CHAPTER 2 A BRIEF HISTORY OF DUTY HOURS AND RESIDENT EDUCATION

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Accreditation of Resident Education

Historically, review of residency programs has been provided by the American Medical Association (AMA), which provided listings of ''approved'' programs as early as 1910. The Residency Review Committees (RRCs) that accredit resident education in the individual specialties emerged in the 1950s, with surgery and internal medicine first forming committees in 1950.[1] Before 1974, the RRCs performed their peer review and accreditation function independently, with support and staffing from the AMA.[1] In 1972, the Liaison Committee for Graduate Medical Education (LCGME) was inaugurated and began to provide a convening function for the RRCs.[1] The ACGME was organized in 1981 by transitioning the LCGME to an unincorporated entity with 5 member organizations (the AMA, the American Board of Medical Specialties, the American Hospital Association, the Association of American Medical Colleges [AAMC], and the Council of Medical Specialty Societies).[1]

Like the ACGME in later years, the LCGME used documented accreditation standards comprising general requirements that applied to all accredited programs and specialty-specific program requirements.[2] The early requirements did not explicitly reference resident hours; instead, they mentioned resident supervision and the learning environment, requiring a ''well organized and well qualified teaching staff'' and ''an educational committee of the staff which is responsible for the organization, supervision, and direction of the residency program.''[3] The requirements further stated that ''[t]he educational effectiveness of a residency depends largely on the quality of its supervision and organization,'' and that ''[t]he responsibilities for these important functions lie with the department heads and a representative committee of the medical staff.''[3]

As an educational accreditor, the ACGME monitors compliance and cites programs that do not meet its standards. It promotes resident learning and patient safety by requiring an educational curriculum; specifying the patient care experiences important to competence for independent practice; and ensuring that programs track the progress of residents through regular evaluations, including assessment of their knowledge, clinical and procedural skills, and competencies such as communication and interpersonal skills. Programs that do not comply with these standards are cited, and may be placed on probation, and residents and applicants must be notified that this has occurred. As this negatively impacts the ability to attract good residents, it is a powerful incentive for compliance. The accreditation of programs that fail to improve ultimately is withdrawn, after a system of due process. The ACGME also periodically (at minimum every 5 years)[4] updates its accreditation standards and enforcement processes to accommodate changes in the practice of the medicine and in educational theory and methodology, and other factors affecting graduate medical education, such as enhanced public calls for accountability.

The US Congress, the Department of Health and Human Services, and the Centers for Medicare and Medicaid recognize that the ACGME fosters high-quality education and safe and effective patient care by requiring accreditation of programs that receive graduate medical education payments under the Medicare program.[5] In addition, state medical licensing authorities expect residents to complete 1 or more years in an ACGME-accredited residency program as a condition of physician licensure.[6]

Duty Hours: The Early Years

Long hours are a component of medical residency and preparation for an occupation that

requires hard work and dedication. Their origin, along with the term ''resident,'' are found in traditional models of physician education as brief periods of intense training, during which responsibility for patients rested with residents 24 hours a day, 7 days a week. By the latter part of the 21st century, this had given way to a multiyear experience that combined exposure to patients with new learning modalities in a vastly changed delivery system.

The formal study of the effect of residents' long hours on performance began in 1971, when a study showed postcall residents made more errors in reading a standardized electrocardiogram than their rested colleagues.[7] Earlier research using military personnel and college-age volunteers had shown that sleep deprivation affected performance across a range of dimensions including vigilance, cognition, and executive function.[8,9]

As early as 1980–1981, the specialty-specific Program Requirements for Internal Medicine and Pediatrics included statements on a balance of education and service demands, and the need for time for educational and personal pursuits.[10] The pediatrics standard stated that ''[h]ospital duties should not be so pressing or consuming that they preclude ample time for other important phases of the training program or for personal needs.''[11] Several specialties adopted similar language throughout the 1980s.

Regulation of Resident Hours in New York State

In 1984, the death of Libby Zion in a New York teaching hospital initiated a debate about resident hours and supervision.[12] Zion, a college freshman, died within 8 hours of her emergency admission to a major New York teaching hospital where she had been cared for by first-year and second-year residents. Initially, her death was ascribed to an infection, but today most agree she died from serotonin syndrome, prompted by the closely timed administration of 2 psychiatric drugs, meperidine and phenelzine.[13,14] Her father, an influential newspaper columnist, began a campaign that targeted the long resident hours and poor supervision he felt had contributed to his daughter's death.

A 1986 grand jury investigation found the death was related to 36-hour duty periods worked by the residents involved in her care and to inadequate supervision by the attending physicians.[12,15] Testimony provided to the grand jury showed awareness of the complexity of duty hour regulation: ''It would be unrealistic to expect residents to absorb the realities of caring for their equally fragile and needy patients if their working hours were fixed according to an arbitrary schedule, however well-intended'' (F. Davidoff, MD, testimony to the 1986 Ad Hoc Committee charged with the inquiry into Libby Zion's death). The grand jury called for reforming resident education, including regulation of resident hours and supervision, and the New York Health Commissioner appointed an Advisory Committee, which became known as the Bell Commission.[15] The Committee's findings were released in 1987 and included a recommendation for an 80-hour limit on weekly resident hours, a maximum of 24 consecutive hours on duty, and a requirement for the presence of senior physicians in the hospital.[16,17]

Despite controversy and resistance by the teaching hospital community, the recommendations were incorporated into the New York State Health Code in 1989, making New York the first state to regulate resident hours.[17] The regulations, incorporated into the state hospital code at section 405.4, which governed service delivery by the organized medical staff, encompassed the duty hour limits and enhancements to supervision recommended by the Bell Commission.[18] Adoption was gradual and 10 years after the regulations had been issued, site visits to assess compliance with the regulations revealed widespread noncompliance.[18] In 2002, site surveys by a contractor hired by New York State to monitor compliance showed that more than 60% of the 118 teaching hospital surveyed were in violation of the limits.[19] Today compliance is improved in part due to vigilant monitoring by the State and the ACGME.

New York remains the only state that has adopted regulatory standards for resident hours.

Other states (California, Connecticut, Florida, Iowa, Massachusetts, and Pennsylvania) considered and rejected adopting similar regulation. The Commonwealth of Puerto Rico instituted local regulation of duty hour limits in 2003, though it does not provide specific enforcement mechanisms.[20] Adoption of the New York duty hour regulation has been costly. A 1989 survey estimated that the regulation produced additional staffing costs for New York hospitals of more than $358 million.[21] An added concern is that regulation did not appear to meet the primary aim of making patient care safer or better.[22,23]

The ACGME 1987 Task Force on Resident Hours and Supervision

In response to interest in duty hour limits prompted by the death of Libby Zion, in June 1987 the ACGME authorized the formation of a Task Force on Resident Hours and Supervision and charged it with studying 3 areas: the adequacy of resident supervision; resident schedules and number of hours of work; and the changing educational sites for resident education. The Task Force developed preliminary recommendations for standards for review at the February 1988 ACGME meeting.[23] The group also affirmed the following: (1) education is the primary objective of residency; (2) a relationship exists between the quality of training and the quality of medical care provided by physicians after graduation; (3) residents play a role in providing continuity of care; (4) attending physicians have ultimate responsibility for care; and (5) education and patient care benefit when resident schedules maximize educational experiences, while allowing for rest to avoid stress, fatigue, and depression. In addition to addressing resident hours, new standards defined the clinical support services, including pathology, radiology, results retrieval, and messenger and transport services that would need to be available to residents at all times, including evenings and nights.[24] Specific recommendations included (1) 1 day in 7 away from the hospital; (2) on-call duty in the hospital no more frequently than every third night; (3) adequate backup if sudden and unexpected patient care needs create resident fatigue sufficient to jeopardize patient care; and (4) institutional policies to ensure that all residents are adequately supervised and reliable methods of communication between residents and supervising physicians.[24] The Task Force also recommended that each RRC develop standards regarding the frequency of duty and on-call assignments for residents.[24]

The AAMC 1988 Position Statement

In March 1988, the AAMC released its position on resident hours and supervision.[25] In keeping with its role as an academic member organization, the AAMC presented its position as a set of guidelines for hospitals to consider and use in a manner appropriate to their setting, role, and resources.[25] The guidelines asked each hospital to develop operational mechanisms to ensure that resident education enhanced the quality of care provided to patients.[25]

The AAMC guidelines specified that hours should not exceed 80 per week, averaged over 4 weeks, and recommended curtailing moonlighting by limiting the total hours of residency and moonlighting to 80 hours per week.[25] It called for changes in resident hours to be phased in gradually to avoid compromising patient care or the educational goals of residency programs, and it recommended that all payers reimburse teaching hospitals for the incremental costs incurred as a result of these changes.[25]

The 1992 Common ACGME Standards

In February 1988, the ACGME adopted the Task Force's report and assigned an ad hoc committee to incorporate them into the general requirements. The ACGME continued to debate general duty hour standards for the next 2 years and the revised general requirements were accepted at the ACGME's June 1990 meeting and forwarded to the ACGME's 5 member organizations.[26] The 1990 version specified that (1) at least one 24-hour day in 7 should be free of patient care responsibilities and that (2) on-

call in the hospital should be no more than every third night, averaged over a 4-week period.

As the ACGME debated common standards, several RRCs established specialty-specific standards that set limits on weekly duty hours. The RRC for Internal Medicine (RRC-IM) instituted an 80-hour weekly limit, averaged over 4 weeks, to become effective in July 1989.[27] In 1990, 3 additional RRCs set limits on weekly hours. The RRCs for Dermatology and Ophthalmology established a weekly limit of 80 hours, averaged over 4 weeks,[28,29] and the RRC for Emergency Medicine established a limit of 72 hours, of which only 60 could be devoted to clinical activity.[30] In the early 1990s, 2 additional specialties set limits of 80 weekly hours, averaged over 4 weeks. For allergy and immunology, the standard became effective in July 1992, and for preventive medicine, in July 1993.[31,32] By 1993, 6 specialties, including internal medicine, the largest accredited specialty, had established a weekly duty hour limit.

Because of the multilayered approval process in operation before the ACGME became an independent corporation in 2002, seven additional sets of revisions were made to the standards, with the 5 member organizations opposing various sections of the draft.[33] The revised draft for the general requirements ultimately was approved in February 1992, with an effective date of July 1, 1992.[34] Two of the 5 member organizations had withheld their approval until revisions were made in the duty hour language, and the revised requirements asked that ''each residency program establish formal policies governing resident duty hours and working environment that are optimal for both resident education and the care of patients.''[33,34]

The Early Years of the 21st Century

In 1999, the Institute of Medicine released ''To Err Is Human: Building a Safer Health System.''[37] The report did not particularly implicate resident physicians or their long hours; instead, it recommended interventions to reduce the potential for errors in health care, including labeling and packaging strategies for high-risk drugs and substances with similar names, training issues for residents, work-rest cycles, how relief and replacement processes could be improved, and improvements to equipment (eg, standardizing equipment in terms of the shape of knobs and the direction in which they turn).''[37(p64)] Its release prompted the ACGME Board of Directors and its Strategic Initiatives Committee to explore sources of errors in the resident education environment, with reviews of the literature and other sources again suggesting limitation of resident hours and enhancing supervision as important strategies to enhance safety in teaching settings.[38]

An added reason for a reassessment of the duty hour standards was enhanced public focus on resident hours, and the observation that the specialty-focused and nuanced nature of the ACGME's approach to setting limits made it difficult to explain the standards and their benefits to patient safety to the public. A commentary by the ACGME's director noted, ''patients have the right to expect competent care in all phases of an acute illness, and residents have a right to expect competent supervision in all aspects of their education in which they interface with patients.''[35(p1)]

After approval of the new duty hour standards in 1992, the RRCs had begun to monitor compliance and to cite programs for noncompliance. The ACGME did not make summary compliance data public for nearly 10 years, and there was variability among the RRCs in citing programs with violations on the duty hour standards. In 2000, the ACGME first published aggregated data on compliance with the duty hour standards for the year 1999, and a report released in 2001 compared duty hour compliance for 1999 and 2000.[35] It contrasted the percentage of programs and institutions cited for violations in 1999 with data for the year 2000, showing that in 1999, 17 of 87 institutions (20%) sponsoring residency education programs that were reviewed during the year had failed to comply substantially with the duty hour requirements. By 2000, that number had fallen to 10 of 127 institutions (8%)

reviewed. The percentage of internal medicine programs cited for duty hours fell from 30% in 1999 to 10% in 2000, and the percentage of orthopedic surgery programs cited declined from 29% to 10%. In contrast, the percentage of surgery programs cited remained constant (36% versus 35%).[35]

In 2001, citation rates for duty hour violations were 18% for surgery programs (of 99 programs reviewed), 21% for thoracic surgery programs (of 19 programs reviewed), 19% for internal medicine (of 81 programs reviewed), 11% for pediatrics (of 35 programs reviewed), 10% for family medicine programs (of 136 programs reviewed), and 5% for obstetrics and gynecology programs (of 81 programs reviewed).[36]

Proposals for Federal Regulation of Resident Hours

On April 30, 2001, a petition requested that the Occupational Safety and Health Administration regulate duty hours as a workplace health hazard.[39] Federal legislation, called the *Patient and Physician and Protection Act* (HR 3236), was proposed in November 2001 by Representative John Conyers of Michigan, which would limit resident work hours and provide federal enforcement.[40] Approximately 6 months later, Senator John Corzine of New Jersey introduced comparable legislation in the Senate (S 2614).[41]

Several major academic organizations issued position statements on resident hours. In June 2001, the AMA Board of Trustees formally affirmed it would (1) encourage the ACGME to enforce its work-hour guidelines to the maximum limit and develop mechanisms to assure that noncompliance would be corrected quickly and completely; (2) facilitate discussion on legislative and other options to enforce work-hour standards; and (3) investigate the enforcement of the current duty hour standards.[42] The AAMC issued a statement on graduate medical education policy relevant to duty hours and supervision that echoed many elements of its 1988 duty hour position, including that ''prudence favors the establishment of a reasonable upper limit,'' and concluded that ''80 hours per week constituted a reasonable limit, albeit a generous one by any conventional standard.''[43] The American College of Surgeons issued a statement noting that ''[i]mplicit in a residency program is the principle that all patient care provided by residents is safe and well supervised…quality patient care, now and in the future, is dependent on quality graduate education. It is critical to monitor, modify, and optimize the work environment to achieve this important goal.''[44]

Formation of the ACGME Work Group on Duty Hours and the Learning Environment

In September 2001, the ACGME authorized the formation of a Work Group on Resident Duty Hours and the Learning Environment and charged it with the development of enhanced ACGME-wide general standards for resident duty hours and with providing recommendations in a number of related areas, such as enforcement and educational activities.[45,46] The Work Group's report was scheduled for review in February 2002. The charge called for the Work Group to develop a comprehensive approach that considered the relationship between resident hours and the elements of the learning and working environment, building on the ACGME's role and success in fostering high-quality education and patient and resident safety.[47] The Work Group was asked to provide recommendations for how the ACGME could enhance its efforts related to duty hours, minimize any negative impact on physician learning, explore innovative approaches for education under restricted hours, and communicate the ACGME's duty hour standards, policies, and related efforts to stakeholders, legislative and regulatory bodies, and the public.

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