The 2003 Common Duty Hour Limits: Process, Outcome, and Lessons Learned

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History

Long hours are a component of medical residency and a cultural symbol of a profession that requires hard work and dedication. The origins of residents' long work hours, along with the term *residency*, are found in a traditional model of clinical education as a generally brief period of intense training, during which responsibility for patients rested with the residents 24 hours a day, 7 days a week. By the early 21st century, this has given way to a multiyear experience that combines participation in patient care with new learning modalities in a vastly changed delivery system.

In the summer of 2002, the Accreditation Council for Graduate Medical Education (ACGME) granted preliminary approval to common duty hour limits for all specialties that became effective in July 2003. The establishment of common duty hour standards was prompted by 3 factors: a change in the delivery system, with increased patient acuity and demands on residents; a body of scientific knowledge showing negative effects of sleep loss on performance; and public attention on the number of hours worked by residents. In late 2001 this culminated in the introduction of legislation to limit resident hours and a petition to regulate duty hours as a workplace health hazard.[1,2] In response, the ACGME charged a work group with the development of a blueprint for common duty hour limits. Setting duty hour standards across specialties was a watershed event for the ACGME, yet it built on 20 years of prior effort that had produced specialty-specific limits. The nuances of this approach made it difficult to explain its benefits to the public.

The dialogue with the academic community and the public highlighted a gulf between these 2 stakeholder groups. From this emerged 2 concepts that served as guiding principles for the work group's deliberations. The first was reaffirmation of the need for standards sensitive to the education and patient care needs of the 26 ACGME-accredited specialties; the second was a need for the standards to reflect the science on sleep loss and performance. This led to a plan to develop common standards that would preserve an educational accreditation model that was flexible and sensitive to specialties, programs, and residents. At the same time, the standards should be easily explained to the public and viewed as comparable to the perceived safety and effectiveness of a legislative or regulatory approach.

Standard Setting

The discussion about optimal standards highlighted tensions between the benefits of shorter hours, which render residents more alert and able to learn, and the need for time and exposure to patients for the learning that needs to occur. There was (and still is) little scientific guidance for the number of weekly and continuous hours at which residents safely and effectively learn and participate in patient care. The new standards would have to balance the strengths of a common approach as perceived by legislators and the public, and its limitations, given differences among specialties in patient care and educational processes. The work group chose 80 hours a week as the upper limit to safeguard against chronic sleep loss, and a 24-hour limit on continuous duty to mitigate against acute sleep deprivation.[3] Both standards were selected because they allowed residents to participate meaningfully in care and to gain an understanding of the dedication expected from physicians, while allowing them to be reasonably rested and alert.[4] In a standards setting approach it was not feasible to take into account individual differences in the response to sleep loss.[1,2]

The added period of up to 6 hours after overnight call preserved flexibility in scheduling didactic activities,

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minimized exclusion of postcall residents from educational programming, and avoided residents going home at the time of their circadian nadir.[2] The other limits were included as added protection against chronic sleep deprivation. Residents in selected specialties such as emergency medicine and anesthesiology were able to continue to use more restrictive requirements to accommodate unique patient care, safety, and education considerations specific to those specialties.

Implementation

At the time of the implementation of the new standards in 2003, the ACGME resolved that no revisions to the standards would occur for 5 years to allow programs to adapt education and patient care systems and give the accrediting organization and the education community time to collect data on effectiveness. The ACGME would solicit feedback on elements that appeared to reduce educational quality or had other unintended effects, with the goal of identifying areas for refinement. Future changes would be evidence-based and would incorporate input from the medical education community and the public.

The charge to the work group had specified a comprehensive program to address resident hours based on 3 essentials: standards that promote safe care and resident learning, consistent adherence by programs and sponsoring institutions, and education of residents and faculty about sleep loss and its effects. Most importantly, the work group recognized that duty hours, attributes of the learning environment, and curricula and education models were inexorably linked. Implementation of the new standards would have to be accompanied by changes in the delivery and educational systems.

Experience

Ideally, information about the effects of limits would be gathered from prospective studies showing improvement or deterioration in the clinical performance of physicians after residency and in the settings where residents participate in care. This information does not exist. Studies to date have consisted of opinion surveys, single-site studies without the power to demonstrate effect, and analyses of secondary data that show associations but cannot establish cause and effect. Speculation on the effects of the limits have included both overstatements of their negative effect on learning outcomes, often based on faculty perceptions of ''inadequate clinical experience'' that are rooted in comparisons with the faculty's own experience during residency, and disappointment arising from unrealistic expectations on the part of members of the public and the media who thought the limits would produce an immediate, profound improvement in patient care quality and safety.

Effect on the Residents

In many specialties, implementation of the common limits has reduced residents' fatigue, improved well-being, and contributed to a balance between professional and personal lives. Yet a pervasive concern, even prior to the implementation of the ACGME common duty hour standards, was that the limits would contribute to a loss in professionalism, with residents comfortable working in an hourly setting but less familiar with the real-world obligations that physicians have to their patients.[5] Most formal definitions of professionalism emphasize altruism and self-effacement, yet do not equate these with an unlimited number of hours devoted to patient care.[6,7]

A predicament of the current cohort of residents is that they have to deal with the unstated, perhaps unconscious, expectations of faculty, program leaders, and administrators. If residents leave work too early, they are seen as lacking professionalism and the dedication exhibited by prior cohorts. If they linger, they are viewed as inefficient and a threat to compliance with the standards. Interviews and commentaries suggest that residents' decisions to remain at work or go home are influenced by a number of factors, but particularly the extent to which residents see the given activity as educationally valuable or essential to a good patient outcome (eg, transitioning a patient to the intensive care unit vs paper work to arrange for home delivery of oxygen).[8] When the work group set the standards, it viewed them as the absolute minimum, with the expectation that programs would offer a ''cushion'' to ensure full compliance and allow residents to remain at work when patient care or learning demands made this salient. For the same reason, the ACGME added a formal exception that allowed individual programs to extend weekly hours by 10% if there was a valid educational rationale.

Effect on Clinical Skills

A few studies and a larger number of commentaries on the effect of the work limits on the acquisition of clinical skills suggest that findings may vary by specialty. One reason for this is that the discussion about common standards obscures the fact that a sizable number of specialties were not affected because their residents almost always worked within limits established in 2003, while only selected rotations in other specialties were affected by the new standards. In contrast, the surgical community continues to express concern that an unintended consequence of the limits could be reduced operative skills for cohorts of surgeons trained under the limits.

Effect on the Quality and Safety of Care

Duty hour limits seek to reduce fatigue as a negative performance-shaping factor and contributing cause to health care errors. Residents function in a system in which the financial and human costs of errors are profound, and their role as learners, short tenure, and lack of familiarity with settings may make the more vulnerable to the effects of sleep loss. Systems approaches to reduce sources of errors are emerging as fertile interventions to enhance safety. At

the same time, studies of factors that shape human performance in health care are lagging behind those in other industries.[9]

Studies of the effect of the common duty hour limits at the national level, despite large sample sizes, found little change in patient mortality during the 2 years following implementation.[10–12] Duty hour limits may be one factor in health care errors, but unquestionably there are others. Research on closed malpractice claims implicated lack of supervision, teamwork breakdowns, and handoff errors as prevalent problem in teaching settings.[13] The increased need for transfers of care, which would be necessitated by shorter shifts under the recent recommendations by the Institute of Medicine Committee,[14] prompts concern that loss of continuity of care and frequent and time-constrained handoffs may frustrate the aims of the duty hour limits.

What Did Not Occur

In the more than 5 years since the implementation of the common duty hour standards, programs and institutions have made changes in education, patient care, and the mechanisms for duty hour monitoring and oversight. However, much of the large-scale change and innovation to adapt to the duty hour limits did not materialize. As a consequence, the current debate about the next set of limits echoes many of the concerns voiced 6 years ago about giving up resident labor and the threat of diminished clinical competence and professionalism of cohorts educated under the limits.

Large-Scale Institutional Change

A small number of programs re-engineered their patient care and education systems to adapt them to the reduction in resident hours and clinical contributions. However, in many programs this was achieved through the use of night float and other schedule changes to bring hours under the common limits, with some substitution of residents' clinical work with midlevel practitioners or hospitalists and an increase in the clinical load of faculty.

There is evidence that residents work harder in their shortened hours, and some are more concerned about the intensity of the work than the number of hours worked. This is due to financial pressures that force many hospitals to preserve residents' clinical contributions.[11] This can upset the balance between service and education, with fewer elective rotations, less formal didactic activities, and less time for bedside learning and learning in the operating room, where opportunity to observe and assist in procedures before performing them under supervision is becoming the exception rather than the norm. There are fewer senior residents available to teach and mentor junior residents and students, and to benefit themselves from participation in this time-honored process of education in the profession.

Innovative Approaches to Learning and Clinical Care

In the more than 5 years since implementation of the common standards, some new approaches have emerged that focus on decoupling educational objectives and patient-service demands. Initiatives include standardized patients, objective skills-based clinical examinations, and skills-based and high-fidelity simulation with debriefing and feedback. These efforts have gained in importance as the community looks for optimal approaches to prepare residents for practice in the reduced number of hours. Moving from resident assignments using time-based concepts to competency- and mastery-focused approaches have been tried in a very small number of places.[12] Simulation, accepted for its benefits to patient safety and the acquisition of competence, is limited by the aspects of clinical skills that lend themselves to the modality, and by the financial and opportunity costs of its broad application to resident education. Efforts to advance new models of care and learning, which are needed under reduced hours, are largely in their infancy, and some have proven challenging to implement. Much of the innovation anticipated under the limits has not yet materialized.

Conclusion

Resident education and patient safety are influenced by multiple factors. No single intervention, including imposition of very restrictive limits on resident hours, can ensure safe patient care. There are dangers in implementing added changes without evidence that they will contribute to safer care and better education as well as offer good value for what will likely be their sizable added cost in a health care system with many competing demands for constrained resources. At the same time, the educational rationale for an 80-hour work week—twice the number worked by many Americans—is not easily explained to the public and the media.

Future efforts to refine and build support for duty hour standards need to continue to emphasize a broad approach to education and safe care that includes (1) supervision and "graduated levels of responsibility" to allow residents to achieve competence for increased clinical involvement throughout their education, culminating in independent practice; (2) regular evaluation of resident progress, including assessment of their developing skills through the Milestones Project;[15] and (3) education of residents about sleep loss, the effects of fatigue, and the need to manage alertness for education and patient care activities as part of their obligations as medical professionals.

In exploring new approaches to refine the duty hour standards, the ACGME and Residency Review Committees are in an excellent position to identify and evaluate innovative models, but such models do not yet exist. The dearth of innovative approaches suggests that the ACGME may have a role in encouraging pilot studies and developing new models of care and education for further testing. In this

way, the ACGME can help meet the challenge of maintaining and enhancing resident well-being and learning, and at the same time, maintaining and enhancing the quality and safety of patient care.

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