



***How will
limitations imposed on
residents' work hours
affect medicine?***

by

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In 1989, the New York state legislature enacted New York State Code 405 in response to the 1984 death of a female patient at New York Hospital. A report by the Bell Commission implicated the rigors of resident training as a part of the problem that led to this tragic death and issued recommendations for graduate medical education reform. More specifically, the commission cited overwork, sleep deprivation of house staff officers, and lack of supervision as major issues requiring corrective measures.

Since the state's rules went into effect in 1989, hospitals in New York State have attempted to adhere to them. However, a 2002 audit of the state's teaching hospitals indicated that 63.6 percent were noncompliant. The most common infractions were: (1) having residents work in excess of 24 consecutive hours; and (2) having residents work in excess of 80 hours per week.

Similar requirements were imposed nationally when, after considerable debate and input, the Accreditation Council for Graduate Medical Education (ACGME) on June 12, 2002, issued rules limiting residents' work hours. These changes have altered the fundamental manner in which future U.S. residents will be trained.

The objective of these new standards is to maintain the high quality of clinical and didactic education while simultaneously improving patient safety. Provisions are included for institutional monitoring and oversight.

In addition, the Patient and Physician Safety and Protection Act of 2003 was introduced in Congress by Sen. Jon Corzine (D-NJ) and Rep. John Conyers (D-MI). This legislation became effective July 1, 2003, and called for the development of regulations to address public concerns about the deleterious effects that sleep deprivation could have on patient and house staff officer safety, patient well-being, and resident education. These new regulations dictate a minimum standard that must be achieved by all accredited training programs. A further attempt to enforce the system for monitoring compliance was made as well.

The restrictions imposed on residents' work hours limit their schedule to 80 hours per week, although a department chair may petition to increase this limit by up to 10 percent if a sound educational rationale is offered. Additional man-

dates include at least one night out of seven free time, no more than one night on call every three nights, and a maximum work duration limit within a given shift. These new rules also grant a minimum resting period of 10 hours between patient care shifts. Teaching hospitals and individual specialties are encouraged to develop innovative programs to support and monitor the emotional and physical well-being of residents and to promote an educational environment that leads to safe patient care.

Over time, the ACGME hopes to gather information from the New York State experience to support the thesis that working excessively long hours negatively affects the cognitive performance and function of house staff officers. Since New York State restrictions were instituted in 1989, studies have shown that patient care has neither diminished nor improved. Gradually, through prospective and retrospective studies, training programs in New York are gaining insights into the changes in residents' attitudes about the residency program modifications.

Other fields are also studying the effects of restrictions they have implemented. Studies of airline pilots have demonstrated that fatigue and sleep deprivation can decrease attention span and manual dexterity, and compromise decision making. The Federal Aviation Administration has reviewed these studies and confirmed that fatigue leads to increased anxiety, reduced motivational drive, decreased short-term memory, slower reaction time, work inefficiencies, and greater variability in work performance.

Dramatic alterations in the current design and structure of residency specialty programs must be accomplished to meet the ACGME guidelines. During a recent annual meeting of the Association of Program Directors, the department of surgery at New York-Presbyterian Hospital (Columbia Campus) presented their new system for scheduling surgical residents. Their two-team approach deviates from the norm of every third night call schedule by creating a day and night team of residents that allows for continuous daily patient care but in alternating shifts. The residents at this institution are also responsible for tracking their personal duty hours and entering them into a work-hour database. The responsibility of the senior/chief resident to moni-

tor and limit residents from working excessive hours has dramatically improved compliance. Continued restructuring and reevaluation of the workforce and graduate medical education challenges the future of medical education.

Controversy over implementation

Considerable debate among hospital administrators, medical directors, department chairs, and teaching program directors has arisen over the implementation of these requirements. Those individuals who concur with the new directives and regulations believe that house staff fatigue correlates directly with physician error, depression, anger, and lack of compassion for patients. These advocates for reform see benefits in adjusting on-call schedules, recruiting and educating physician extenders, and scheduling “night float” residents responsible for overseeing patient care on the evening and night shifts.

Other members of the community oppose the new regulations, arguing that more patient transfers between physician caregivers will lead to increased medical errors. The critics of these regulations emphasize that a key goal of house staff training is to engender a sense of accountability and responsibility. They also express concern over the loss of professionalism among resident physicians who regard themselves as “hourly workers.” Will these restrictions inhibit or, even worse, sever the unique bond between patient and physician that has been the foundation of our profession and the public’s perception of us?

The stress and intensity of caring for patients

in teaching hospitals is far greater now than in the past, creating disturbing shifts in the attitudes of residents. House staff work-hour reforms reflect a response to changes in medical care in America, including decreased length of hospital stay, advancements in medical technology, and increased severity of illness. Innovative programs and questionnaires demonstrate that residents’ attitudes can be objectively measured and that residents can accurately perceive and respond to program modifications. Efforts can now be made to develop valid standardized attitudinal scales from such questionnaires to aid in the assessment of the numerous changes in residency programs currently being implemented. Creative solutions are needed to formulate a strategy of medical education and medical care that is based on more than just workforce demands and numerical solutions that only relate to compliance with an 80-hour week. One area that has been severely neglected is the measurement of educational goals and outcomes. How do we achieve more from this group of the “best and brightest?”

Evaluating regulatory changes

Politicians and administrators feel that the new 80-hour workweek limitations are a leap forward into a new era of medical training characterized by enlightenment and foresight, but others disagree. Multiple centers, initially in New York and now nationwide, are attempting to evaluate how these guidelines affect training and patient care through confidential studies of residents and program directors. In one survey, an overwhelming majority of program directors and a clear majority of residents opposed the work-hour restrictions. They said that the guidelines will have a negative impact on resident training.

A survey of residents enrolled in general surgery programs throughout New York State confirmed that most respondents attempt to comply with Code 405 regulations. Although the majority of residents find that these regulations improve their quality of life by decreasing their stress level, a significant number are convinced that the rules negatively affect their surgical training and the quality, intensity, and continuity of patient care. A predicted reduction in educational operative opportunities was considered detrimental. Concern about the transition to a shift-worker mentality was a prevalent theme. Interestingly, negative perceptions of



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the impact of duty-hour restrictions are more prevalent among senior residents and residents at academic institutions than among junior residents at community hospitals. As reported from an in-house survey at New York Presbyterian Hospital, residents and faculty believe schedule changes have a deleterious effect on patient care.

On the other hand, the mean American Board of Surgery in-training exam scores improved significantly for junior residents after the reduction of work hours. This suggests that long work hours that result in fatigue may adversely affect residents' study habits and preparation for cognitive functions. Yet perceptible differences were noted in test scores for senior residents. Barden and others conclude that a reduction in resident work hours has a positive effect on the perception of workload and learning environment. Further evaluation and critique is necessary to judge the long-term effects of these changes on both residents' training and patient care.

Other surveys have evaluated the potential correlation between house staff coverage schedules and the occurrence of preventable events. Petersen and colleagues found an association between potentially preventable adverse events and coverage by physicians from another service. Laine and others found that in-hospital complications and diagnostic test delays were more frequent since New York State enacted work-hour limitations. Another study from a Boston, MA, teaching hospital suggested that a tired intern with detailed information about a patient may be able to provide more appropriate care than a well-rested one who is less familiar with the case. These studies indicate that interspecialty cross-coverage by a physician from another service may hinder continuity of care plans, provide incomplete transmission of information, and cause subsequent errors in judgment by a covering physician who is unfamiliar with the details of a patient's history.

Implementation of regulations

Multiple suggestions have been offered to address the problems caused by work-hour regulations. These include requesting that the Residency Review Committee establish more residency positions, using pre- or postresidency fellows, creating a "night float" coverage schedule, lengthening or shortening the residency program, reduc-

ing electives/research time, altering resident involvement in cases, developing more postresidency specialty fellowships, and petitioning hospitals to hire nurse practitioners and physicians' assistants to cover noneducational duties traditionally performed by residents. Another possibility is limiting residents' work hours by eliminating the expectation that they perform tasks that can be done by other personnel and that have no educational value.

Each option deserves further scrutiny, but certain drawbacks already are apparent. Lengthening residency seems like a simple solution, but it would be difficult to implement given current workforce concerns, financial constraints, and limited available funding. What effect would additional years of training have on the relative attractiveness of individual specialties?

Is a "night float" system the answer? Studies have demonstrated that a "night float" system (in which designated residents cover night call for a specific time period) may be more detrimental to good patient care than the present system in which the same team provides continual care. This implies that a team of physicians, although fatigued, knows a patient and the nuances of his or her care and is, therefore, better suited to upholding continuity of care than a well-rested team that is unfamiliar with the patient. The residents who are part of the "night float" system are frequently pulled from their time on research electives, which is all about education unrelated to the issues of hospital coverage.

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Employing physician extenders is cited as another possible solution. All these choices may be realistic options for a university hospital, but where are the supplemental governmental financial resources to support these alternatives?

Another question we need to consider is what type of registry is necessary for tracking resident education hours and ensuring compliance with the new regulations. Maintenance of this type of device will represent a change in the usual daily routine. Many options involving commercial time-tracking software are now being considered. Compliance remains a significant hurdle, and it is an uphill battle to get everyone to regularly use a tracking system. Residents often record their data on weekly time sheets, and then data entry is done by system administrators. The data recording and reporting feature would be the same, but the input for the residents might be easier than having them clock in and out on a desktop each day.

Conclusion

Unfortunately, the ACGME regulations raise more provocative questions than they answer. Although we need to provide appropriate medical care, we also must minimize the adverse outcomes that can occur in the caregiving process. Surgical training must continue to be about education and patient care, not about following work-hour rules. Every activity performed by a house staff officer has educational value, even those that are primarily service-oriented, because they can add to the physician's knowledge base.

Surgeons in private practice will face many practical concerns regarding the eventual effect of ACGME guidelines on the surgical workforce. The availability of surgeons to care for patients presenting to emergency departments or needing elective consultations is a significant issue in private practice. The majority of surgeons currently practicing in both academic and nonacademic practices are extremely concerned that the new guidelines may adversely affect the expectations that young surgeons have regarding call coverage and continuity of care. Surgeons in communities throughout America feel that they have a moral and ethical responsibility to care for urgent and emergent problems, and this concept has been a very significant component of surgeons' training. The disparity between the 80-hour workweek during resi-

duency and the expectation that hospital staff surgeons may be pressured to provide every third night on call once they enter into practice may produce some significant discontent in young surgeons entering the private workforce. These new ACGME guidelines may produce expectations of structured time off that are incompatible with the demands of private practice. Surgeons in private practice, while acknowledging the shortcomings of the traditional Halsted hierarchy training system, remain wary of the long-term effects of the ACGME guidelines.

A new curriculum for residency training must be formulated to deal with the educational objectives within the context of the 80-hour workweek guidelines. Attending surgeons in academic training centers must not become complacent. It remains their responsibility to continually strive to improve the work environment, to inject enthusiasm and pride into the workplace, and to foster residents' educational experience. If practicing physicians do not take a proactive stand to determine the future demands of our specialties, then the rules will be made by individuals who do not understand the implications of these types of major sweeping changes. □

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MacKenzie Professor and chair of the department of surgery at Oregon Health Science University School of Medicine, Portland, and a recognized expert and innovator in minimally invasive surgery. The *World Journal of Surgery* is published by the International Society of Surgery.

In recognition of his dedication to building a statewide trauma system, **Sidney Miller, MD, FACS**, has been named the Frederick A. White Distinguished Professor of Service at Wright State University, Dayton, OH. Dr. Miller devoted more than two decades to advocating for a trauma system in Ohio to ensure that injured patients are directed to appropriate facilities. After legislation passed in 2000, Gov. Bob Taft (R) appointed Dr. Miller to serve on the Ohio Trauma Committee established by the bill. Dr. Miller is professor of surgery at Wright State University and director of the Regional Adult Burn Center at Miami Valley Hospital.

Carl Patow, MD, MPH, FACS, has received a Bush Foundation Medical Fellowship to conduct a three-year study leading to the redesign of the graduate medical education system in Minnesota. The new model will emphasize patient safety, informatics, communication, health care design, and teamwork. Dr. Patow is executive director of the HealthPartners Institute for Medical Education and associate dean of the University of Minnesota Medical School for Faculty at HealthPartners in Minneapolis. He also is an associate professor of otolaryngology at the University of Minnesota Medical School. The Bush Medical Fellows Program provides grants to physicians who are seeking to improve health care in Minnesota, North Dakota, and South Dakota.

Krishna Sawhney, MD, FACS, was recently named the 2004-2005 president of the

American Medical Association (AMA) Foundation. Dr. Sawhney is chief of surgery for the Downriver region of the Henry Ford Health System and clinical associate professor of surgery at Wayne State University School of Medicine, Detroit, MI. The AMA Foundation supports a wide range of programs intended to improve health care in the U.S., providing scholarships for medical students, grants for research and community-based programs, and educational resources.

Capt. David S. Wade, MD, FACS, recently assumed command of the U.S. Naval Medical Clinic, Patuxent River, in Maryland. Dr. Wade is a Hayward Award-winning graduate of the Naval War College and is associate professor of clinical surgery at the Uniformed Services University of the Health Sciences, Bethesda, MD.

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