Internal Medicine Clerkship Directors' Perceptions About Student Interest in Internal Medicine Careers

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BACKGROUND: Experienced medical student educators may have insight into the reasons for declining interest in internal medicine (IM) careers, particularly general IM.

OBJECTIVE: To identify factors that, according to IM clerkship directors, influence students' decisions for specialty training in IM.

DESIGN: Cross-sectional national survey.

PARTICIPANTS: One hundred ten institutional members of Clerkship Directors in IM.

MEASUREMENTS: Frequency counts and percentages were reported for descriptive features of clerkships, residency match results, and clerkship directors' perceptions of factors influencing IM career choice at participating schools. Perceptions were rated on a five-point scale (1 = very much pushes students away from IM careers; 5 = very much attracts students toward IM careers).

RESULTS: Survey response rate was 83/110 (76%); 80 answered IM career-choice questions. Clerkship directors identified three educational items attracting students to IM careers: quality of IM faculty (mean score 4.3, SD=0.56) and IM rotation (4.1, SD=0.67), and experiences with IM residents (3.9, SD=0.94). Items felt most strongly to push students away from IM careers were current practice environment for internists (mean score 2.1, SD=0.94), income (2.1, SD=1.08), medical school debt (2.3, SD=0.89), and work hours in IM (2.4, SD=1.05). Factor analysis indicated three factors explaining students' career choices: value/prestige of IM, clerkship experience, and exposure to internists.

CONCLUSIONS: IM clerkship directors believe that IM clerkship experiences attract students toward IM, whereas the income and lifestyle for practicing internists dissuade them. These results suggest that interventions to enhance the practice environment for IM could increase student interest in the field.

KEY WORDS: career choice; education, medical, undergraduate; medical students, workforce.

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BACKGROUND

As experts question how many practicing physicians may be leaving internal medicine (IM) careers and whether primary care will survive, student interest in IM careers, particularly general IM, has declined.^{1,2} The total number of medical graduates matching into IM programs remained constant from 1993 (N=4,658) to 2007 (N=4,798); the percentage of United States (US) medical graduates matching into IM programs, however, has fallen. In 2007, 22% of all match participants chose IM, and only 55% of those positions were filled by US medical graduates.³ More dramatic has been the recent steady decline in the number of students selecting residencies in primary care IM, down from a high of 608 in 1997 to 274 in 2007. Experts are proposing strategies to counter anticipated IM physician shortages and enhance recruitment to areas that serve the growing aging population, including primary care, geriatrics, oncology, and cardiology.^{1,4-6}

Multiple reasons have been proposed to explain observed patterns in students' choices for specialty training in IM, ranging from negative educational experiences to an oppressive practice environment. Older literature suggested that ambulatory IM experiences may promote students' choosing IM careers,^{7,8} and more recently, a satisfying experience on the inpatient IM service was positively associated with students' preferences for general IM careers.⁹ Experience with hospitalized, chronically ill patients may, however, dissuade students from selecting IM.¹⁰ Students' negative attitudes toward complex, chronically ill patients parallel general internists' dissatisfaction with this component of their practice.¹¹ Students may be dissuaded from primary care by seeing practicing physicians whose offices are inadequately equipped to provide the comprehensive team-based chronic disease management that complex patients need.¹² The reported prominence of lifestyle in students' career decisions may steer them away from IM toward specialties with controllable lifestyles.¹³

Although experts have proposed strategies to increase student interest in IM careers, none have been tested or shown to succeed. Experts have called for exposing trainees to more

positive rather than dysfunctional clinical practices and aligning training experiences with the actual practice of IM to attract more students to the field.^{14,15} Changes in reimbursement and the health-care system may be necessary to allay student concerns about income and lifestyle in IM.^{1,13}

In light of the debate about students' educational experience as one opportunity for stimulating interest in IM careers, clerkship directors may be well situated to understand and influence students' career choices. In addition to managing clerkship curricula, recruiting teachers, and evaluating students, clerkship directors commonly perform career advising and model the departments' mission and values.¹⁶ We thus designed this study to characterize clerkship directors' perceptions of the factors influencing students' career choices regarding IM. We also sought to determine the relationship between the IM clerkship structure at institutions (number of weeks, inpatient versus ambulatory rotation, etc.) during medical school and the institutional percentage of students matching in IM.

METHODS

This study was a cross-sectional descriptive survey of the institutional members (typically the current or former clerkship director) of the Clerkship Directors in Internal Medicine (CDIM), the national organization representing IM educators. In April 2006, CDIM conducted an annual, voluntary, and confidential survey of its US and Canadian membership, including 110 institutional members (of 142 eligible schools; the other 32 schools do not have CDIM members). The study was designed to inform the planning of a subsequent survey of students. One survey section contained demographic questions about the respondent. For a section written by the CDIM Task Force on Enhancing Student Interest in IM Careers, two study authors (KEH, SJD) developed career questions based on a literature review. We drew some items from a prior survey of students by a Society of General Internal Medicine (SGIM) Interest Group to examine whether items relevant in older literature are still relevant to current students.¹⁷ Questions addressed clerkship structure (amount of IM clerkship time including inpatient and ambulatory IM, amount of student exposure to IM generalists and subspecialists) and career choice (percentage of students at the respondents' institution matching in IM for the prior 3 years). Seventeen questions assessed respondents' perceptions of the factors attracting students toward and pushing them away from careers in IM (1 = very much pushes students away; 5 = very much attracts students toward).

Members of the CDIM Task Force reviewed and refined career items for clarity and face validity. The CDIM Research Committee and CDIM Council reviewed the entire survey and made suggested revisions before implementation. The survey was mailed in April 2006, with up to three follow-up contacts to non-responders by e-mail, regular mail, or telephone. The Institutional Review Board at the Uniformed Services University deemed the survey exempt.

All statistical analyses were performed using SPSS, version 12. To determine whether items from other sections of the CDIM survey were associated with career questions, we used Spearman rho for continuous variables and chi square or Fisher's exact test for categorical variables. We used the institutional member as the unit of analysis. A factor analysis

using principal components analysis with varimax rotation was performed on the career items; we identified factors based on examination of items with eigenvalues greater than one and the scree plot. Because our sample size was small, we followed the procedure outlined by Stevens¹⁸ of identifying statistically significant factor loadings accounting for sample size and minimizing type I error by setting alpha at 0.01. Cronbach's alpha was calculated to determine the reliability of each factor. All p values are two tailed.

RESULTS

Respondents. The institutional member response rate was 83/110 (76%); 80 (72.7%) of the 110 answered the section on career choice. Respondents identified their primary role as clerkship director (81%), educational vice chair or dean (9%), ambulatory, site or deputy clerkship director (8%), or preclinical course director (2%). Respondents' mean age was 45 years [standard deviation (SD)=6 years], and 62% were male. Most were associate or full professors; 34% were assistants. Over 80% were clinician educators. Responding faculty had been in their primary role an average of 7 years (SD=5.4, range 0.5–24 years). These demographic data were very similar to prior annual surveys of CDIM institutional members.

Clerkship structure. The IM clerkship averaged 11 weeks duration (range 6–24 weeks, SD=2). Sixty-five participating schools (78%) included an outpatient component to the IM clerkship, with a mean duration of 4 weeks, although 22% did not include any ambulatory time. Respondents estimated that inpatient service attending duties at their institutions were allocated 37% to generalists, 48% to subspecialists, and 36% to hospitalists (hospitalists may overlap with the prior categories). In contrast, during the ambulatory block, generalists performed the majority of student teaching (73% by generalists, 31% by subspecialists).

Career choice. Respondents reported that the percentage of their students matching into IM residencies was stable over the prior 3 years: 20% (range 5–36%, SD=5%) in 2003, 20% (range 8–44%, SD=7%) in 2004, and 21% (range 10–40%, SD=6%) in 2005. National residency match data for IM were highly comparable, attesting to the accuracy of respondents' reporting; 22.4% in 2003 and 2004 and 22.2% in 2005.³

Table 1 shows respondents' perceptions of the factors which, in their opinions as clerkship directors, influence students' decisions regarding IM careers. The factors perceived to attract students strongly to IM careers were quality of IM faculty (mean score 4.3, SD=0.56), quality of IM rotation (4.1, SD=0.67), and experiences with IM residents (3.9, SD=0.94). The factors felt most strongly to push students away from IM were the current practice environment for internists (2.1, SD=0.94), students' perception of future income in IM (2.1, SD=1.08), students' debt (2.3, SD=0.89), and students' perception of future work hours in IM (2.4, SD=1.05).

We conducted an exploratory factor analysis for the items pertaining to factors influencing students' career decisions

Table 1. Clerkship Directors in Internal Medicine (CDIM) Institutional Members' Ratings of Factors Influencing Medical Students' Decisions to Choose Careers in Internal Medicine (n=80/110)

	Rating		
	Mean*	Median (range)	Standard deviation
Quality of my IM teaching faculty	4.3	4 (2–5)	0.56
Quality of my IM rotation	4.1	4 (2–5)	0.67
Diversity of career options in IM	4.1	4 (3–5)	0.53
Experiences with IM residents	3.9	4 (2–5)	0.94
Student exposure to subspecialists during my clerkship	3.6	4 (2–5)	0.70
Student exposure to generalists during my clerkship	3.4	3 (2–5)	0.67
Student exposure to hospitalists during my clerkship	3.4	3 (1–5)	0.65
Presence of an IM interest group at my institution	3.4	3 (1–5)	0.64
Exposure to research in IM	3.2	3 (1–5)	0.62
Morale of my teaching faculty	3.0	3 (1–5)	1.04
The type of patients an internist treats	2.8	2 (1–5)	0.99
Prestige of IM as specialty	2.8	3 (1–5)	0.91
Managed care environment for practice in my geographic area	2.6	3 (1–5)	0.70
Students' perception of future work hours in IM	2.4	2 (1–5)	1.05
Student medical school debt at my institution	2.3	2 (1–5)	0.89
Students' perception of future income in IM	2.1	2 (1–5)	1.08
Current practice environment for internists	2.1	2 (1–5)	0.94

*1 = very much pushes students away from careers in IM; 5 = very much attracts students toward careers in IM

about IM. With a sample size of 83, items with a factor loading >0.57 were retained. We had four factors with eigenvalues exceeding 1.00, but examination of the scree plot indicated a substantive drop after the third factor. Therefore, we retained a three-factor solution, with each of 13 items loading only on a single factor, accounting for 50.2% of the variance:

1. Value and prestige of internal medicine (students' perception of future work hours in IM, students' perception of future income in IM, prestige of internal medicine as specialty, student medical school debt at my institution, current practice environment for internists); mean scale score 11.73, standard deviation 4.06, Cronbach's alpha 0.89. This factor accounts for 21.3% of the total variance.
2. Clerkship experience (quality of my IM rotation, quality of my IM teaching faculty, experiences with IM residents); mean scale score 12.24, standard deviation 1.81, Cronbach's alpha 0.78. This factor accounts for 15.5% of the total variance.
3. Exposure to practicing internists (student exposure to generalists during my clerkship, student exposure to subspecialists during my clerkship, student exposure to hospitalists during my clerkship, presence of an internal medicine interest group at my institution); mean scale score 13.82, standard deviation 1.87, Cronbach's alpha 0.65. This factor accounts for 13.4% of the total variance.

We examined the association between clerkship structure items [length of clerkship (total, ward, ambulatory weeks), inpatient service attending type (generalist, subspecialist, hospitalist), quality of IM rotation, percentage of students matching in IM per year] and career items. Only quality of the IM rotation and percentage of students matching in IM in 2005 ($r=0.41$, $p<0.01$) and quality of IM teaching and percentage of students matching in IM in 2005 ($r=0.40$, $p<0.01$) were statistically significant, demonstrating moderate correlation. There were no significant correlations between weeks of core inpatient or outpatient IM or type of attending and percentage of students matching in IM.

DISCUSSION

In this national survey of IM clerkship directors, most IM student educational leaders perceived that the overall IM clerkship experience and quality of IM faculty promote student interest in IM careers, regardless of respondents' clerkship structure or composition of teaching faculty. These findings are consistent with a recent study showing that, on inpatient general IM wards, students' ratings of their faculty and the teaching were associated with choosing an IM career.⁹ In our study, resident teaching was less strongly identified as a motivating factor toward IM careers and with a wider confidence interval, as shown in Table 1, suggesting that clerkship directors perceive that resident teaching has a more variable and institution-specific effect on students. Our participants' impressions about the salutary effects of high-quality teaching in IM rotations are further supported by sustained high ratings of the IM clerkship in the Association of American Medical Colleges annual survey of students, in which 88% of graduating students nationally in 2006 rated the educational experiences on the IM clerkships as good or excellent, higher than any other core clerkship.¹⁹

The results of our factor analysis show that clerkship directors observe that factors extending beyond the clerkship teaching structure seem to influence students' career decisions regarding IM. Role models have a powerful influence on student career choice,²⁰ and IM faculty must not only provide outstanding teaching, but also serve as positive clinical role models to attract students to their field. Students' primary exposure to internists during core clerkships is typically to general internists. Students with greater debt may be less likely to pursue general IM careers,²¹ and our respondents seem to perceive that students are aware of the problems plaguing primary care that have eroded reimbursement.²² In fact, as listed in Table 1, our participants cited debt and limited income potential as strong deterrents from IM careers. Programs to forgive medical school debt for students entering general IM or lower-paid subspecialties of IM might facilitate a broader range of students choosing IM. In contrast to some earlier literature, we did not find an association between presence or duration of an ambulatory component of the IM clerkship and career choice in IM.^{7,8} This discrepancy between our results and some earlier findings from the 1990s may reflect evolution in the ambulatory IM practice environment toward a faster, more hectic pace with more managed care influence. Notably, our respondents cited practice environment as the

factor most strongly discouraging their students' interest in IM. The reported dissatisfaction of many outpatient general internists with high patient complexity in the setting of time-pressured visits and managed care influences raises educational concerns, because many of these physicians may serve as medical student preceptors.^{11,23} Productivity pressures challenge preceptors to find time to teach students, observe them with patients, and provide them with feedback.²⁴

This study has a few limitations. First, we surveyed only institutional members of CDIM, mostly clerkship directors and not other teaching faculty. Clerkship directors may have been biased to respond favorably about the salutary effects of clerkships on students. However, the positive correlation in our study for at least one year between IM rotation quality and teaching and the percentage of students matching in IM supports the idea that clerkship directors' hold accurate impressions about curricular experiences that draw students to the field. Second, we did not have access to the actual number of students matching into IM residencies from individual schools. We believe our respondents' estimates are probably correct, however, because the average of their estimates in our survey were almost identical to national averages from the NRMP. Third, our data on student opinion is obtained indirectly from clerkship directors rather than directly from students. Lastly, our factor analysis identified factors that account for only half of the variance in responses. The other issues that influence the complex specialty choice decision may relate to personal and demographic factors, features of other specialties, and attitudes of the students themselves.

Though these findings reinforce the importance of a high-quality IM clerkship experience for the future of IM as a specialty, many students who are very satisfied with their IM education are choosing careers other than IM. Our study demonstrates that clerkship directors have insight into the reasons behind the declining interest in IM as a career, but they may be limited in their ability to make substantive changes in career choice trends without looking beyond the clerkship along with other physicians at opportunities to advocate for improvements to the practice environment. Ultimately, changes to the health-care system that improve the organizational structure and reimbursement for ambulatory care may have the greatest effect on student selection of IM training. Based on our survey, the need for reform is particularly acute for primary care.

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