Teaching Internal Medicine Residents in the New Era

Inpatient Attending with Duty-Hour Regulations

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BACKGROUND: Little is known about the impact of resident duty-hour regulations on the inpatient teaching experience.

OBJECTIVE: Provide descriptive information on the effect of resident duty-hour regulations on attendings and the educational environment.

DESIGN: Qualitative analysis of attending focus groups and e-mail survey of residents in Internal Medicine.

PARTICIPANTS: Inpatient attending physicians at 2 academic centers and residents at the affiliated university-based Internal Medicine residency program in Portland, OR.

RESULTS: Seventy-two percent of eligible attendings participated in 2 focus groups. Three themes were generated: increased clinical role, altered time management, and altered teaching. Attending physicians report performing more clinical work, teaching less, using more focused teaching methods, and experiencing an increased perception of intensity. Forty percent of eligible residents completed our e-mail survey. We organized residents data using the same 3 themes as attending physician data. Residents observed attending physicians performing increased clinical work, being more time aware, delivering more focused teaching, and having less time to teach. Participants noted changes in autonomy and professionalism. Strategies to enhance teaching effectiveness in the new environment were described.

CONCLUSION: Duty-hour regulations have increased attending clinical responsibility and decreased teaching time in 1 residency program, leading to the perception of a more intense attending experience. Duty-hour regulations encourage educators to determine what is critical to preserve in the educational experiences of learners and challenge us to reexamine autonomy and professionalism in training.

KEY WORDS: resident education; inpatient teaching; duty hours.
DOI: 10.1111/j.1525-1497.2006.00425.x
J GEN INTERN MED 2006; 21:447–452.

In 2003, the Accreditation Council for Graduate Medical Education began enforcing duty-hour regulations for U.S. residents to less than 80 h/wk averaged over 4 weeks, a 10 hours duty-free period between shifts, and a maximum of 24 hour shifts in direct patient care followed by 6 hours of nondirect care. The rationale for these regulations reflects the observations that patient acuity and service intensity is increasing,[1] extended work hours increase the risk for medical errors[1–3] and personal injury,[4] sleep deprivation negatively affects work performance, education, and well-being,[5,6] and heightened public concern that resident fatigue jeopardizes patient safety.[7,8]

In order to be compliant with duty-hour regulations, residency programs across the country have modified the structure of inpatient ward rotations. At our own institutions we observed a change in the educational experiences of learners and the teaching experience of attending physicians. We reviewed the literature and found no studies describing how the inpatient attending physician experience had changed. In September 2003, the American Medical Association Internet Question of the Month to program directors was "what has been your programs experience with the duty-hour regulations?" Responses included opinions that there is increasing work for faculty, fellows, and residents and increased intensity of work, but not less work.[9] Beyond duty-hours, there are several factors that may contribute to a perception of increased intensity in the inpatient work environment including increased acuity of patients, decreased length of stay, shortened duration of inpatient attending physician blocks, increased transitions of care, and patient care "hand offs."

Several editorials highlight the unknowns regarding the impact of duty-hour regulations on attendings including whether attendings are exasperated by absent residents and whether they will usurp decision making thereby diminishing resident autonomy.[10] Learner drawbacks include lapses in continuity of care, and a potential decrease in learner investment in patient care leading to compromised professionalism.[11] Other opinions suggest regulated duty-hours encourage attending physicians and residency program directors to reexamine educational programs and provide an opportunity to create new learning experiences in teamwork, systems improvement, and self-care.[12]

We believe understanding the attending perspective on the impact of duty-hour regulations is important because faculty response and guidance will shape future training models. Identifying the clinical and teaching skill sets and time requirements to be successful ward attendings in the new environment and recognize faculty development needs is critical. An informed approach to maximize the educational experience is preferable to a reactionary plan. In this study, our goal is to provide descriptive information that explores the effect of resident duty-hour regulations on attendings and the educational environment. We also describe solutions suggested by attendings and learners.

METHODS

We conducted 2 focus groups with core inpatient attending physicians at the Oregon Health & Science University (OHSU) and Portland Veterans Affairs Medical Center (PVAMC) 6 months after the implementation of duty-hour regulations. All inpatient attending physicians who had more than 1 year of experience in this role and who attended at least 6 weeks in the 2003 to 2004 academic year were invited to participate. We asked them the following questions: (1) how has your role as a teaching attending been impacted by duty-hour regulations, (2) what strategies have you developed to adapt to these changes and, (3) if there were a single systems issue that could be offered to help you become a better teacher in the new environment what would it be? The 2 authors followed a stand-

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ardized script during both sessions. Each was recorded and transcribed. All attendings gave verbal consent to be recorded.

In the second part of our study, we requested second- and third-year residents to complete a survey distributed by e-mail. The survey was conducted during the first year of duty-hour regulations. We asked residents the following questions: (1) how have ward attendings roles as teachers been impacted by duty-hour regulations, (2) what effective strategies have your attendings developed to enhance your learning in the new work environment and, (3) in your opinion, what makes a great attending? Reminder e-mails were sent out 3 times to nonresponders.

Data from attending focus groups and the resident survey were blinded and coded. The 2 authors independently analyzed the attending physician and resident data and generated themes. There was 90% agreement between authors regarding themes; remaining differences were resolved by consensus. While attending physician themes were generated first, a separate analysis was done for the resident data. As resident and attending physicians emphasized the same major themes, in the final analysis, we organized our data using the same categorization scheme for both groups to present information in a cohesive format. We were vigilant not to omit any relevant themes in this process.

We externally validated our attending focus group data at regional and national Society of General Internal Medicine (SGIM) workshops and a national workshop at the Association of Program Directors in Internal Medicine (APDIM) meeting to a total number of approximately 100 participants. Before sharing the results of our study, we asked participants to answer the same questions we asked our attending physician focus group participants regarding their experiences teaching with duty-hour regulations. After presenting our data, we encouraged participants to provide additional themes or hypotheses which we collected using field notes. In addition, we held a resident conference open to all internal medicine residents at OHSU focusing on the impact of duty-hour regulations. Approximately 40 residents, 10 faculty members, and 5 students attended this session. We used this session to internally validate the resident data and provide an opportunity for residents to add additional comments. We then incorporated any additional themes generated from these 4 external validation sessions into our data set.

Our study was conducted at OHSU hospital, a 500-bed tertiary care referral center and at the PVAMC, a 300-bed veterans hospital servicing a tri-state area. The OHSU internal medicine residency is a 3-year training program graduating 30 residents/y. Residents spend an average of 48 weeks on inpatient ward rotations over 3 years. Inpatient teams at OHSU are comprised of 1 resident, 1 intern, and 2 medical students. Team caps are set at 12 patients. At PVAMC teams are composed of 1 resident, 2 interns, and 2 medical students with a team cap of 16 patients. Both hospitals function on a 5-day call cycle with a night float system in place at PVAMC. Teams are supervised by an attending who is responsible for patient management and teaching.

RESULTS

Eighteen of 25 eligible attendings participated (72%) in the focus groups. Sixty-one percent of participants were male and 72% had more than 5 years of experience as inpatient attendings. We generated 3 overarching themes from our attending focus groups: increased clinical role, altered time management, and altered teaching. These themes, subthemes, and sample quotes are delineated in Table 1. *Increased clinical role* manifested in more delegation of work to attendings with attending physicians spending more time making solo rounds and primary diagnoses. *Alterations in time management* resulted from attending physicians devoting more time to ward attending activities, direct patient care, and to round preparation, changing the structure of rounds to be more efficient, and changing the format of patient presentations to be more succinct. *Changes in teaching* manifested in attending noting they had less time to teach and consequently using more focused teaching methods. Attendings perceived their increased presence and decreased allotment of time for teaching and question asking compromised resident autonomy. They found it more challenging to work with marginal learners and described decreased time to deliver quality feedback. The summation of these themes led to increased perception of intensity in the work environment.

We asked attending physicians to comment on what strategies they employed to be more effective in their teaching roles. Responses are included in Table 1. While attending physicians reinforced the continued value of providing formal orientation, specific feedback, and patient-based teaching, many had adapted their methods to be more efficient in the limited time. Some examples of this include advanced schedule planning to allow for increased allotment of time to ward attending activities, access to electronic medical records early and late in the day to aid in preparation for rounds, reading about patients in advance, developing a game plan with learners at the beginning of rounds, curtailing presentations, listening to student presentations outside of formal rounds, prospectively planning for teaching time, embracing focused teaching, and having residents identify learning needs.

We also asked attending physicians to comment on what residency program and hospital system changes would improve the teaching experience in the new era. Attending physicians had a variety of suggestions for the residency program including: reemphasize the concept of a team (i.e., carve out 1.5 h/d several days a week that is free of interruptions, so all members can discuss patient care and learn), increase restrictions on team census and numbers of patients admitted, restructure the order of the day (i.e., move morning report and conferences to times that are least disruptive to patient care), restructure the timing of student conferences, emphasizing professionalism within the constraints of duty-hour restrictions, emphasize signing out (of procedures, labs, consults to coverage teams) as an expectation and not a manifestation of weakness, and overall reemphasize the residency program commitment to the educational process. Attending physicians had a variety of suggestions for the hospital system to support duty-hour restrictions including: improving system efficiency, support for ancillary services, providing PA or NP assistance for some patient care-related work, providing home access to the record via electronic medical record and bedside computer systems. A common sentiment among attending physicians was that residency programs and hospital systems need to reassess the educational mission in the context of compressed duty-hours. They emphasized that if the service-education balance was to improve, hospitals and programs need to re-

Table 1. Attending Perspective: How Has Your Role as an Educator Changed with the Implementation of Duty-Hour Regulations and What Adaptive Strategies are Effective?

Theme	Example	Adaptive Strategy
Increased clinical role		
Increased delegation of work to attending	"I'm writing more notes, orders, conferring with consultants and implementing treatment plans"	Use the electronic medical record to learn about patients in advance Explain the more active attending role in covering residents
Make more of the primary diagnoses	"I'm talking to residents about cases before they've had time to formulate their thoughts Consequently, I make more of the primary diagnoses"	Allow time for team members to briefly describe their thoughts before giving feedback
More solo rounding	"I'm seeing patients a lot more on my own"	Carve out time outside of rounds to see patients Explain to patients the team concept of care
Altered time management		
Increased time spent on ward attending	"I'm doing attending work earlier and later in the day" "I'm here at 5:30 AM reviewing admissions on post-call days, to be prepared for rounds . . ." "I have limited time for non-ward attending work"	Plan personal and team schedule in advance of ward attending to anticipate conflicts Anticipate decreased availability for other responsibilities Emphasize to residents the importance of early sign-out and delegation of unfinished work Create "to do" lists for the attending postcall
Increased preparation for rounds	"I'm more prepared for the day's schedule"	Develop a game-plan at the beginning of rounds Review key data before rounds
Change in structure of rounds	"Attending rounds are like work rounds; emphasis is on efficiency" "I'm more directive managing rounding time" "The most organized person on the team drives rounds"	Emphasize at orientation the expectation for efficiency during rounds and limit clinical discussions to key issues Address less critical issues outside of rounds. Attending sees established patients solo postcall Round with 1 intern at a time post-call
Decreased time spent as a team	"Divide and conquer mentality results in loss of team cohesion" "My rounds are like controlled chaos"	Prospectively carve out round days to come together as a team for learning and social interaction
Change in presentations	"I ask for more succinct presentations of patients including only assessment and plan. Their task is to provide a framework for expressing how they drew their conclusions"	Abbreviate patient presentations; start with clinical questions and concerns Minimize external disruptions during rounds
More focused teaching	"I used to do a complete demonstration of physical findings, now I focus on 1 aspect of the exam"	Improved skills for teaching in compressed time
Changes in teaching		
Less teaching time	"It was difficult to find teaching time before but now it's well nigh impossible, particularly given increased patient turnover . . ." "Postcall, my team presented a patient with cellulitis that I saw later on my own. Well, it was actually vasculitis. I called dermatology, got the biopsy, had a discussion and learned a ton. The teachable moment for the residents was gone . . ." "I have less time for teaching preparation" "There is less question asking, and group discussion" "There is decreased bedside rounding" "There is less time for formal didactics and more teaching on-the-fly"	Anticipate time to teach in advance Consistently protect 5-10 minutes of teaching time in rounds Have learners proactively identify their learning needs Close "the loop" on missed clinical teaching opportunities as soon as possible Emphasize the teachable moment and teaching "off the cuff" Focus on 1 teaching point in an article, not the whole article Utilize web resources in rounds Keep track of clinical questions Engage all team members in answering questions Focus on 1 aspect of history or physical exam Carve out time specifically devoted to physical findings on rounds Limit didactics to appropriate days of the call cycle Hone skills for brief teaching
Impact on resident autonomy	"I'm finding there are things the residents don't know about the patients because I have written the orders and done the follow-up"	Keep resident "in the loop" on all patient care issues Preserve resident patient care decision making as much as possible Always ask for resident's perspective before giving your input
Challenges for learners	"I find it hard to keep students meaning fully involved it the new system" "Student presentations are usurped and occur after rounds" "It's even harder to teach a sub par learner in this system; it creates chaos"	Encourage opportunities for one-on-one teaching, presentations and physical exam skill development with students outside of rounds, not necessarily involving the ward attending Teach students succinct presentation skills Check in regularly with student about level of team involvement
Changes in feedback	"There is less opportunity to give feedback because of time constraints"	Document illustrative examples for specific feedback Schedule times to deliver feedback Brief, specific feedback postcall

Table 2. Resident Perspective: How Have Attending Teaching Roles Changed with Duty-Hour Regulations and Suggestions for Improvement

Theme	Sample Quotes	Resident Suggestions for Improvement
Increased clinical role	"Attendings have new responsibilities; more paperwork, note writing, talking with patients and their families, so they are not able to teach as much."	Proactively relieve residents of clinical tasks: "I need an attending to offer help, and to pay attention to how long we are there and step in when it gets close to the time (24+6) that we are required to leave. Otherwise I will just quietly stay there as long as needed to get the work done and end up violating work hours"
Altered time management	"It's great to have more explicit time limits so that attendings better manage the rounding period"	Demonstrate schedule sensitivity, prepare for rounds: "Being concise is the key. Tangents are not tolerable in our new system" "A great attending paces rounds and avoids digressions and interruptions" "Read about the patients before the start of postcall rounds"
Change in presentations	"There is no time for lengthy rambling presentations. The pressure is on to be brief and focused"	Encourage succinct presentations
No adaptive change	"Frankly, some attendings have changed little in their approach, squeezing resident work-time into impossibly short periods"	Be time sensitive and flexible to patient care and resident work time
Changes in teaching Less teaching time	"There is less teaching time because residents are under the burden of getting their work done to get out on time"	Incorporate focused, patient driven teaching: "Great attendings do not give up teaching just because of work hours restrictions—they find ways to fit it in" "Attendings who can teach and help with work are great attendings—it's a balancing act"
Changes in teaching More focused teaching	"Attendings must be concise teachers and pace themselves on rounds if they wish to protect time for didactics"	Check in with resident and proactively carve out time for teaching
Real-time teaching	"Attendings teach almost exclusively in the moment"	Teach the "pearls" as they arise on rounds
Impact on autonomy	"Attendings are micromanaging more. I feel like my autonomy is decreased" "Attendings who can't readily transition from the active management role to the supervisory role challenge my need to think on my own"	Respect autonomy—keep residents in the loop, guide, not direct patient care: "Attendings should act like the rudder on a ship—let me do the rowing and move in a direction, but gently redirect me when the boat moves off course"
No change	"I noticed no change in teaching"	Adapt teaching to the time constraints of duty-hours

consider patient volume limits and be invested in developing strategies to decrease the noneducational tasks performed by residents.

Twenty-four of 60 eligible residents (40%) responded to our e-mail survey. From their responses to the question, "how have attending roles as teachers changed with the implementation of duty-hour regulations," we generated themes (Table 2). All themes generated in the resident response analysis fit into the same categorization scheme used for the attending physicians. First, under *increased clinical role*, residents noted attending physicians taking on more direct patient care responsibilities including writing notes, orders, and communicating more with families. Second, regarding *altered time management*, residents noted many attending physicians were more time aware and carefully planned how rounds should flow, including curtailing presentations to just the key components. Residents mentioned some attending physicians had made no adaptive time management changes making it impossible for them to complete their work in the allotted period. Third, regarding *changes in teaching* residents noted less teaching time, more focused and teaching "in the moment" and a diminished sense of autonomy. A few mentioned that teaching had not changed at all in response to duty-hour regulations. Residents were asked to describe what makes a great attending physician in the new era and what effective strategies they observed. Beyond the core skills of being an excellent teacher, communicator, and clinician they described several characteristics including being proactive in taking on clinical tasks, time aware, respectful of resident autonomy, adaptable, and capable of balancing service with teaching. Sample quotes are included in Table 2.

Participants in our external validation sessions at SGIM, APDIM, and OHSU sessions independently came up with every theme generated in our study. Some attending physicians noted residents to be less interested in teaching. Attending physician workshop participants had additional positive observations about the impact of duty-hour regulations on teaching efficiency including teaching more succinct presentation skills to learners, preparation for "real-world" medicine, self-directed learning skills, how to care for patients at critical decision points, and increased time for attending physicians to observe learners in action leading to more reliable evaluations. Additional negative observations included concerns about the impact on professionalism and humanism. Residents are now absent for many important family and patient care discussions on postcall days. They expressed concern for patient safety with multiple transitions of care providers and questioned whether the new generation of Internists will possess a shift

worker mentality. They were concerned about attending burnout and wondered whether attending physicians less immersed in direct inpatient care may be more challenged to function as ward attendings in the new era. They noted frustration in trying to maintain the former educational structure in the new work environment. Additional opinions expressed by residents included a favorable impact on resident well-being, but also concerns about potential for attending burnout and diminished attractiveness of academic internal medicine. Both residents and attendings physicians described conflict and at times confusion regarding roles and responsibilities in patient care.

DISCUSSION

The results of our study support the perception that duty-hour regulations have increased attending clinical responsibility and decreased teaching time, leading to the perception of a more intense ward attending experience and work environment. Attending physicians perceive a shift in responsibilities from the traditional teaching role to a clinical and managerial role and have less time to accomplish other activities. They note a greater opportunity to observe learners process information in "real time" and that while there is less time for teaching, teaching efforts are more concise and targeted. They describe less time to work with inexperienced members of the team, especially medical students.

Learners have experienced multiple changes with the implementation of duty-hour regulations. Key perceived losses include time for question asking, synthesis, autonomy, and reflection on patient care. The "divide and conquer" approach to patient care results in the perception of efficient but disjointed rounds and compromised team cohesion. Compromised continuity of care and the consequential missed learning opportunities, particularly in the postcall period, are additional concerns raised by residents and faculty. Finally, our learners and attending physicians perceive a change in the meaning of professionalism.

Medical education has evolved from a system supporting maximal independence with minimal attending contact to one with fully engaged attendings who directly participate in patient care. This increased involvement may not necessarily translate into improved teaching and learning. In a recently published study conducted following duty-hour implementation, 70% of residents believed there was not enough time for teaching by attending physicians[13] and 57% reported rounds were focused more on getting work done than on teaching. Defining the balance of time spent discussing management versus teaching and the optimal use of educational rounding time is critical to reexamine in the new era. Medical students pose a particular challenge as traditional presentation formats and time for data synthesis are curtailed. While 1 study supports that duty-hour reform has had minimal impact on medical student activities and on their perception of education[14] the impact of duty-hour regulations on medical student education and learning is largely unknown and will be challenging to assess.

Our attending physicians describe using more concise and targeted teaching methods to adapt to time pressures that may result in improved overall teaching effectiveness[15] and better fit the attention span of learners. Duty-hour regulations coupled with increased patient acuity and shortened length of stay[1] add time pressure to inpatient teaching that is long described in the outpatient environment. Effective and efficient teaching strategies used in the outpatient setting may extrapolate well to the inpatient environment.[15–18] Thus, defining how doctors teach and learn best in compressed time is key to improving our educational efforts within duty-hour regulations.[19]

What number and intensity of patient encounters is enough for adequate internal medicine training? Patients are the key curricular content. Before duty-hour regulations, many residents worked over 100 h/wk and now average 80 h/wk. Therefore, residents spend approximately 20% less time caring for patients. One way to accomplish this reduction is to decrease patient numbers, but will residents achieve sufficient competence in inpatient care? It has been argued that internal medicine residents have an excess of exposure to inpatient medicine, thus this reduction may be of little consequence. As a solution to maintain patient numbers, programs may hire nonphysician practitioners to assist in work and enhance efficiency. Responses from faculty at our national workshop highlighted that while these services helped they only partially offset the challenges of working in compressed time.

In the preduty-hour era, increased attending presence was found to result in improved learning with maintained autonomy.[20] In the postduty-hour era, many of our residents suggest autonomy has decreased. Perhaps the active role-attending physicians have in directly managing patients is the primary reason. It remains unclear whether duty-hour regulations have taken us below the optimal level of autonomy needed for learning. As autonomy remains a valued component of the training curriculum, attending physicians need to pay particular attention to balancing their level of involvement while giving residents sufficient room to exercise independent decision making. Determining the appropriate level of autonomy and identifying methods that attendings can use to foster autonomy is a rich area for future study.

Duty-hour regulations have also challenged the traditional definition of professionalism. Historically, professionalism emphasized tireless commitment to patient care and working regardless of time and fatigue. This behavior was expected and rewarded. Professionalism has evolved to include the importance of adequate rest and time away from patient care to create a workforce more receptive to learning and less likely to make medical errors. As elements of these 2 messages collide, our learners and attendings feel conflicted about how best to uphold the principles of professionalism when duty-hours have elapsed and critical work has not been completed. An attending physician trained under the traditional model may view a resident who complies with duty-hours as "unprofessional." As we obtain more data on the impact of duty-hour regulations on patient care outcomes, medical errors, and patient satisfaction, and become more skilled at patient care transitions, we will have a clearer understanding of the impact of duty-hours on professionalism.

In the new era, our attending physicians are experiencing a perceived work hour expansion, which will continue unless other changes are made to offset the load. Longer hours may lead to decreased professional satisfaction, diminished academic productivity and promote burnout, potentially making internal medicine seem less attractive to trainees.[21] Duty-hour regulations have highlighted the specific skill set needed to be successful as an inpatient attending physicians. Our data

suggest that attending physicians who are efficient, deliver focused, clinically relevant teaching, provide timely feedback and easily move between providing direct patient care and supervising care are highly valued in the new era. Adaptability appears critical to success. While these attributes have always been valued, there are increasingly important in today's work environment. Additionally, it remains challenging to measure the influence of the increasing number of teaching hospitalists, many who are recent graduates, who are potentially less vested in other professional activities, and may have more time to be "hands on" in the inpatient environment.

There are several limitations to our study. First, our data are derived from attending physicians and residents in 1 residency program and cannot be directly extrapolated to other programs. Second, the authors who ran the focus group sessions and coded the responses are both inpatient attendings with their own experiences and perceptions of the impact of duty-hours on teaching. We attempted to minimize these 2 potential biases by soliciting input from participants at regional and national workshops on this topic. Feedback from participants suggested our themes are common to many university-based residency programs. Third, our resident e-mail survey response rate was low. Therefore, we presented our resident survey results at a house staff meeting where themes were validated and expanded upon. Fourth, confounding variables may affect the perception of increased work intensity, including shortened patient length or stay and increased patient acuity. Finally, as our study is qualitative, we are indirectly measuring changes in work intensity for attending physicians. These perceptions are potentially impacted by inherent struggles associated with adapting to major change.

Duty-hour regulations encourage us to determine what is essential to preserve in the attending-learner interaction and be proactive and reflective in adapting the existing model of inpatient medical education. We need to reexamine appropriate patient volumes, methods to maintain autonomy, and enhance professionalism. Additionally, the increased role attending physicians play in direct patient care and the consequence of this on their personal and professional lives are areas for close monitoring. To our knowledge, this is the first study assessing attending physicians' experiences teaching internal medicine residents in the era of duty-hour regulations. Continued efforts to explore the impact of duty-hour regulations on the lives of attending physicians and their learners are needed so that we can understand the implications on physician work satisfaction, burnout, and resident preparedness for practice.

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