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Anticipated Consequences of the 2011 Duty Hours Standards: Views of Internal Medicine and Surgery Program Directors

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Abstract

Purpose—To assess internal medicine (IM) and surgery program directors' views of the likely effects of the 2011 Accreditation Council for Graduate Medical Education duty hours regulations.

Method—In fall 2010, investigators surveyed IM and surgery program directors, assessing their views of the likely impact of the 2011 duty hours standards on learning environment, workload, education opportunities, program administration, and patient outcomes.

Results—Of 381 IM program directors, 287 (75.3%) responded; of 225 surgery program directors, 118 (52.4%) responded. Significantly more surgeons than internists indicated that the new regulations would likely negatively impact learning climate, including faculty morale and residents' relationships ($P < 0.001$). Most leaders in both specialties (80.8% IM, 80.2% surgery) felt that the regulations would likely increase faculty workload ($P = .73$). Both IM (82.2%) and surgery (96.6%) leaders most often rated, of all education opportunities, first-year resident clinical experience to be adversely affected ($P < .001$). Respondents from both specialties indicated that they will hire more nonphysician/midlevel providers (59.5% IM, 89.0% surgery, $P < .001$) and use more nonteaching services (66.8% IM, 70.1% surgery, $P = .81$). Respondents expect patient safety (45.1% IM, 76.9% surgery, $P < .001$) and continuity of care (83.6% IM across all training levels, 97.5% surgery regarding first-year residents) to decrease.

Conclusions—IM and surgery program directors agree that the 2011 duty hours regulations will likely negatively affect the quality of the learning environment, workload, education opportunities, program administration, and patient outcomes. Careful evaluation of actual impact is important.

In July 2011, the Accreditation Council for Graduate Medical Education (ACGME) implemented additional rules regarding duty hours for trainees. The 2011 rules retain many of the 2003 limitations, including the “80-hour” work week.¹ New specifications add further limits of 16-hour work limits for interns (i.e., graduates in post-graduate year 1), 28-hour work limits (including time for transitions and education activities) for upper level residents (i.e., residents in post-graduate years 2 or higher), and greater supervision requirements. These new regulations also limit the number of night floats per rotation and training time. Moreover, the new standards encourage strategic napping for upper-level residents (but they do not require key recommendations from the 2008 Institute of Medicine [IOM] report regarding resident sleep and patient safety,² such as the mandatory 5-hour nap period during long shifts).

The intended goals of both the 2003 and 2011 regulations are to improve patient safety, resident education, and resident well-being. Residency program directors generally agree that the 2003 regulations have improved resident well-being, but at the expense of educational experiences.³⁻¹¹ The 2003 regulations have forced many programs to decrease elective rotations, teaching conferences, and clinical bedside teaching.¹² Parallel to these educational experience concerns are concerns about the impact of more frequent handoffs on patient outcomes¹³ and concerns about the increased costs of the regulations in terms of constituting an unfunded mandate that necessitates the hiring of more staff and increasing faculty workload.¹⁰⁻¹¹ Further, surgical specialties have voiced surgery-specific concerns related to the involvement of trainees in fewer and/or less complex surgical cases in the years since the implementation of the 2003 duty hours standards.⁸⁻¹⁰

The majority of internal medicine (IM) program directors responding to a 2009 survey regarding the IOM recommendations for duty hours thought that future increased limitations

would further decrease patient ownership, faculty morale, the quality of learning environments, patient safety, and the quality of handoffs.¹⁴ And, since the release of the highly anticipated 2011 ACGME duty hours standards, program directors have continued to show ambivalence. For example, a national survey of program directors in IM, surgery, and pediatrics demonstrated that while over 70% of respondents supported standards related to supervision and workload, their support for the maximum limit of 16 hours for first-year residents was very low.¹⁵ Moreover, most of these program directors felt that residents' ability to achieve competency in 5 of the 6 required ACGME competency areas would be limited.¹⁶ Consistent with earlier reports,³ views of surgical program directors reflected even more concern than those of their IM peers that new regulations would negatively impact residents' ability to achieve competency in all six required ACGME competency areas; further, surgical program directors worried that resident fatigue would not decrease. Additionally, program directors from smaller community training programs espoused less favorable opinions than did directors of large academic medical center programs presumably because community programs have fewer resources and fewer personnel to cover times when interns are off and to provide supervision.¹⁶

Given mixed support for the 2003 duty hour limits among residency program directors and the differences observed between surgery and IM, we undertook this study to understand in greater detail program directors' concerns regarding the potential effects of the 2011 duty hours regulations. Through this increased understanding, the graduate medical education community will be in a better position both to formally evaluate the effects of the 2011 duty hours standards and to implement interventions to preserve the mission of residency education—that is, to graduate residents who have achieved entry-level competency. We partnered with the Association of Program Directors in Internal Medicine (APDIM) and the Association of Program Directors in Surgery (APDS) to determine (1) how IM and surgery program leaders thought the 2011 regulations would affect program learning environment, workload, education opportunities, program organization/administration, and patient outcomes; (2) if there were differences in perceptions between surgery and IM program directors, and (3) how perceived effects related to individual program features.

Method

In summer 2010, representatives from APDIM and APDS held a series of phone meetings to develop survey content and methods. We chose IM and surgery for our population or census-based surveys for two reasons. First, they represent the two specialties that are the focus of the grant supporting this project. Second, investigators often study duty hours issues and the affects of duty hours in IM and surgery specialties, likely because these specialties typically have larger training programs and because they represent two types of programs, sometimes referred to, respectively, as “nonprocedural,” and “procedural”¹⁷ or and “person-oriented” and “technique-oriented.”¹⁸

One investigator with expertise in survey development and item writing (J.S.) compiled a master list of items based both on the literature published since the implementation of the 2003 regulations and on earlier APDIM surveys.¹⁴ The ad hoc committee—comprising the Duty Hours Workgroup of the APDIM Survey Committee, representatives of the APDS, and members of the study team with expertise in survey development—reviewed, reworked, and shortened the initial items over multiple iterations. APDS members who did not participate in writing the items reviewed them for clarity and relevance. The full APDIM Survey Committee and the APDIM Council vetted candidate items, and the APDS Duty Hours Taskforce Survey and Documentation Group piloted the penultimate draft. A limited number of specialty-specific items were developed, typically to reflect specialty-specific

issues (e.g., the number of operations for surgery trainees).¹⁹ See Results (and Table 1) for these and other differences. The stem for each item read as follows:

There could be multiple potential consequences of the new requirements. Please indicate your beliefs regarding the potential effects of the 2010 ACGME regulations, if implemented, on each of the following ...

Response options were 1 = greatly decrease, 2 = decrease, 3 = neither increase nor decrease, 4 = increase, and 5 = greatly increase. The IM survey included 34 items and the surgery survey included 44 items.

Members of the study team debated ways to collapse items into themes/categories or domains to facilitate presentation. Working independently, each team member assigned items to a domain: learning environment, workload, education opportunities, program organization/management, and other. They were invited to suggest new domains. Items for which 8 or more of the 11 reviewers chose the same category were assigned therein (40 of 49 unique items). A subset of authors reviewed the nine items for which there was less agreement, and they reached a consensus on an appropriate domain, including a fifth domain “patient outcomes,” for each of the items. This subset of authors assigned four of the nine items for which there was less agreement into this new domain.

The survey for IM was embedded within the annual survey sent to all APDIM members. Previous reports have described those procedures.^{14,20} Briefly, the APDIM survey committee developed the annual survey, and the Mayo Clinic Survey Research Center administered it to the population of IM program directors. In August 2010, the Mayo Clinic Survey Research Center sent e-mail notifications with program-specific hyperlinks to a Web-based questionnaire to all 381 IM residency core program directors recognized by APDIM. Non-responders received two monthly reminders. The hyperlinks allowed the survey administrators to send personalized reminders to program directors (and they provided links to other databases with program-level details that are not relevant to the current study).

Research staff at the University of Pennsylvania administered the survey to the population of APDS members (n = 249). APDS members with an active e-mail address received an initial electronic greeting letter from the most recent past-president of the organization (K.B.), announcing the survey and encouraging participation. The initial invitation including a link to the Web-based survey was sent in September 2010. Non-responders received one reminder two weeks after the initial invitation. There were no links to other program-level data. Participation was voluntary. Results were confidential and the analytic file did not contain identifiable data. We offered no incentives for participation.

Once the respondents completed the questionnaires, we linked their responses to publically available data that describe program characteristics such as accreditation cycle length, region of the country, and total number of ACGME-approved positions. In addition, we obtained some data describing program and program directors either directly from respondents’ answers on the survey (IM) or from manually abstracting necessary information from the Fellowship and Residency Electronic Interactive Database (surgery).

We have provided data regarding program director and program demographics, as well as responses to the survey items for each specialty. We collapsed responses with the same valence; that is, “greatly decrease” / “decrease” and “increase” / “greatly increase.” Analyses using the full 5-point scale were substantially similar. Because these are population-based surveys, statistics (other than descriptive statistics) may not be necessary.²¹ However, our interest was in comparing responses between the two specialties, thus, we used the chi-square statistic to compare response distributions by specialty as well as by

- program type (university, non-university),
- program director tenure (tertiles: 0-3 years, 3.1 – 8 years, > 8 years)
- year program director completed residency (tertiles: prior to 1954, 1954-1984, 1985 or later), and
- number of filled first-year trainee positions (grouped in to quartiles within specialty: IM = 0-12, 13-19, 20-31, 32+; surgery = 2-6, 7-10, 11-21, 22+).

Finally, we used ordinal regression analyses to examine the relationship between survey items and specialty. Again, we used program type, program director tenure, program size, and year program director completed residency as covariates. We used SPSS (version 16, Armonk NY) for all analyses.

The University of Pennsylvania and Mayo Clinic Institutional Review Boards approved this study.

Results

Of the 381 IM program directors who received the e-mail, 287 (75.3%) completed the section on the anticipated consequences of 2011 duty hours regulations. Of the 249 names on the APDS membership list, 18 did not have an e-mail address, 5 had non-valid e-mail addresses, and 1 was deceased. We received responses from 118 (52.4%) of the 225 living surgery program directors who received the e-mail. Within IM, we detected no differences between respondents and non-responders in terms of geographic area, program type, three-year American Board of Internal Medicine examination pass rate, total filled trainee positions, total filled first-year positions, total trainee positions approved by ACGME, or program director tenure (all $P > .05$). Within surgery, we detected no differences between respondents and non-responders in program type, total filled trainee positions, or total filled first-year positions (all $P > .05$).

The samples were similar in terms of program director's tenure (IM mean = 7.0 years, standard deviation [SD] = 6.1; surgery mean = 7.3 years, SD = 5.3; $P = .65$) and year residency was completed (IM mean = 1989, SD = 8.6 years; surgery mean = 1990, SD = 8.3; $P = .28$). Compared to IM, more surgery programs were university-based (33.9% [IM] vs. 62.7% [surgery], $P < .001$) and surgery programs had, on average, fewer first-year trainee positions filled (IM mean = 24.1, SD = 15.1; surgery mean = 15.4, SD = 12.6; $P < .001$).

In general, the results of our national surveys show that program directors in IM and surgery do *not* believe that the 2011 regulations will have a positive or beneficial impact on residency programs in any domain, including learning environment, workload, education opportunities, program administration/organization, or patient outcomes (Table 1).

Learning environment

The prevailing viewpoint was that the learning environment would suffer (Table 1). Distributions between IM and surgery were significantly different for every item within this category. A greater percentage of surgeons consistently indicated that the 2011 ACGME duty hours regulations would decrease the quality of, or have a negative impact on, the learning climate. To illustrate, 88.1% of surgery program directors indicated that the quality of the relationship between first-year residents and all other residents would decrease compared to 57.5% of IM program directors ($P < 0.001$). Surgeons were much more likely than their IM peers to think the 2011 regulations would hurt the morale of residents in their second or higher post-graduate year (46.7% IM, 83.9% surgery, $P < 0.001$). In addition, 46.2% of IM program directors indicated the 2011 regulations would increase first-year

resident morale whereas 61.9% of surgery directors thought it would decrease morale ($P < 0.001$). Of all the aspects of the learning climate, the one which the greatest percentage (85.0%) of IM program directors thought would decrease was faculty morale.

Workload

Most program directors agreed that the regulations would increase the workload for faculty (80.8% IM, 80.2% surgery, $P = 0.73$; Table 1). Surgeons were more likely than internists to think that the regulations would increase the workload of subspecialty fellows (41.4% IM, 56.1% surgery, $P = 0.02$) and of housestaff (31.7% IM, 55.1% surgery, $P < 0.001$). Notably, almost all surgery program directors (91.5%) thought the workload of the program director and program coordinator would increase.

Education opportunities

We detected few differences between specialties in perceptions of the impact on education opportunities; responses were decidedly negative across both IM and surgery directors (Table 1). Leaders from both IM (82.2%) and surgery (96.6%) most often rated, of all the areas within education opportunities, first-year resident clinical experience to be adversely affected ($P = 0.001$). More surgery (72.9%) than IM (49.5%) program directors predicted a negative impact on first-year resident attendance at educational conferences ($P < 0.001$). The majority in both specialties indicated that the regulations would likely decrease the educational experience in terms of elective rotation time ($P = 0.29$), medical student education ($P = 0.51$), attendance at educational conferences by residents in their second or higher post-graduate year ($P = 0.12$), research time for housestaff ($P = 0.56$), and clinical experience for residents in their second or higher post graduate year ($P = 0.03$). The majority of surgery program directors indicated concerns about the number of operations a resident surgeon (78.0%), a first assistant (63.2%), and teaching assistant (53.4%) would be able to perform. Surgery program directors were particularly worried about decreased resident availability for elective (89.8%) and urgent (79.7%) surgery cases.

Program administration/organization

The new regulations require program directors to make changes in how they organize their program (Table 1). The majority of program directors in both specialties agree they will need to increase the hiring of nonphysician/midlevel providers (59.5% IM, 89.0% surgery, $P < 0.001$). The number of hospitalists/additional faculty members hired will also have to increase for both surgery (70.3%) and IM (63.8%) programs ($P = 0.22$). The new regulations will increase the burden of monitoring duty hours, more so in surgery (75.0%) than in IM (66.6%, $P = 0.02$), and they are associated with large predicted decrements in program director morale (72.1% IM, 95.7% surgery, $P < 0.001$). The majority of respondents in each group agreed that their ability to negotiate for space would likely not change (67.1% IM, 65.0% surgery, $P = 0.50$), whereas the quality of the relationship of the residency program with the hospital administration would decrease (54.9% IM, 65.5% surgery, $P = 0.14$). Surgery program directors were more likely than IM program directors to indicate they would probably, if approved by ACGME, increase the number of interns admitted to their programs (49.3% IM, 63.2% surgery, $P = 0.002$), as well as the number of residents in their second or higher post-graduate year (40.8% IM, 53.8% surgery, $P = 0.05$).

Patient outcomes

Almost half of responding IM directors and more than three quarters of responding surgery program directors think the regulations will decrease the safety of patients (45.1% IM, 76.9% surgery, $P < 0.001$; Table 1). Most program directors (both IM and surgery) also expected decrements in the continuity of care (83.6% IM across all training levels, 97.5%

surgery regarding first-year residents). Use of nonteaching services (e.g., services in which attendings provide clinical care and there are no residents) will increase (66.8% IM, 70.1% surgery, $P = 0.81$). While most program directors do not think the perceived quality of trainees leaving their programs will change (83.6% IM, 70.7% surgery, $P = 0.01$), 83.1% of surgery program directors believed graduates would be less prepared to practice.

Program and program director characteristics

Appendix 1 summarizes the analyses examining the relationship between views of changes to the learning environment, workload, education opportunities, program administration/organization and characteristics of programs and program directors. We detected very few statistically significant relationships. For five items program directors from university programs felt that the consequences would be worse compared to program directors from non-university programs. For the other program and program director characteristics, we detected very few significant relationships. When we applied these variables (i.e., program type, program director tenure, year program director finished training, and number of first-year trainee positions filled) as covariates in the regression models, only three significant findings reported in Table 1 became nonsignificant: the educational experience of second year or higher post-graduate residents, the burden of monitoring duty hours by the program, and the workload of subspecialty fellows.

Discussion and Conclusions

The results of this national survey of the populations of U.S. IM and surgery program directors provide four key findings. First, the majority of program directors in both specialties agreed that the 2011 duty hours regulations will lead to a deterioration in multiple aspects of the learning climate and educational experience, increase the workload for faculty and program directors, and require multiple changes in how clinical services are run. Second, surgery program directors generally had more concerns about the potential impact than did IM program directors. Third, while IM and surgery directors share many concerns, certain concerns are specialty-specific; for example, large percentages of surgery program directors expect declines in program director morale, in the quality of the relationship of first-year residents to trainees of other levels, in housestaff autonomy, and in availability of residents for elective and urgent surgeries. IM program directors were concerned with faculty morale. Finally, these results were largely *unrelated* to program and program director characteristics.

The results of these population-based surveys show many of the same trends as surveys that followed the 2003 duty hours regulations; specifically, directors have concerns regarding resident educational and clinical experiences, continuity of care for patients, faculty workload, and the need to make changes, many of which are quite expensive, in how clinical services are delivered.^{3-12,14} Another similarity to the previous studies is that the concerns of surgery program directors were more prevalent than those of IM program directors.^{3,15} One difference between our findings and those of earlier studies¹⁵ is that we did not observe that responses were related to program or program director characteristics; this lack of correlation is likely related to the lack of variation in the responses.

This study makes several unique contributions to the literature. First, we have identified areas of concern across five domains of the learning climate. Across all domains, both IM and surgery program directors feel the 2011 duty hours will have multiple negative effects. Our study further allows us to expand the scope for each domain to identify the specific areas of concern; for example, within the learning environment domain, respondents are concerned about decreased morale among trainees, faculty, and program directors as well as a detriment in the quality of the relationships of first-year residents to trainees of other

levels. Perhaps the concerns regarding relationships among interns and other post-graduate trainees are temporary reactions to the implementation of the new regulations, resulting from the perception that first-year residents in 2011 have it easier than those who went before them. Another cause for the concern over graduate trainees' relationships could lie in the answer to the question, Who will be doing the extra work brought on by tighter duty hours restrictions and increased supervision? The answer was clearly faculty, although about half of the surgery program directors thought fellows and upper-level trainees would also have an increased workload.

The overriding conclusion from the results of our national surveys is that program directors in IM and surgery do *not* believe that the 2011 regulations will have a positive or beneficial impact on any domain in the residency program, including patient safety, resident well-being, and education.

Clearly, including only two specialties limits the generalizability of our results, although IM and surgery are often the subjects of research as they are the largest representatives of person-oriented and technique-oriented specialties.¹⁸ Further, our response rate from the IM program directors exceeded and our response rate from the surgery directors matched the oft-cited 50% goal,²² and we detected no apparent differences between respondents and non-responders.

Important follow-up studies might go in several directions. First, assessing what actually happens in terms of patient and educational outcomes, as several researches did after the implementation of the 2003 duty hours limits, is critical.²³⁻³² Scientifically rigorous studies of outcomes which factor in the many complexities of residency training (e.g., fatigue, experience, procedural competency, continuity of care, supervision) must occur before further regulations are implemented. Another line of future inquiry would be to use different methodologies, including those associated with qualitative research, to ask "why" and "how" questions. For example, Why don't program directors think the health of housestaff will improve, and How has the relationship between director and hospital administration changed? Third, concerns of increased faculty and fellow workload suggest the need to reconcile the dual demands of patient care (which is income-generating) with increased supervision (which is likely not equally compensated). Fourth, given the worries of program directors regarding diminished educational opportunities, it is important to follow objective metrics through the implementation process and to develop interventions that improve educational opportunities and ensure adequate clinical experiences, especially—given concerns of diminished operative experience—for surgical residents. Fifth, future work can better tailor policies and programs to optimize residents' duty hours by specialty. The multiple differences among specialties suggest that a one-size-fits-all approach may not be the best strategy to optimize training across disciplines. Tailoring the post-graduate experience may both address some of the concerns noted by our respondents and enable the innovations to lead to improvements—rather than detriments—in key metrics related to patient quality, resident education and wellness, and program director satisfaction.

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Appendix 1

Appendix 1

Significant * Relationships Between Program and Program Director Characteristics and Consequences

Potential effects of 2011 Accreditation Council for Graduate Medical Education (ACGME) regulations	Program type [†]	Program director tenure [‡]	Year program director completed residency [§]	No. of first-year positions filled [¶]
Learning environment				
First-year residents' morale	.01			
Morale of residents in their second or higher year of post-graduate training	.002			
The relationship between first-year residents and all other residents	.02			
Housestaff autonomy		.01		
Workload of subspecialty fellows	<.0001			<.0001
Elective rotation time for housestaff		.002	.04	
Program administration/organization				
Hiring of nonphysician clinicians/midlevel providers	.02			
Ability to negotiate for more resources		.02		
Ability to negotiate for more space		.04		
Perceived quality of fellowship applicants from your residency program			.001	

* Denotes statistically significant result at $P < 0.05$.

[†] Program type: university, non-university.

[‡] Program director tenure, in tertiles: 0-3 years, 3.1 – 8 years, > 8 years.

[§] Year program director completed residency, in tertiles: prior to 1984, 1984-1984, 1985 or later.

[¶] Number of filled first-year resident positions within specialty: medicine = 0-12, 13-19, 20-31, 32+; surgery = 2-6, 7-10, 11-21, 22+.

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Internal Medicine and Surgery Program Directors' Views in 2010 Regarding the Potential Effect (Increase, No Change, Decrease) of the 2011 Duty Hour Regulations*

Table 1

Potential effect: Please indicate your beliefs regarding the potential effects of the 2011 Accreditation Council for Graduate Medical Education (ACGME) regulations, if implemented, on each of the following	Medicine				Surgery				P †
	N	Increase: No. (%)	No change: No. (%)	Decrease: No. (%)	N	Increase: No. (%)	No change: No. (%)	Decrease: No. (%)	
Learning environment									
The relationship between first-year residents and all other residents	287	11 (3.8)	111 (38.7)	165 (57.5)	118	0	14 (11.9)	104 (88.1)	<.001
Housestaff autonomy	284	5 (1.8)	99 (34.9)	180 (63.4)	109	1 (0.9)	15 (13.8)	93 (85.3)	<.001
Morale of residents in their second or higher year of post-graduate training	285	53 (18.6)	99 (34.7)	133 (46.7)	118	6 (5.1)	13 (11.0)	99 (83.9)	<.001
First-year residents' morale	286	132 (46.2)	108 (37.8)	46 (16.1)	118	19 (16.1)	26 (22.0)	73 (61.9)	<.001
Faculty morale	286	1 (0.3)	42 (14.7)	243 (85.0)	118	0	6 (5.1)	112 (94.9)	.02
Health of housestaff	285	78 (27.4)	194 (68.1)	13 (4.6)	117	10 (8.5)	95 (81.2)	12 (10.3)	<.001
Time for housestaff to reflect ‡	285	71 (24.9)	138 (48.4)	76 (26.7)					
Workload									
Workload of faculty	286	231 (80.8)	41 (14.3)	14 (4.9)	116	93 (80.2)	19 (16.4)	4 (3.4)	.73
Workload of subspecialty fellows	280	116 (41.4)	154 (55.0)	10 (3.6)	114	64 (56.1)	45 (39.5)	5 (4.4)	.02
Workload of housestaff	287	91 (31.7)	82 (28.6)	114 (39.7)	118	65 (55.1)	35 (29.7)	18 (15.3)	<.001
Workload of program director and program coordinator ‡					117	107 (91.5)	6 (5.1)	4 (3.4)	
Education opportunities									
First-year resident clinical experience	287	14 (4.9)	37 (12.9)	236 (82.2)	118	1 (0.8)	3 (2.5)	114 (96.6)	.001
First-year resident attendance at educational conferences	287	32 (11.1)	113 (39.4)	142 (49.5)	118	3 (2.5)	29 (24.6)	86 (72.9)	<.001
Elective rotation time for housestaff	287	8 (2.8)	108 (37.6)	171 (59.6)	118	2 (1.7)	36 (30.5)	80 (67.8)	.29
Medical student education	287	3 (1.0)	119 (41.5)	165 (57.5)	117	0	51 (43.6)	66 (56.4)	.51
Attendance at educational conferences by residents in their second or higher post-graduate year	285	15 (5.3)	119 (41.8)	151 (53.0)	118	1 (0.8)	51 (43.2)	66 (55.9)	.12
Time for housestaff to do research	286	14 (4.9)	121 (42.3)	151 (52.8)	118	3 (2.5)	51 (43.2)	64 (54.2)	.56

Potential effect: Please indicate your beliefs regarding the potential effects of the 2011 Accreditation Council for Graduate Medical Education (ACGME) regulations, if implemented, on each of the following	Medicine				Surgery			
	N	Increase: No. (%)	No change: No. (%)	Decrease: No. (%)	N	Increase: No. (%)	No change: No. (%)	Decrease: No. (%)
Clinical experience for residents in their second or higher post-graduate year	285	13 (4.6)	118 (41.4)	154 (54.0)	118	14 (11.9)	42 (35.6)	62 (52.5)
Balance of service vs. education for housestaff	285	50 (17.5)	158 (55.4)	77 (27.0)	117	22 (18.8)	55 (47.0)	40 (34.2)
Resident time on Trauma, Intensive Care Unit, Acute Care Surgery, or night float rotations [§]	283	158 (55.8)	68 (24.0)	57 (20.1)	118	61 (51.7)	29 (24.6)	28 (23.7)
Time for bedside teaching [‡]					115	0	19 (16.5)	96 (83.5)
Time for patient-care-based conference teaching [‡]					118	0	24 (20.3)	94 (79.7)
Time for attending teaching rounds [‡]	286	9 (3.1)	110 (38.5)	167 (58.4)				
Number of operations as resident surgeon except as chief resident [‡]					118	0	26 (22.0)	92 (78.0)
Number of operations as chief resident [‡]					118	9 (7.6)	84 (71.2)	25 (21.2)
Number of operations as first assistant [‡]					117	6 (5.1)	37 (31.6)	74 (63.2)
Number of operations as teaching assistant [‡]					118	1 (0.8)	54 (45.8)	63 (53.4)
Resident availability for elective cases [‡]					118	2 (1.7)	10 (8.5)	106 (89.8)
Resident availability for urgent cases [‡]					118	2 (1.7)	22 (18.6)	94 (79.7)
Program administration/organization								
Hiring of nonphysician clinicians/midlevel providers	284	169 (59.5)	104 (36.6)	11 (3.9)	118	105 (89.0)	11 (9.3)	2 (1.7)
Burden of monitoring duty hours by program	287	191 (66.6)	61 (21.3)	35 (12.2)	116	87 (75.0)	11 (9.5)	18 (15.5)
Hiring of hospitalists, acute care surgeons, and/or additional faculty members [¶]	287	183 (63.8)	86 (30.0)	18 (6.3)	118	83 (70.3)	32 (27.1)	3 (2.5)
Number of interns (if ACGME permitted increase in complement)	286	141 (49.3)	139 (48.6)	6 (2.1)	117	74 (63.2)	36 (30.8)	7 (6.0)

Potential effect: Please indicate your beliefs regarding the potential effects of the 2011 Accreditation Council for Graduate Medical Education (ACGME) regulations, if implemented, on each of the following	Medicine				Surgery			
	N	Increase: No. (%)	No change: No. (%)	Decrease: No. (%)	N	Increase: No. (%)	No change: No. (%)	Decrease: No. (%)
Number of residents in 2 nd or higher post-graduate year (if ACGME permitted increase in complement)	287	117 (40.8)	165 (57.5)	5 (1.7)	117	63 (53.8)	52 (44.4)	2 (1.7)
Ability to negotiate for more resources	286	69 (24.1)	131 (45.8)	86 (30.1)	117	29 (24.8)	43 (36.8)	45 (38.5)
Ability to negotiate for more space	286	16 (5.6)	192 (67.1)	78 (27.3)	117	4 (3.4)	76 (65.0)	37 (31.6)
Relationship of residency program with hospital administration	286	12 (4.2)	117 (40.9)	157 (54.9)	116	3 (2.6)	37 (31.9)	76 (65.5)
Program director morale	287	5 (1.7)	75 (26.1)	207 (72.1)	117	1 (0.9)	4 (3.4)	112 (95.7)
Burden of tracking duty hours by residents [‡]					118	77 (65.3)	24 (20.3)	17 (14.4)
Use of jeopardy coverage [‡]	284	134 (47.2)	148 (52.1)	2 (0.7)				
Patient outcomes								
Safety of patients	284	33 (11.6)	123 (43.3)	128 (45.1)	117	3 (2.6)	24 (20.5)	90 (76.9)
Use of nonteaching services (patient care services without housestaff)	286	191 (66.8)	90 (31.5)	5 (1.7)	117	82 (70.1)	33 (28.2)	2 (1.7)
Perceived quality of fellowship applicants from residency program	281	3 (1.1)	235 (83.6)	43 (15.3)	116	1 (0.9)	82 (70.7)	33 (28.4)
Graduates' preparedness for practice after residency [‡]					118	2 (1.7)	18 (15.3)	98 (83.1)
Continuity of care by first-year residents [‡]					118	0	3 (2.5)	115 (97.5)
Continuity of care by second- and third-year residents [‡]					117	9 (7.7)	34 (29.1)	74 (63.2)
Continuity of care by fourth- and fifth-year residents [‡]					118	16 (13.6)	52 (44.1)	50 (42.4)
Continuity of care for patients [‡]	287	7 (2.4)	40 (13.9)	240 (83.6)				

* Program directors indicated how they believed the proposed 2011 duty hour regulations would impact the learning environment. Items were rated on a scale where 1 = greatly decrease, 2 = somewhat decrease, 3 = neither increase nor decrease, 4 = somewhat increase, 5 = greatly increase. Options were collapsed as follows: (1 and 2), 3, and (4 and 5). Please note that all percentages do not all equal 100 due to rounding.

[‡] P-value for chi-square test of differences in distributions between medicine and surgery.

[‡]Denotes item asked of just one specialty.

[§]Medicine wording: resident time on night float rotations; surgery wording: Resident time on Trauma, Intensive Care Unit, Acute Care Surgery, or night float rotation.

[¶]Medicine wording: hiring of hospitalists/additional faculty members.