Impact of Proposed Institute of Medicine Duty Hours: Family Medicine Residency Directors' Perspective

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Abstract

Purpose To examine the opinions of family medicine residency program directors concerning the potential impact of the Institute of Medicine (IOM) resident duty hour recommendations on patient care and resident education.

Methods A survey was mailed to 455 family medicine residency program directors. Data were summarized and analyzed using Epi Info statistical software. Significance was set at the $P < .01$ level.

Results A total of 265 surveys were completed (60.9% response rate). A majority of family medicine residency program directors disagreed or strongly disagreed that the recent IOM duty hour recommendations will, in general, result in improved patient safety and resident education. Further, a majority of respondents disagreed or strongly disagreed that the proposed IOM rules would result in residents becoming more compassionate, more effective family physicians.

Conclusion A majority of family medicine residency program directors believe that the proposed IOM duty hour recommendations would have a primarily detrimental effect on both patient care and resident education.

Background

In 2003, the Accreditation Council for Graduate Medical Education (ACGME) adopted requirements common to all specialties limiting the duty hours of resident physicians to optimize resident learning, resident well-being, and patient safety. The impact of these work hour limits for resident physicians on patient care and safety has been inconsistent.[1–4] While the impact of these duty hour limits suggests that residents' quality of life may have been improved, effects on resident education have yet to be investigated.[5]

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DOI: 10.4300/JGME-D-09-00003.1

More recently, several studies[6–9] have specifically examined the effect of resident fatigue on medical errors and resident well-being. These studies reported increased medical errors and adverse events in an intensive care unit as well as increased rates of motor vehicle crashes associated with extended-duration work shifts. A survey of residents at 2 teaching hospitals[10] found that self-reported adverse events are common and the causes for these events are multifactorial. The effect of resident fatigue on medical errors that affect patient outcomes and overall quality of care has not been demonstrated.[6] In addition, a literature review[11] noted that teaching hospitals had better compliance with quality-of-care measures than did nonteaching hospitals in the predominant number of studies reviewed.

Concerns about patient and resident safety prompted members of the United States Congress to ask the Institute of Medicine (IOM) to form a consensus committee to "(1) synthesize current evidence on medical-resident schedules and health care safety and (2) develop strategies to enable optimization of work schedules to improve safety in the health care work environment."[12] The report of this committee recommended revisions to the current ACGME duty hour standards that include:

- The current 80-hour weekly limit should include internal and external moonlighting.
- Scheduled continuous-duty periods must not exceed 16 hours unless a 5-hour uninterrupted sleep period is provided between 10 PM and 8 AM.

- Extended duty periods must be limited to every third night without averaging.
- Night float or night shift duty must not exceed 4 consecutive nights and must be followed by 48 continuous hours off duty after 3 or 4 consecutive nights.
- At least one 24-hour off-duty period must be provided per 7-day period without averaging; 1 additional (consecutive) 24-hour period off duty must be provided to ensure at least 1 continuous 48-hour period off duty per month.

The ACGME Residency Review Committee for Family Medicine requirements state the goal of the family medicine residency program is to produce fully competent physicians capable of providing high-quality care to their patients.[13] Upon completion of residency, the program must verify the resident has demonstrated sufficient competence to practice independently without supervision. Whether the IOM-recommended limit will allow a resident in family medicine to receive adequate training in the current 3-year residency program to meet this fundamental goal has yet to be determined. The impact of the current and added proposed limits on the quality of care in teaching hospitals and the quality of care provided by graduates of residency programs has also yet to be determined. In a recent survey,[14] residents favored work hour restrictions but had serious concerns about the effects of the restrictions on patient care and medical education.

Directors of family medicine residency programs are responsible for resident training and for meeting the fundamental goal described above, and the ACGME tasks program directors with implementing and monitoring resident duty hours and adjusting schedules as necessary.[15] As a group, residency program directors are familiar with the benefits and the likely unintended consequences of duty hour restrictions. Their perspective is a vital component of effective and accurate review and revision of existing duty hour requirements, and it offers valuable insights as limits are being considered.

The purpose of this study is to examine the opinions of family medicine residency program directors concerning the potential impact of the IOM resident duty hour recommendations on patient care and resident education. In addition, the anticipated difficulty of implementing the IOM recommendations with current program resources will be examined.

Methods

Subjects

Participants for this study were identified as the current members of the Association of Family Medicine Residency Directors (AFMRD), which represent 435 of the 446 family medicine residency programs in the United States (97.5%).

Instrument

A questionnaire was designed specifically for this project, modeled after a survey conducted by the ACGME in late 2008. This questionnaire was reviewed by the Board of Directors of the AFMRD, staff of the Division of Medical Education of the AFMRD, and volunteer family physicians for readability and clarity.

Survey Process

A complete list of AFMRD members was obtained, and each member was e-mailed a statement requesting their participation in this survey. The survey was made available online using the web-based Zoomerang tool (Zoomerang, San Francisco, CA). Members were provided the website address for the survey and asked to complete it. A second e-mail was sent to nonresponders 6 weeks after the initial request with the same cover message. The anonymous responses in completed questionnaires were recorded in a computer database.

Data Analysis

The responses were analyzed using Epi Info statistical software (Centers for Disease Control and Prevention, Atlanta, Georgia). The analyses included descriptive statistics, χ^2 for noncontinuous variables, and Student t test for continuous variables. Significance was defined as the $P < .01$ level of confidence.

Results

A total of 265 surveys were completed out of 435 surveys e-mailed (60.7% response rate). The demographics of the programs responding to the survey were determined to be representative of all current family medicine programs listed in the American Academy of Family Physicians database (TABLE 1).[16]

The majority of responding family medicine residency program directors disagreed or strongly disagreed that the recent IOM duty hour recommendations will result in improved patient safety and resident education (TABLE 2). The majority of respondents felt implementation of the proposed IOM limits would result in decreased access to care. With regard to medical education, a majority of directors agreed or strongly agreed that residents would develop a "shift-worker mentality," lack sufficient experience to practice independently, take less ownership for the care of their patients, and be less prepared for the work hour demands of future practice. A majority of respondents disagreed or strongly disagreed that the proposed IOM rules would result in residents becoming more compassionate, more effective family physicians.

The program directors' responses to questions regarding the implementation of the recommended IOM rules indicate that some would be easy or very easy to implement while others would be difficult or very difficult (TABLE 3). The following aspects were viewed as most difficult by program

TABLE 1 **Demographic Information of the Surveyed Family Medicine Residency Programs**

	Respondents (%)	Total Programs (%)	*P* Value
Type			
University-Based	42 (15.9)	56 (12.3)	$P = .637$
Community-Based, University Administered	46 (17.4)	88 (19.3)	
Community-Based, University Affiliated	151 (57.2)	272 (59.8)	
Community-Based, Unaffiliated	17 (6.4)	24 (5.3)	
Military Sponsored	8 (3.0)	15 (3.3)	
Location			
New England (CT, ME, MA, NH, RI, VT)	14 (5.3)	15 (3.3)	$P = .818$
Middle Atlantic (DE, DC, MD, NJ, NY, PA)	43 (16.3)	75 (16.5)	
Southeast (FL, GA, NC, SC, PR, VA, WV)	45 (17.0)	67 (14.7)	
South Central (AL, AR, KY, LA, MS, TN)	19 (7.2)	41 (9.0)	
Great Lakes (IN, IL, MI, OH, WI)	55 (20.8)	91 (20.0)	
Midwest (IA, KS, MN, MO, NE, ND, SD)	26 (9.8)	40 (8.8)	
Southwest (AZ, NM, OK, TX)	22 (8.3)	47 (10.3)	
Mountain (CO, ID, MT, NV, UT, WY)	12 (4.6)	22 (4.8)	
Pacific (AK, CA, HI, OR, WA)	28 (10.6)	57 (12.5)	
Size			
≤16 Residents	41 (15.5)	89 (20.0)	$P = .308$
17–24 Residents	158 (59.6)	247 (55.4)	
≥25 Residents	66 (24.9)	110 (24.7)	

directors: (1) admitting patients for only up to 16 hours, plus a 5-hour protected sleep period between 10 PM and 8 AM, with the remaining hours for transition and educational activities; (2) limiting residents to 16-hour shifts; (3) offering 12 hours off after night shift; (4) capping in-hospital night shift at a 4-night maximum (and providing 48 continuous hours off after 3 or 4 nights of consecutive duty); and (5) offering 1 day off per week without averaging and 1 continuous 48-hour period off per month. In contrast, these recommendations were considered relatively easy to implement: (1) in-hospital call every third night without averaging, (2) 10 hours off after day shift, (3) 14 hours off after any extended duty period of 30 hours and no return earlier than 6 AM the next day, and (4) internal and external moonlighting counted against the weekly limit.

Discussion

The responses of the family medicine residency directors to this survey suggest the recommended IOM duty hour limitations would have detrimental effects on several factors associated with patient safety and resident education. While the recommended duty hour limitations may positively impact resident fatigue, the results of this study show a marked difference of opinion with the IOM committee that developed the new work hour recommendations. The survey results suggest the new recommendations may have a detrimental effect on the quality and safety of care and on resident education.

The anticipated effect of the IOM recommendations on resident education appears to be greatest in the area of professionalism. More than 90% of family medicine program directors believed that implementing added duty hour restrictions would exacerbate a ''shift-worker mentality that is ultimately not good for patients or the profession'' and result in resident physicians ''taking less ownership'' for the care of their patients. The ACGME Common Program Requirements describe aspects of professionalism as ''a responsiveness to patient needs that

TABLE 2 **The Potential Impact of the Institute of Medicine (IOM) Duty Hour Revisions on Patient Care and Medical Education as Assessed by Residency Program Directors**

Survey Item	Strongly Agree, No. (%)	Agree, No. (%)	Neither, No. (%)	Disagree, No. (%)	Strongly Disagree, No. (%)	N
In general, the IOM duty hour recommendations, if implemented, would result in improved patient safety.	2 (0.8)	18 (6.8)	56 (21.1)	**120 (45.3)**	**69 (26.0)**	265
In general, the IOM duty hour recommendations, if implemented, would result in improved resident education.	1 (0.4)	6 (2.3)	27 (10.2)	**118 (44.5)**	**113 (42.6)**	265
I believe that in my own institution, implementing the IOM requirements would result in decreased patient access to care.	**72 (27.3)**	**116 (43.9)**	44 (16.7)	27 (10.2)	5 (1.9)	264
I am concerned that residents are developing a "shift-worker mentality" that the IOM rules would exacerbate, which is ultimately not good for patients or the profession.	**190 (72.0)**	**50 (18.9)**	11 (4.2)	9 (3.4)	4 (1.5)	264
I am concerned that additional IOM duty hour requirements would result in graduating doctors who are not experienced enough to practice independently.	**130 (49.8)**	**89 (34.1)**	28 (10.7)	12 (4.6)	2 (0.8)	261
I am concerned that additional duty hour requirements would result in graduating doctors who generally take less "ownership" and do not know patients as thoroughly as in the past.	**160 (60.4)**	**85 (32.1)**	8 (3.0)	9 (3.4)	3 (1.1)	265
I believe that the IOM rules would result in residents becoming more compassionate, more effective family physicians.	2 (0.8)	0 (0.0)	42 (15.9)	**119 (45.1)**	**101 (38.3)**	264
I believe that requiring additional training on "handoffs" would be adequate to decrease the patient-safety risks they potentially engender.	14 (5.3)	62 (23.5)	68 (25.8)	77 (29.2)	43 (16.3)	264
I am concerned that the IOM's duty hour rules would make future doctors less prepared for the work-hour demands of future practice.	**148 (55.8)**	**92 (34.7)**	19 (7.2)	3 (1.1)	3 (1.1)	265

supersedes self interest'' and a demonstration of ''accountability to patients, society, and the profession.''

Thomas J. Nasca, MD, MACP, and chief executive officer of the ACGME,[17] noted that residency programs and their leaders live with a conflict between 2 competing ''goods'': ''ensuring proper and timely transitions of care (for the sake of resident and patient safety), while respecting and nurturing the effacement of self-interest that is at the core of the trust between patients and physicians.'' Program directors recognize the supreme importance of appropriately resolving these competing demands. They, along with residents and faculty, may also be frustrated with feeling un-empowered to make professional judgments case by case based on what is in the best interests of patients. Program directors may also be concerned that these situations (and the professional development of residents) will be less-than-optimally served by relying only on rigidly enforced regulatory requirements, to the detriment of physicians-in-training and their patients.

Besides concerns regarding patient safety and residency education, program directors reported that several of the recommendations would be very difficult to implement with current program resources available for patient care and resident education. The results of this study highlight a significant issue. Residents reported that the impact of previous changes in work hours was felt most greatly in the area of quality of life.[13] Concerns have arisen regarding the ability of programs to provide quality medical education, specifically with regard to the results of certifying board scores.[18] Whether the current IOM recommendations would have an impact on patient safety and quality of care is not known, and this area requires further study prior to any broader implementation. While the IOM consensus committee recognized the importance of supervision by

TABLE 3 **Implementing Institute of Medicine Duty Hour Recommendations in Family Medicine Residency Programs**

Specific Recommendation	Very Easy, No. (%)	Easy, No. (%)	Difficult, No. (%)	Very Difficult, No. (%)	N
30 hours (admitting patients for up to 16 hours, plus 5-hour protected sleep periods between 10 PM and 8 AM with the remaining hours for transition and educational activities)	3 (1.1)	20 (7.5)	**69 (26.0)**	**173 (65.3)**	265
Limiting residents to a 16-hour shift	6 (2.3)	28 (10.6)	**90 (34.1)**	**140 (53.0)**	264
In-hospital call every third night, no averaging	**89 (33.7)**	**89 (33.7)**	59 (22.3)	27 (10.2)	264
10 hours off after day shift	**65 (24.7)**	**146 (55.5)**	39 (14.8)	13 (4.9)	263
12 hours off after night shift	17 (6.5)	75 (28.5)	**124 (47.1)**	**47 (17.9)**	263
14 hours off after any extended duty period of 30 hours; resident should not return earlier than 6 AM the next day	39 (14.8)	101 (38.2)	75 (28.4)	49 (18.6)	264
In-hospital night shift 4-night maximum; 48 continuous hours off after 3 or 4 nights of consecutive duty	16 (6.1)	47 (18.0)	**83 (31.8)**	**115 (44.1)**	261
5 days off per month; 1 day (24 hours) off per week, no averaging; one 48-hour period off per month	15 (5.7)	57 (21.5)	**133 (50.2)**	**60 (22.6)**	265
Internal and external moonlighting counted against 80-hour weekly limit; all other duty hour limits apply to moonlighting in combination with scheduled work	**72 (27.4)**	**110 (41.8)**	45 (17.1)	36 (13.7)	263

more-experienced physicians, the focus of elected officials and the public is still primarily on hours worked.

This study has several limitations. The overall response rate (60.9%) and the response rate of directors by program category may have affected results. It is possible that responders are disproportionately more concerned about the potential negative impact of the IOM's proposed duty hour rules compared to nonresponders. The results may not be generalizable to other specialties, because differences exist. The survey measures perceptions rather than actual changes in resident competency or patient safety since the implementation of the ACGME duty hour limits in 2003. While the information is subjective, the opinions of residency program directors are valued and considered to be significantly authoritative by the ACGME and other organizations in medical education.

Finally, many other factors not studied may affect not only program directors' responses to the survey but also patient care and residency education. Further study of whether resident fatigue actually directly impacts the number and severity of medical errors that directly impact patient outcomes and overall quality of care is certainly warranted.

In summary, the results of this study indicate that a majority of family medicine residency program directors believe that the proposed IOM duty hour recommendations would have a primarily detrimental effect on both patient care and resident education. The ease or difficulty of implementing the recommendations and their anticipated benefits to patient care and resident learning appear to vary significantly.

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