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Chapter 5 New Duty Hour Limits: Discussion and Justification

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Introduction

The ACGME Task Force on Quality Care and Professionalism established 3 principles of enduring value that guided the Task Force in its work. The standards thus seek to ensure (1) the safety of patients in our teaching hospitals today; (2) the safety of patients who will be under the care of today's residents in their future independent practice of medicine; and (3) the establishment of a humanistic learning environment where residents learn and demonstrate effacement of self-interest in favor of the needs of their patients. This chapter provides a rationale for each individual standard. At the same time, the duty hour requirements were developed as a comprehensive package that emphasizes the importance of supervision, workload and work compression, professionalism and personal responsibility, transitions in patient care, and alertness management in the ability to achieve these 3 objectives. The goal was to create standards that would promote resident education, while protecting patient and resident safety, and the Task Force considered both the IOM recommendations[1] and the 3 comprehensive reviews of the literature commissioned by the ACGME.[2–4]

Maximum Hours of Work Per Week

> Duty hours must be limited to 80 hours per week, averaged over a 4-week period, inclusive of all in-house call activities and all moonlighting.

In 2003, when the ACGME common duty hour requirements for all accredited programs were implemented, many educators were concerned about a negative effect of a limit on weekly duty hours. In the 7 years that the GME community has functioned under the 2003 common standards, studies have shown that residents' clinical exposure,[5–16] academic achievement,[17] and medical knowledge[12,18–21] have remained constant or improved slightly. In addition, residents identified 76 to 82 hours as ideal for experiential learning, as shown in FIGURE 1, which presents data on hours worked per week compared to residents' perception of ideal duty hours for learning, based on learning styles.[22]

Some patient safety advocates predicted sweeping improvements in the quality of patient care after the institution of the 2003 standards, while others foresaw a significant worsening of the quality of care. Neither materialized, and quality of care appears to have been unaffected or only very slightly improved by the 2003 limits.[19,20,23–29] A survey of residents in 1999 showed that residents averaging more than 80 hours per week were more likely to be involved in a personal accident or injury, or in a serious conflict with other staff members.[30] An anticipated effect of

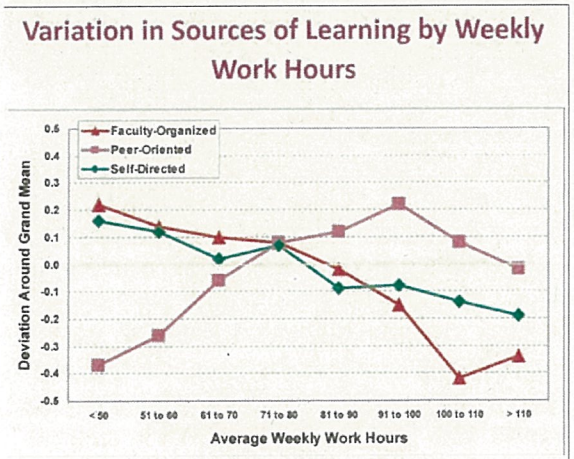


FIGURE 1 Hours Per Week Versus Perception of Residents of Ideal Duty Time for Learning, Based on Learning Styles

the 2003 standards was improvement in resident mood and quality of life, which has been borne out by several studies across multiple specialties.[31–37] Finally, the Task Force entertained comment from a wide range of individual organizations in the profession and found broad-based support for maintaining the 80-hour weekly limit.

Duty Hour Exceptions

> A Review Committee may grant exceptions for up to 10%, or a maximum of 88 hours, to individual programs when based on a sound educational rationale.
>
> In preparing a request for an exception, the program director must follow the duty hour exception policy from the "ACGME Manual on Policies and Procedures."
>
> Before submitting the request to the Review Committee, the program director must obtain approval of the institution's Graduate Medical Education Committee and designated institutional official.

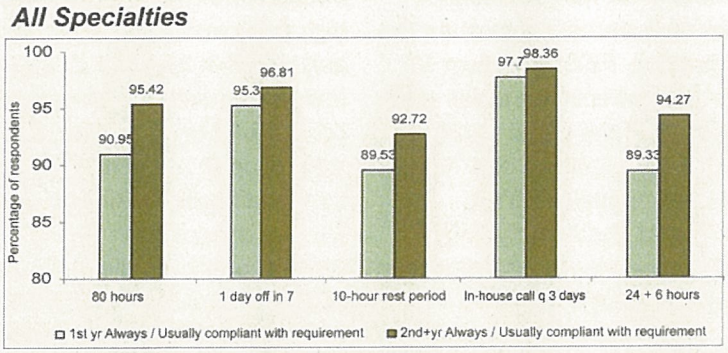
The Task Force retained this requirement unchanged from the 2003 standards. A major theme of the June 2009 ACGME Duty Hours Congress, was "one size does not fit all." This emphasizes that some academic and patient care settings may require an approved variance in weekly hours. Use of the exception will continue to require strict oversight by the program, the sponsoring institution, the Residency Review Committee, and the ACGME Monitoring Committee. Neurologic surgery is the only discipline that currently has a significant number of programs with an approved exception. All were reviewed and approved by the RRC, using criteria that have been approved by the ACGME. Support for maintaining this exception comes from research showing that in surgical specialties with very long operative procedures, duty hour limits may have a negative effect on residents' attainment of competence for independent practice.[6]

Moonlighting

> Moonlighting must not interfere with the ability of the resident to achieve the goals and objectives of the educational program. Time spent by residents in internal and external moonlighting (as defined in the "ACGME Glossary of Terms") must be counted toward the 80-hour maximum weekly hour limit. Postgraduate year–1 (PGY-1) residents are not permitted to moonlight.

The Task Force reviewed the benefits and drawbacks of resident moonlighting, including the Institute of Medicine position and the legal and logistic dimensions of inclusion of external moonlighting in the maximum hours-per-week calculation. It concluded that external moonlighting had a similar impact on overall resident fatigue as hours spent in the training program, and that for this reason, all moonlighting hours must be included in the calculation of weekly duty hours. PGY-1 residents are not permitted to moonlight because the necessary degree of supervision cannot be assured outside of their formal education program. In most states, first-year residents cannot moonlight because most state medical boards require at least 1 year of graduate medical training before residents are able to apply for an unrestricted license that would allow them to practice independently.[38]

One reason for including moonlighting under the duty hour limits is concern about the cumulative effect of an absence of supervision and the potential for fatigue. The lack of supervision may place patients seen by residents moonlighting at greater risk than patients seen by residents working the same number of hours under supervision. Also, because of the lack of supervision, moonlighting hours are less valuable for the acquisition of competence for independent practice than hours in the formal education program.



2007 ACGME Resident Survey Data.

FIGURE 2 | DUTY HOURS FOR FIRST-YEAR RESIDENTS AND ALL OTHER YEARS

MandatoryTime Free Of Duty

> Residents must be scheduled for a minimum of 1 day free of duty every week (when averaged over 4 weeks). At-home call cannot be assigned on these free days.

The Task Force left unchanged the requirement for 1 day in 7 free from duty to balance continuity of care with fostering resident recovery from fatigue and ensuring quality of life. The flexibility given by the option to average days off over 4 weeks allows residents a reasonable opportunity to participate in activities outside the hospital and ensures time for recuperation, while promoting continuity of care. Finally, an inpatient care team of any size can provide daily continuity of care because at least 1 member of the team will be present on every day.

Maximum Duty Period Length

> Duty periods of PGY-1 residents must not exceed 16 hours.

This group of requirements addresses the requests for some flexibility in the standards requested by the community. It takes into account the differences between PGY-1 residents and their more senior colleagues, and the consensus that very junior learners would benefit from a more supported and regulated learning environment. PGY-1 residents may not have sufficient experience and skills to provide high-quality, safe patient care, while research indicates that under the current standards, this group works the longest hours of any cohort of residents,[39] as shown in FIGURE 2. All differences between first-year and other residents, with exception of home call and 1 day off in 7, are significant ($P < .0001$). In addition, PGY-1 residents make more errors when working longer consecutive hours.[40,41] Entrusting care to residents with inadequate experience is neither good education nor quality, safe patient care. PGY-1 residents must earn the right to remain with patients for 24 continuous hours, through demonstration of the competencies required, which are best learned under the direct supervision of upper-level residents, fellows, and faculty. The ideal is a first year of education with more protected hours, with hours and responsibilities gradually increasing over the years of residency, and the final year of residency beginning to emulate practice, while still under supervision.

Although limiting first-year residents to 16 continuous hours represents a significant shift in the scheduling patterns for PGY-1 residents, it should not diminish their overall contact time with patients. PGY-1 residents may still be scheduled for up to 80 hours per week, averaged over 4 weeks. Continuity of care

provided by PGY-1 residents may actually be enhanced by the new requirements because the typical amount of time the PGY-1 resident is "away" from his or her patients for a day off is decreased as compared to the usual practice of taking 18 hours off on the postcall day. Finally, these standards do not preclude PGY-1 residents from working at night and gaining experience that will prepare them for practice in the nighttime hospital setting.

> Duty periods of PGY-2 residents and more senior residents may be scheduled to a maximum of 24 hours of continuous duty in the hospital. Programs must encourage residents to use alertness management strategies in the context of patient care responsibilities. Strategic napping, especially after 16 hours of continuous duty and between the hours of 10:00 PM and 8:00 AM, is strongly suggested.

Studies looking for an increased risk of errors among more advanced residents have not demonstrated significant differences in patient outcomes,[42,43] nor have they demonstrated any differences in patient outcomes based on the "sleep status" of the residents providing care.[44–46] The Task Force asserted that observing the progression of illness and treatment in patients is critical in the development of clinical judgment. Although it is true that residents can learn about the preoperative, operative, and postoperative care by caring for 3 different patients, the experience is more effective when it involves the continuous care of a single person. In addition to providing for continuity of care, prolonged periods of duty more adequately replicate the actual practice of clinical medicine that residents will encounter after completing training and overcome senior residents' view of the duty hour restrictions as barriers to their education.[47]

The Task Force gave serious consideration to the recommendation by the IOM Committee on Resident Duty Hours to provide a 5-hour nap period for overnight call.[1] There is scientific evidence from other occupations with need for high performance that naps can restore alertness and cognitive function. However, sleep schedules tested and used in these settings generally consist of a brief "power nap,"[48–50] and longer naps of up to 1 hour may be associated with sleep inertia (difficulty waking up after sleep or a nap).[51] Studies of napping in teaching settings found that time for protected sleep enhanced sleep efficiency, but it did not affect measures of alertness.[52] One study found that interns who were given coverage for protected naps did not take the rest periods, owing to their desire to care for their patients and concerns about discontinuity of care.[53]

> It is essential for patient safety and resident education that effective transitions in care occur. Residents may be allowed to remain on-site to accomplish these tasks; however, this period of time must be no longer than an additional 4 hours.
>
> Residents must not be assigned additional clinical responsibilities after 24 hours of continuous in-house duty.

The Task Force learned that many programs had not used the 2003 "24 + 6" hours, as was initially intended, and scheduled residents for 30 hours of continuous duty, sometimes caring for patients they had met previously owing to the broad definition of "new patient." To address this issue, the new standards define the 4 hours after the 24 hours of consecutive duty as time solely for transitions in care.

> In unusual circumstances, residents, on their own initiative, may remain beyond their scheduled period of duty to continue to provide care to a single patient. Justifications for such extensions of duty are limited to reasons of required continuity for a severely ill or unstable patient, academic importance of the events transpiring, or humanistic attention to the needs of a patient or family.

Under those circumstances, the resident must:

- appropriately hand over the care of all other patients to the team responsible for their continuing care; and
- document the reasons for remaining to care for the patient in question and submit that documentation in every circumstance to the program director.

The program director must review each submission of additional service and track both individual resident and program-wide episodes of additional duty.

One of the foremost concerns expressed in residents' testimony to the Task Force was the ethical dilemma the regulations caused them, because of the decision on whether to "break the rules" to do the right thing and remain at the bedside of a dying patient or to leave because of the time on the clock, while believing that their choice may be morally and professionally wrong. It was crucial that the Task Force address this concern by adding flexibility to the requirements, while promoting education and safety and maintaining the integrity of the standards. The flexibility offered by the new requirements allows residents to remain in the hospital caring for a single patient, satisfying the spirit of the requirements and the tenets of professionalism. Program directors are expected to monitor such occurrences, assuring that abuse of the privilege does not occur. This also offers a unique opportunity for reflection by the resident and the program director when such an extension occurs.

Minimum Time Off Between Scheduled Duty Periods

PGY-1 residents should have 10 hours, and must have 8 hours, free of duty between scheduled duty periods.

Intermediate-level residents (as defined by the Review Committee) should have 10 hours free of duty and must have 8 hours between scheduled duty periods. They must have at least 14 hours free of duty after 24 hours of in-house duty.

Residents in the final years of education (as defined by the Review Committee) must be prepared to enter the unsupervised practice of medicine and care for patients over irregular or extended periods. This must occur within the context of the 80-hour maximum duty period length and 1-day-off-in-7 standards. While it is desirable that residents in their final years of education have 8 hours free of duty between scheduled duty periods, there may be circumstances (as defined by the Review Committee) when these residents must stay on duty to care for their patients or return to the hospital with fewer than 8 hours free of duty.

Circumstances of return-to-hospital activities with fewer than 8 hours away from the hospital by residents in their final years of education must be monitored by the program director.

The aim of this requirement is to provide residents adequate time for recovery between shifts. According to the American Time Use Survey 2003–2005, adults 25 to 34 years of age slept an average of 8.2 hours each night,[54] and nearly two-thirds of employed respondents who participated in the National Health Interview Survey in 2004–2007 reported sleeping an average of 7 or 8 hours each night.[55] In consideration of this, the Task Force elected to set the minimum requirement for time off between shifts at 10 hours, unless programs were able to provide an acceptable educational justification for a briefer rest period of 8 hours between shifts.[56]

The increased flexibility for residents in the final years of training is intended to prepare them for the 24-hour world they will enter after completing training. The Task Force received extensive testimony from specialty societies and from senior residents and fellows that this

degree of flexibility was essential in the final phases of preparation for independent clinical practice in many fields, most notably those where clinical responsibilities include surgical or invasive procedures. This requirement also decreases the likelihood of an ethical dilemma for senior level residents in the provision of care to their patients.

Maximum Frequency of In-House Night Float

> Residents must not be scheduled for more than 6 consecutive nights of night float. (The maximum number of consecutive weeks of night float, and maximum number of months of night float per year, may be further specified by the Review Committee.)

Sleep physiology studies have demonstrated that night shifts are more taxing than day shifts.[57] With this requirement, The Task Force ensured that any resident on night float would receive 1 day in 7 free from program responsibilities, and that the requirement for 1 day off in 7 must not be averaged during night float rotations. Although there is evidence that the deleterious effects of working night shifts or night float are cumulative,[58–60] no studies have identified a consistent number of days at which the effects warrant added limitation on the number of consecutive nights.

The Task Force recognized that the intensity and quality of the learning experience of night float varies both between specialties and between programs. Each Review Committee therefore was directed to consider further specificity regarding night float, including placing limits upon the maximum number of consecutive weeks of night float and maximum number of months of night float per year.

Maximum In-House On-Call Frequency

> PGY-2 and more senior residents must be scheduled for in-house call no more frequently than every third night (when averaged over a 4-week period).

The Task Force considered the scientific literature and testimony by the medical community in deliberating this requirement. Studies have demonstrated that residents continue to experience effects of call beyond the first recovery night,[57] and that PGY-1 residents taking every-other-night call experienced more fatigue and stress than their counterparts taking call less frequently.[61] For these reasons, the Task Force initially recommended in-house call to be no more frequent than every third night, with no averaging permitted. During the period of public comment, however, resident groups and individuals pleaded for the flexibility averaging provides, with many comments coming from program directors and residents representing programs with a small resident complement, where averaging of call frequency is essential in providing residents with a weekend free from duty each month. The Task Force noted that PGY-1 residents are excluded from overnight call, and studies[62] have not found any difference in the actual number of errors per call when residents took every-other-night call, as compared to less frequently. The members also noted that the current standard is infrequently cited or identified as problematic in the ACGME Resident Survey. After careful consideration of all the factors involved, the Task Force affirmed the current standard, deciding that the trade-off of occasional every-other-night call (for residents beyond the PGY-1 year) for increased flexibility of scheduling, to allow residents to be scheduled for 1 weekend entirely free of duty per month, was acceptable. The discussion of this standard emphasized that frequent or routine scheduling of every-other-night call is unacceptable and should be cited by the Review Committees, even if the frequency of call is every third night or less when averaged over 4 weeks.

At-Home Call

> Time spent in the hospital by residents on at-home call must count toward the 80-hour maximum weekly hour limit. The frequency of at-home call is not subject

to the every-third-night limitation, but must satisfy the requirement for 1 day in 7 free of duty, when averaged over 4 weeks.

At-home call must not be so frequent or taxing to preclude rest or reasonable personal time for each resident.

Residents are permitted to return to the hospital while on at-home call to care for new or established patients. Each episode of this type of care, while it must be included in the 80-hour weekly maximum, will not initiate a new "off-duty period."

This requirement relates to the time residents spend at home but are available to provide care for patients should the need arise. The sleep physiology literature has affirmed that the most restorative sleep is fully uninterrupted. At the same time, medical practice in the United States requires physicians to be available to their patients and respond to their needs 24 hours a day.

Use of at-home call varies among specialties, as does the intensity of such coverage. At-home call provides the more senior resident or fellow with the opportunity to experience that actual practice with some degree of supervision. In many circumstances, the resident may not receive a call. In others, at-home call may result in remote supervision of more junior residents, or telephone counseling of patients or families. Finally, there may be instances in which at-home call frequently requires the resident to return to the hospital at night. These hours of return to the hospital continue to be included in the maximum weekly hour limit.

The Task Force attempted to further limit the impact at-home call would have on resident fatigue by including the time spent in the hospital while on at-home call in the 80-hour weekly maximum and by requiring that the resident have 1 day in 7 free of all duties including at-home call. In some specialties, the nuances of at-home call may require more specific oversight or guidance, and in those cases, individual Review Committees may make standards more stringent.

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