also sought to evaluate learners’ preferences and perceived patient preferences for bedside case presentations, concerns regarding bedside case presentations, and perceived importance of bedside rounds for learning core clinical skills.

## METHODS

### Study Design

In June 2005, we sent an e-mail invitation to the 125 third-year medical students and the 77 Internal medicine and internal medicine/pediatrics residents at the Pennsylvania State University College of Medicine to participate in an anonymous Web-based survey. The e-mail described the study and explained that informed consent would be implied through completion of the survey. The participants were instructed to follow a URL link to the online survey, which was managed by the Pennsylvania State College of Medicine’s Department of Public Health Sciences. Following the initial e-mail, three additional e-mail reminders were sent to the potential participants at 1-week intervals encouraging participation. The study was undertaken near the end of the academic year to ensure the greatest number of completed general medicine rotations. As an incentive for participation, three \$50 prizes were randomly awarded to three survey participants. The study was approved by the Institutional Review Board at the Pennsylvania State College of Medicine.

### Survey Instrument

A survey instrument was developed for the purpose of this study, with some items adapted from previous works.<sup>9,10,13</sup> During development the survey was piloted to a group of clinical fellows. Demographic items in the survey included age, gender, and level of training. Items assessing future career plans included desired specialty and preference to practice medicine in a teaching versus a non-teaching location. At the Penn State College of Medicine there are five hospitals where internal medicine clerks and internal medicine residents can rotate. All clerks and residents rotate at the Penn State Milton S. Hershey Medical Center; the other sites are three academically affiliated community hospitals and a veterans’ affairs hospital. Each medical student rotates at two hospitals during the internal medicine clerkship, and each medicine resident rotates at two or three different hospitals during their residency. Our survey

specifically addressed the learners' experiences at each of the different hospitals where they rotated. More than one rotation at a particular hospital was considered a single hospital rotation. Attending physicians at all five hospitals provide both primary clinical care as well as teaching responsibilities to the learners. At the time the study was conducted, all of the hospitals had ward services that typically consisted of one attending, one resident, one intern, and two medical students. The average census at all hospitals was 12 to 15 patients per team. There were no explicit expectations of the faculty in terms of using bedside teaching and/or bedside presentations during attending rounds.

Survey questions regarding "attending rounds" pertained to the activities directly involving patient care/management and teaching under the guidance of the attending physician. For each hospital rotation, respondents were asked the following questions about time spent at the bedside and case presentations during attending rounds:

Estimate the percent of time spent at the following locations during attending rounds (sum of the responses must equal 100%):

- i. bedside
- ii. hallway
- iii. conference room
- iv. other (please specify)

Please estimate the percentage of patient case presentations that occurred at the bedside in the presence of the patient:

- 0%
- 1–25%
- 26–50%
- 51–75%
- 76–99%
- 100%

We specifically distinguished between time spent at the bedside during attending rounds and whether case presentations occurred at the bedside based on our hypothesis that case presentations at the bedside could potentially provide a different type of learning experience and evoke distinct attitudes about attending rounds. Participants were also asked the average number of physical diagnosis skills explicitly taught/reviewed by a member of the team at the bedside per day of rounds.

Several attitudinal items were also assessed. Respondent preference and perceived patient preference for bedside case presentations were investigated on a 5-point Likert scale by asking learners whether they agreed or disagreed with the following statement: "I/Patients prefer bedside case presentations during attending rounds." In order to assess concerns/barriers about bedside case presentations, the respondents were given a list of potential concerns and asked to rank them by degree of importance.<sup>9,13</sup> In addition, respondents indicated whether bedside attending rounds were important for learning various clinical skills—that is, history taking, physical examination skills, and so on—on a 5-point Likert scale. Finally, the learners were questioned about their perceptions of the importance of physical diagnosis skills in making correct diagnoses.

## Data Management and Analysis

The Web-based survey was designed with Cold Fusion language, accessed through Macromedia Dreamweaver. JavaScript was utilized for execution of the validation rules. Survey data were stored in tables, using a database created in MySQL.

The Statistical Analysis System (SAS) Version 8.2 (Cary, NC) was used for data analysis. Descriptive characteristics and survey responses are presented. Attitudinal items were compared by demographics (age group, gender, student vs. resident status) and future career plans (specialty, teaching vs. nonteaching). Based on balanced midpoints in the data concerning “time spent at the bedside” and “case presentations at the bedside,” attitudinal items were also compared among learners that had spent  $\leq 30\%$  time at the bedside during attending rounds versus those who had spent more, as well as among those reporting that  $\leq 25\%$  of case presentations were presented at the bedside during attending rounds versus those who reported  $>25\%$  of case presentations were performed at the bedside. Chi-square and Fisher's Exact Tests were used for hypothesis testing, using 2-tailed analysis with alpha of 0.05 as criterion for significance.

## RESULTS

### Demographics

There were 153 participants in the final sample (75% response rate), consisting of 102 medical students and 51 residents. The participant characteristics are shown in Table 1. The respondents did not significantly differ from the total student/resident population in terms of gender or level of training. A total of 321 hospital rotations were completed by the respondents. Medical students completed 203 (63%) of these rotations, whereas residents completed 118 (37%). The rotations were completed at the 5 hospitals affiliated with the Pennsylvania State University College of Medicine, with the College's Milton S. Hershey Medical Center being the most common site for a rotation (36%).

### Time Spent at the Bedside & Case Presentations Occurring at the Bedside on Attending Rounds

The time spent at the bedside during attending rounds is shown in Table 2. During the rotations completed by medical students, an average of 26.1% ( $SD = 20.0\%$ ) of attending rounds was spent at the bedside during attending rounds (range = 0–90%). During the rotations completed by residents, an average of 30.4% ( $SD = 20.1\%$ ) of attending rounds was spent at the bedside (range = 0–90%). Since some respondents had only completed one hospital rotation and other had completed up to three rotations, we also computed the mean time spent at the bedside during attending rounds for each individual. Those calculations show that medical students spent an average of 25.9% ( $SD = 16.2\%$ ) and residents spent an average of 28.2% ( $SD = 15.0\%$ ) of the time at the bedside during attending rounds. The percentage of case presentations performed at the bedside in the presence of the patient is also shown in Table 2. No statistical difference existed between the five hospital locations in terms of time spent at the bedside or case presentations occurring at the bedside during attending rounds.

### Physical Diagnosis Skills—Assessment and Perception of Importance

Eighty-six percent of respondents agreed/strongly agreed that the utilization of physical diagnosis skills is required to make the correct diagnosis, whereas only 4% disagreed/strongly disagreed with this statement. However, the overwhelming majority (89%) of respondents reported two or fewer physical diagnosis skills taught/reviewed per day of rounds, with 45% reporting less than 1 skill taught/reviewed per day. Nearly half of the respondents (47%) believe

that physical diagnosis skills are somewhat more or much more important currently than prior to entering their 3rd year of medical school.

### Preference for Bedside Case Presentations

Twenty-four percent of the respondents agreed or strongly agreed that she or he preferred bedside case presentations (20% and 4%, respectively), whereas the majority of respondents disagreed (45%) or were neutral (30%) to the statement. Two respondents (1%) never experienced bedside case presentations. Thirty-eight percent of respondents agreed/strongly agreed that patients prefer bedside case presentations (30% and 8%, respectively). Interestingly, respondents were significantly more likely to believe patients preferred bedside case presentations than they themselves did (38% vs. 24%,  $p = .008$ ).

We assessed whether learners' preference/perceived patient preference for bedside case presentations differed by actual experience with bedside case presentations. Learners experiencing at least one hospital rotation with >25% of case presentations occurring at the bedside were significantly more likely to prefer bedside case presentations (42% vs. 13%,  $p < .0001$ ) and significantly more likely to believe patients prefer them (54% vs. 29%,  $p = .003$ ). There was no association between preferences for bedside case presentations and the percentage of time spent at the bedside on attending rounds. Preference and perceived patient preference also did not differ by demographics or future career plans.

### Learners' Concerns About Bedside Case Presentations

Respondents were asked to rank a list of potential concerns regarding bedside case presentations by degree of importance. We present the percentage of respondents that ranked each item within their top 3 concerns. A great majority of respondents (75%) ranked "Rounds at the bedside prevent freedom of discussion about the particular case" as one of their top three concerns. "Patient comfort" and "concern for patient's feelings" were ranked as top three concerns by 66% and 66% of respondents, respectively. Less prominent concerns were the accessibility of nurses and medical records (28%), patient privacy (21%), and concern with performance in front of the patient (13%) and the attending physician (13%). Write-in comments revealed that 5 respondents believe bedside case presentations compromise the efficiency of rounds. Respondent concerns did not differ by time spent at the bedside, amount of cases presented at the bedside, demographics, or future career plans.

### Learning Clinical Skills at the Bedside

Respondents were asked to indicate whether bedside attending rounds were important for learning certain core clinical skills. The results are presented in Table 3. The majority of respondents believed that bedside attending rounds were either important or very important for learning 5 of the 6 skills. These responses did not differ by amount of time spent at the bedside on attending rounds, proportion of case presentations performed at the bedside, demographics, or future career plans, with one exception. Learners experiencing hospital rotations where >25% of case presentations were performed at the bedside during attending rounds were significantly more likely to believe bedside rounds were important for learning patient management skills (70% vs. 51%,  $p = .03$ ).

## DISCUSSION

Since Osler's time, medicine has placed teaching "around" the patient at the forefront, but our findings support previous work that only a minority of teaching is occurring at the bedside. This transition away from the bedside is occurring during a time of profound change in medical education as a whole, when what we need to know as doctors and the effectiveness of our traditional model of inpatient education are being reexamined. The transition to the hallway

and the resultant loss of teaching opportunities prompts one to not only examine our current teaching methods but also to consider the ramifications that teaching away from the bedside during the developing years of medical training will have in the long term.

In recent years, the physician's ability to perform physical examination skills and apply the findings to clinical decision making has been questioned, public opinion in our physicians' communication skills has been declining, and the standards for teaching professionalism to our students and residents have been scrutinized. In our study, despite limited experience with bedside education, learners recognized the importance of bedside attending rounds for learning these core clinical skills expected of the physician. With the increasing controversy about how to best teach students core clinical skills, these findings, taken in conjunction with studies that have shown bedside rounds to be neither physiologically or psychologically stressful for the patient,<sup>6,8</sup> underscore both the suitability and importance of bedside learning. With the apparent decline in time spent at the bedside however, learners are losing opportunities to gain knowledge of valuable medical skills from both patients and teachers and to further define their professional characters.

Even though our learners overwhelmingly recognize the importance of bedside activities, they did not prefer bedside case presentations, which corroborate previous findings.<sup>9,13</sup> Interestingly, those students/residents with more bedside case presentation experience were not only more likely to prefer them but also perceived that patients preferred them as well. Rogers et al. showed similar results in the ambulatory setting. These two studies representing both the inpatient and outpatient settings suggest that even though learners do not prefer presenting at the bedside, this could be a result of their lack of exposure with this method of case presentation. These results may suggest that learners' appreciation for the bedside learning environment could be developed further if more experiences were offered to them.

In addition to not preferring bedside case presentations, learners did not believe patients preferred them either, albeit to a lesser degree. Our learners' concerns about bedside case presentations were largely patient-centered, suggesting that they view the bedside environment as a venue unaccepting of open discussion about the patient. However, evidence that patients are more likely to have favorable perceptions of their care suggests a discord between student perceived patient preference for bedside case presentations and patients' actual opinions.<sup>6,9,14</sup> Measures to overcome this apparent disconnect between student perceptions about patients' feelings/discomfort and actual reality should be explored.

Almost half of our respondents reported that less than one physical diagnosis skill was taught or reviewed per day during rounds. Conversely, that means more than half reported that at least one physical diagnosis skill was being taught per day. Interpreting whether this is an adequate amount of physical exam teaching is limited by the lack of detail in defining what a "physical diagnosis skill" is in our survey instrument. If respondents considered demonstration of a complete cardiac exam followed by learner modeling as "one" physical diagnosis skill, that would be seen by many as an abundance of physical diagnosis teaching. Conversely, respondents may have considered the attending making note of the ankle edema to the team as "one" physical diagnosis skill, which arguably would not be a lot of physical diagnosis teaching for one day. With this limitation in mind, we believe that less than one physical diagnosis skill per day is not an adequate level if we expect learners to have competent physical examination skills upon completion of their training. Physical examination skills should be "practiced" often and observed by experienced clinicians who can give feedback and guidance of improving skills.

The practice of internal medicine has traditionally taken pride in placing the patient at the focal point of medical care and teaching. In an era of great transition in the methods and venues of

medical care, where the focus of care has moved from the inpatient to the outpatient setting, the nature of inpatient hospitalizations has changed as patients have shorter lengths of stay and more critical medical conditions. This transformation has brought into question what the focus of teaching in the inpatient setting should be. Our learners are not spending ample time at the bedside, do not prefer bedside case presentations, and perceive that patients do not want them either, but just as important, our educators are not requiring that the bedside be used as a primary venue for education. We do however recognize that we need to change our models of teaching as the subject of what we teach has changed. In Osler's time, learning at the bedside made sense, since there were no MRIs or PET scans to review. The science and practice of medicine is dramatically different today, with vast knowledge of disease mechanisms, highly advanced imaging technology, and an immense array of pharmaceuticals at our disposal. We need to devote time to helping learners digest the limitless data, and often that is more efficiently accomplished away from the patient. However, teachers can easily get caught up in the impossible task of trying to teach an immense number of facts, and in turn not returning to the bedside to demonstrate skills that we can't learn well elsewhere, namely, physical examination skills, professionalism, communication, and empathy. Although facts and figures can usually be learned without direct supervision, learners will always need experienced clinicians to model behaviors that we value as important to our profession. Although the discussion away from the patient has definite clinical and teaching value, there needs to be appropriate balance with time spent at the bedside. As long as learners continue to report that more time spent at the bedside with an attending would be valuable for learning clinical skills, we have not yet struck the appropriate balance.

Several limitations exist with this study. First, we investigated one population of students and residents from a single medical school, limiting the generalizability of the results. The inquiries, however, did evaluate rotations at 5 different hospitals, namely, a large university hospital, 3 academically affiliated community hospitals, and a veterans affairs hospital. Subjective recall from our respondents certainly may have affected the results. In addition, we are unable to determine from this data whether the bedside teaching reported is driven by a few faculty who teach at the bedside almost exclusively and others who do almost none, or if the low rate is attributable to most faculty. Our study had several strengths. We specifically distinguished between "bedside rounds" and "bedside case presentations." Previous studies have failed to adequately make this distinction, causing difficulty in interpretation. Our findings that learner attitudes differed by experience with bedside case presentations, but not by the amount of time spent at the bedside, demonstrate the importance of this distinction. The study also had a strong response rate resulting in a representative sample of the student body and the housestaff. Finally, we were able to document learners' attitudes about the value of bedside learning for mastering clinical skills, which has not been reported previously.

Still in question is how to best utilize the time at the bedside in order to effectively teach these core skills. Future investigations should focus on whether bedside case presentations objectively improve patient care, patient satisfaction, effectiveness of teaching, and learner performance. These questions will better define the role that bedside rounds have in today's learning environment.

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**TABLE 1**

Characteristics of medical students and residents

Characteristic	Medical Students <sup>a</sup>	Residents <sup>b</sup>
Male	40 (39%)	29 (57%)
Age Group		
20–24	14 (14%)	0 (0%)
25–29	75 (74%)	24 (47%)
30–34	11 (11%)	20 (39%)
35+	0 (0%)	7 (14%)
Level of Training		
3rd-Year Medical Student	102 (100%)	—
Residents		
PGY-1	—	22 (43%)
PGY-2	—	10 (20%)
PGY-3	—	15 (29%)
PGY-4	—	4 (8%)
Future Career Plans		
3rd-Year Medical Student		
Anesthesiology	10 (10%)	—
Family Medicine	12 (12%)	—
Internal Medicine	18 (18%)	—
Obstetrics/Gynecology	11 (11%)	—
Pediatrics	13 (13%)	—
Surgery/Surgery Subspecialties	13 (13%)	—
Other	22 (21%)	—
Undecided	3 (2%)	—
Residents		
Subspecialty Fellowship	—	38 (75%)
GIM—Hospitalist	—	7 (13%)
GIM—Primary Care	—	2 (4%)
Other	—	4 (8%)
Plan to Practice in Teaching Setting	70 (69%)	29 (57%)

Note. *N* = 153.

<sup>a</sup>*n* = 102

<sup>b</sup>*n* = 51.

**TABLE 2**

Characteristics of internal medicine rotations by medicine clerks and residents

	Medical Students <sup>a</sup>	Internal Medicine Residents <sup>b</sup>
% of time spent at the bedside during attending rounds ( <i>M, SD</i> )	26.1 (20.0)	30.4 (20.1)
% of case presentations occurring at bedside ( <i>n, %</i> )		
0%	50 (25%)	8 (14%)
1–25%	103 (51%)	71 (62%)
26–50%	25 (12%)	23 (20%)
51–75%	11 (5%)	11 (10%)
76–99%	13 (6%)	2 (2%)
100%	1 (0%)	0 (0%)

Note. *N* = 319 hospital rotations.

<sup>a</sup> *n* = 202 hospital rotations.

<sup>b</sup> *n* = 117 hospital rotations.

**TABLE 3**

Respondent perceptions concerning learning core clinical skills at the bedside

Attending Rounds at the Bedside are Very Important/Somewhat Important for Learning These Medical Skills/Functions*	Response
a. History taking	55%
b. Physical Examination Skills	89%
c. Professionalism	72%
d. Physician–Patient Communication Skills	83%
e. Differential Diagnosis	43%
f. Patient Management	59%

\* Response categories: *very important, somewhat important, neutral, not very important, not at all important*. “Very important” and “somewhat important” responses summed and presented as a cumulative percentage.