

ORIGINAL RESEARCH

Hospital Medicine in the Internal Medicine Clerkship: Results from a National Survey

Beth W. Liston, MD, PhD^{1*}, Nathan O'Dorisio, MD¹, Curt Walker, PhD¹, Dario Torre, MD, PhD², Klara K. Papp, PhD³

¹Division of Hospital Medicine, The Ohio State University College of Medicine, Columbus, Ohio; ²Department of Internal Medicine, Drexel University College of Medicine, Philadelphia, Pennsylvania; ³Office of Medical Education, SUNY Downstate Medical Center, Brooklyn, New York.

BACKGROUND: Hospital medicine is growing rapidly. This changing inpatient work force has had consequences on medical education, with an increasing hospitalist presence in resident and student training. Initially met with apprehension, there is growing literature to suggest that hospitalists are perceived to be more effective clinical teachers than non-hospitalists. However, the extent to which hospitalists are involved in teaching Internal Medicine (IM) to medical students is not known.

METHODS: In order to determine the role of hospitalists in medical student education within the United States and Canada, we queried clerkship directors in Internal Medicine as part of the 2010 annual Clerkship Directors in Internal Medicine (CDIM) survey. In June 2010, CDIM surveyed its North American institutional members, which represent 110 of 143 Departments of Medicine in the US and Canada.

RESULTS: Eight-two of 107 departments responded to the survey (77%). Seventy-five (91%) indicated that hospitalists served as teaching attendings at their teaching hospital. In twenty-two (27%) IM departments, 75% to 100% of students rotate with a hospitalist during their IM clerkships. Thirty-three (42%) departments report that students are directly supervised by in-house hospitalists during their nighttime call requirements. Sixty-six (81%) indicated that academic hospitalists hold educational administrative positions. Hospitalists are significantly less likely to have additional clinical commitment as compared to non-hospitalist teaching attendings (16% vs 53%, ($\chi^2_{1df} = 33.1$; $P < 0.0001$).

CONCLUSIONS: Hospitalists are involved in medical student education in the large majority of Departments of Internal Medicine throughout the US and Canada, reflecting the growth of hospital medicine nationally. *Journal of Hospital Medicine* 2012;7:557–561. © 2012 Society of Hospital Medicine

Hospital medicine is growing rapidly across the nation with more than 30,000 active hospitalists in more than 90% of all hospitals across the country.¹ Although initially focused in the community sector, hospitalists have had an increasing presence within academic centers. The University Healthsystem Consortium 2006 survey found that hospitalists were practicing in 86% of university hospitals, and the average age of the hospital medicine programs was only 4.6 years.² This changing inpatient work force has had consequences on medical education with an increased hospitalist presence in both resident and student training. The full effects of this have not yet been completely elucidated.

Initially met by educators with apprehension, there is a growing body of literature to suggest that hospitalists are perceived by students to be more effective clinical teachers than non-hospitalists.^{3,4} Multiple studies have demonstrated improved trainee satisfaction, attending teaching efficacy, trainee's perception

of attending knowledge, and attending involvement in patient care decisions when working with hospitalists.^{5–8} Early concerns regarding diminished trainee autonomy are not supported by the available data.⁴

However, the extent to which hospitalists are involved in teaching Internal Medicine (IM) to medical students is not known. A study reported in 2000 suggests that hospitalists are prevalent within education.⁹ Over the past decade though, the hospitalist movement has grown exponentially; the role of hospitalists within teaching activities have likely changed significantly over this same time period. Hospital medicine is the fastest growing medical specialty in this country. In order to determine the role of hospitalists in medical student education within the United States and Canada, we queried clerkship directors in Internal Medicine as part of the 2010 annual Clerkship Directors in Internal Medicine (CDIM) survey.

METHODS

In June 2010, CDIM surveyed its North American institutional members, which represents 107 of 143 Departments of Medicine in the US and Canada. CDIM membership consists of university affiliated academic programs with a medical school. In 2009, 52% were public/state-funded institutions, 40% were private medical schools, and 3% were military. All CDIM institutional members were sent an electronic mail cover message that explained the purpose of the

*Address for correspondence and reprint requests: Beth W. Liston, MD, PhD, Division of Hospital Medicine, The Ohio State University, 4980 Cramblett Hall, 456 W 10th Ave, Columbus, OH 43210; Telephone: 614-293-7499; Fax: 614-366-2360; E-mail: Beth.Liston@osumc.edu

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TABLE 1. Percentage of Students Who Rotate With Hospitalists

Percentage of Students	Respondents n = 82 (%)
0	7 (9)
1-25	20 (24)
26-50	23 (28)
51-75	10 (12)
76-100	22 (27)

survey and contained a link to the confidential electronic survey. Nonrespondents were contacted up to 3 additional times by e-mail and once by telephone. Participants were blinded to any specific hypothesis of the study. The institutional review board (IRB) at Case Western Reserve University reviewed the protocol and determined that the CDIM Survey research protocol did not fit the definition of human subjects' research per 45 CFR 46.102, and declared the study exempt from further IRB review.

Survey Development

A call for questions was issued to CDIM members in the Fall of 2009. In all, 11 topics were submitted for inclusion in the 2010 CDIM Survey. Members of the CDIM Research Committee reviewed submissions and identified 4 different topics of interest: write-ups (history and physicals [H and Ps]), social networking, ambulatory and inpatient training, and the role of hospitalists. Questions were reviewed, organized, and edited by members of the CDIM Research Committee. Questions were then presented to CDIM Council and further revised. The CDIM Research Committee members then completed an initial draft of the online survey and submitted this for another review by the CDIM Council.

Survey Content

The final version of the survey consisted of a total of 60 items over 4 different topics, with additional questions soliciting background information. Some sections contained items that branched (or involved skip-logic) so that respondents could bypass sections that were not relevant to them. The section on hospital medicine was comprised of 6 multiple choice and 2 free response questions designed to explore the role of hospitalists in clinical education and educational leadership positions. Questions posed asked clerkship directors to identify if hospitalists serve as teaching attendings, the percentage of students that rotate with hospitalists, whether students rotate with attending hospitalists on services without residents, medical student's interactions with hospitalists during call requirements, the formal educational sessions conducted by academic hospitalists, the educational administrative positions held by hospitalists, and other clinical responsibilities teaching physicians hold while on teaching services. Descriptive statistics were used

TABLE 2. Formal Educational Sessions by Academic Hospitalists

Percentage of Didactic Sessions	Respondents n = 82 (%)
0	19 (23)
1-25	42 (51)
26-50	10 (12)
51-75	3 (4)
76-100	5 (6)
No formal education sessions in clerkship	3 (4)

TABLE 3. Hospitalists Supervising Medical Student Call

	Respondents n = 82 (%)*
Students are directly supervised by in-house hospitalists	33 (42)
Students are directly supervised by residents	59 (72)
Students do not interact with hospitalists during call	8 (10)
There is no call requirement	7 (7)
Don't know/other	4 (5)

* Respondents were instructed to check all that applied.

to analyze the data. A chi-square test of association was done to evaluate for statistical significance.

RESULTS

Eighty-two (77%) of 107 departments of medicine responded to the survey. At these academic institutions, the majority of departments indicated that hospitalists serve as teaching attendings at their teaching hospital (91%).

We summarize clerkship directors' responses regarding the percentage of students that rotate with academic hospitalists in Table 1. At 20 medical schools (24%), up to one-quarter of students rotate with hospitalists. At 23 medical schools (28%), one-quarter to one-half of students rotate with hospitalists. Ten departments (12%) indicated that 50% to 75% of students rotate with hospitalists, and 22 departments (27%) reported that 75% to 100% of their students are taught by hospitalists in the clinical setting.

Most students work with hospitalists on resident teaching services. However, 7 departments (9%) indicated that medical students doing their core clerkship rotate with hospitalists on non-resident covered services. Few formal educational sessions are conducted by hospitalists (Table 2). In 19 of the IM clerkships (23%), hospitalists conduct no formalized educational sessions. Forty-two departments (51%) report that up to a quarter of these sessions are conducted by hospitalists. Eight (10%) report more than half of the formal educational sessions are conducted by academic hospitalists.

Clerkship directors reported that hospitalists play a role during student call experiences. The majority of respondents reported that students are directly

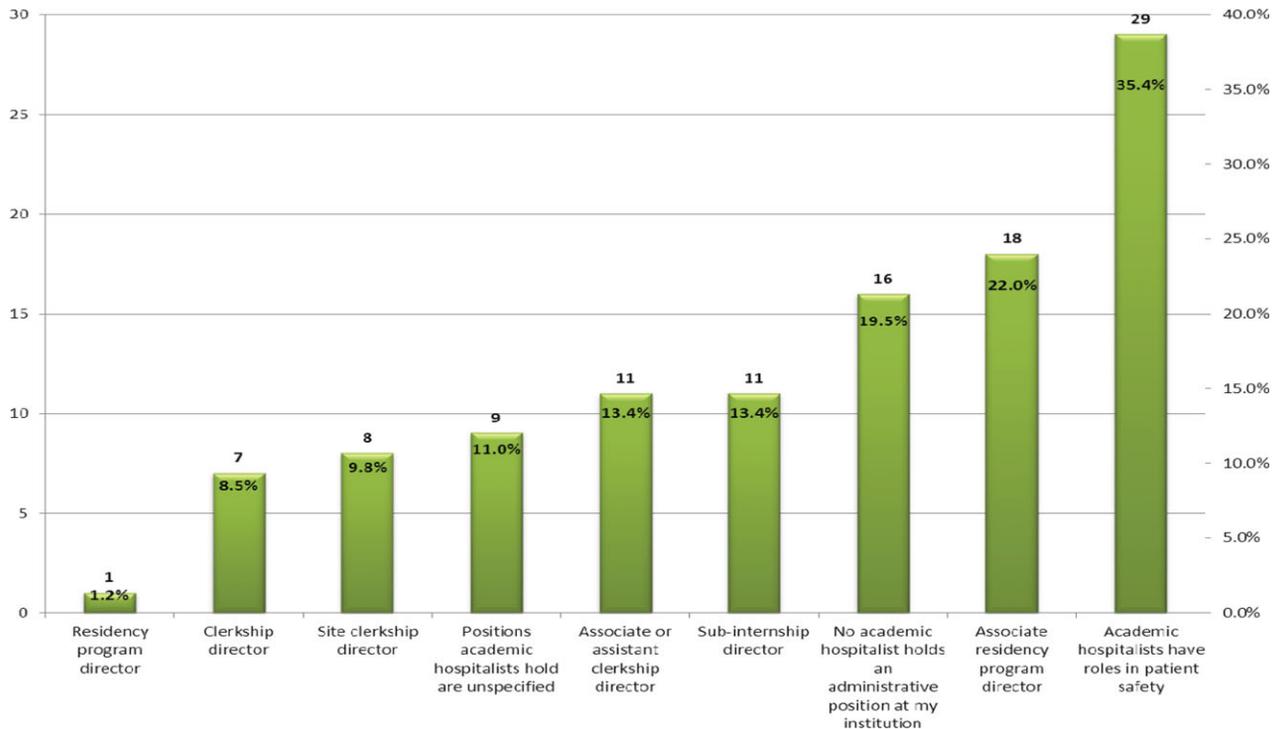


FIG. 1. Academic hospitalist educational administrative positions on the 2010 Clerkship Directors in Internal Medicine (CDIM) annual survey. Note: Categories are not mutually exclusive.

supervised by a combination of residents and/or in-house hospitalists (Table 3). Thirty-three departments (42%) answered that in-house hospitalists are involved in supervising core IM clerkship students during their nighttime call requirements. Students are supervised directly by residents at 59 (72%). Eight departments (10%) reported that students do not interact with hospitalists during call requirements. Three reported that in-house hospitalists supervise students without residents (4%). Seven departments (9%) reported no call requirement, and 4 (5%) were unable to answer the question.

When asked to identify positions hospitalists hold in educational administration, 16 departments (20%) reported that academic hospitalists hold no educational administrative positions at their institution (Figure 1). Fourteen (17%) responded that academic hospitalists only have roles in patient safety. Eight (10%) reported “other” unspecified as the only administrative position at their institution. The remaining 44 departments of medicine (53%) responding reported that academic hospitalists hold clerkship and/or residency program leadership roles. In 7 departments (9%), the clerkship director is a hospitalist. At all programs in which this is the case, academic hospitalists hold additional educational administrative roles. The associate clerkship director was reported to be a hospitalist in 18 departments (22%). Site clerkship directors are hospitalists in 8 (10%). In residency education, hospitalists are slightly less prevalent. One participant responded that the residency program director

was a hospitalist, while in 18 departments (22%), the hospitalists have roles as associate residency program directors.

Respondents were asked to comment on other clinical responsibilities for teaching attendings while on-service. Thirteen (16%) indicated that teaching hospitalists had other clinical responsibilities, whereas 43 (52%) non-hospitalist teaching attendings were reported to have other clinical responsibilities while on teaching service ($\chi^2_{1df} = 33.09, P < 0.0001$). The additional responsibilities for teaching hospitalists included general medicine consults (3 programs), quality initiatives (2 programs), clinics (2 programs), additional nonteaching service patients (2 programs), and educational commitments (4 programs). Responsibilities identified for non-hospitalist teaching attendings were primarily outpatient clinics (29 programs) or were unspecified (14 programs).

DISCUSSION

Over the past decade, hospital medicine has grown exponentially. This clinical growth has been mirrored in medical education. Our study finds that hospitalists teach in core Internal Medicine clerkships in the large majority of Departments of Internal Medicine throughout the US and Canada. Compared to 2000, in which approximately 50% of IM departments employed hospitalists and 80% of these worked with medical students (roughly 40% of all departments),⁹ we find that 91% of academic IM programs utilize

hospitalists for core clerkship education. However, the majority of respondents (72%) reported that less than 25% of formal educational sessions were conducted by academic hospitalists during their core Internal Medicine clerkship. Thus, although hospitalists appear to be involved heavily in supervising medical students during the IM clerkship, the primary teaching modalities utilized appear to be informal. This may be due to the relative youth of the hospitalist movement, with newer faculty being less frequently recruited to conduct didactics. Alternatively, this may result from an historical reliance on subspecialists for Internal Medicine lectures (ie, renal failure lectures are given by a nephrologist, chest pain lectures are given by a cardiologist).

Our study shows that a significant number of hospitalists are involved in student overnight calls. Notably, almost half of the students doing overnight calls were supervised by in-house hospitalists. This is an expected trend, particularly in the current environment in which intern night hours have been limited and extended shifts are less common.¹⁰ Residency programs have frequently shifted to night float systems, the value of which is unknown with regards to education and patient safety.¹¹ Experienced attendings in the hospital afford a unique educational opportunity for third year medical students, and it appears they are being utilized as such.

Although the majority of core IM clerkship students rotate with resident teaching services, we found a small but measurable number of students who are on resident uncovered services. The educational efficacy of this model is not fully defined. In the subinternship setting, resident uncovered teaching hospitalist services were rated equivalently as compared to resident covered teaching services on measures of supervision, faculty assessment, the frequency and value of teaching sessions, and educational value of patient problems. However, students on uncovered services scored these lower on knowledge learned, intellectual discussions, and patient variety.¹² Based on this feedback, caution should be taken in assigning more junior students to uncovered hospitalist services. This is especially true in the post-duty hour setting which has already prompted concern related to student exposure to basic medical conditions.¹³

Despite the level of hospitalist involvement in core clerkship education, few clerkship directors are hospitalists. However, more than half of the Departments of Internal Medicine report hospitalists in some clerkship or residency educational position. Our survey did not address more senior College of Medicine leadership roles, and may, in fact, underrepresent educational leadership positions. Additionally, a large number of hospitalists have additional roles in patient safety, underscoring hospital medicine's leadership in this important niche post in the Institute of Medicine (IOM) report "To Err is Human."¹⁴

Our findings indicate that hospitalists are significantly less likely to have additional clinical commitments while on-service as compared to non-hospitalist teaching attendings. Non-hospitalist teaching attendings were reported to frequently have outpatient clinic duties while teaching on the inpatient service. Conventional wisdom suggests that educators who are able to focus on teaching activities primarily will likely be better teachers. To date, literature has shown notable learner satisfaction with hospitalist educators.^{3,4} However, there are no data on teaching efficacy and learning outcomes. Further studies need to explore the relationship between hospitalist attending status and improved trainee education.

Our study has several limitations. Our report is a survey of institutional members of CDIM. Since not all Departments of Medicine within Schools of Medicine have membership in CDIM, our results may have sampling bias. Additionally, our survey only asked clerkship directors in one discipline to report educational practices. There may be variability at different educational sites that are not captured by the responses. The Society of Hospital Medicine defines a hospitalist as "a physician who specializes in the practice of hospital medicine," however, there remains some ambiguity with regards to how much inpatient focus is necessary to employ the term, and this may lead to errors in reporting. Nonetheless, our response rate of 82% is quite high, and suggests that this survey is reflective of national trends.

In summary, hospitalists are involved in medical student education in the majority of Departments of Internal Medicine throughout the US and Canada. They frequently supervise students in-house at night, and some students rotate on non-resident covered services. Hospitalists have a notable presence in academic education leadership positions and have significantly less outside clinical responsibilities, allowing them greater focus on teaching. Further studies should be conducted to determine the effects of hospitalists on learning outcomes. Additional data is needed to determine the influence of hospitalists on students' attitudes and career choices with regards to Internal Medicine.

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