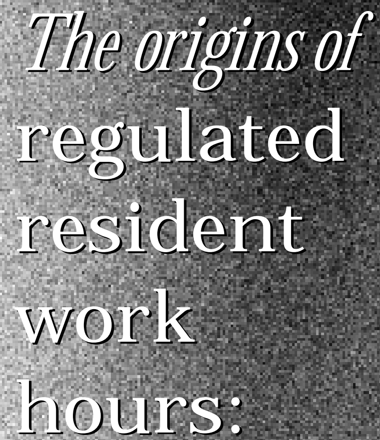

The origins of regulated resident work hours: *New York and beyond*

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The recent policy change by the Accreditation Council for Graduate Medical Education (ACGME) regarding resident work hours may have come as a surprise to some health care professionals. However, a review of related events provides insight into factors contributing to the ACGME decision.

Of particular interest is the interplay between various groups with stakes in the training of residents. Medical students and residents argue for work-hour limits on the basis of health and safety of trainees (although "lifestyle issues" may also contribute).[1,2] Federal and state governments and the public at large lobby for constrained resident work hours in order to reduce medical errors.[1,3] As for consumers of health care, fewer errors will give them a "better product." Finally, physicians argue that control of resident training should remain the purview of medical organizations (such as the ACGME) to maintain a high degree of professionalism within medicine.

This article reviews the events culminating in the ACGME policy change and outlines possible strategies for surgical training programs attempting to comply with the proposed regulations.

New York State

Initial interest in limiting resident work hours started in New York State as a result of the Libby Zion case.[4] In March 1984, Ms. Zion presented to a New York City teaching hospital with fever, chills, and dehydration. In the emergency department, a junior medical resident evaluated her, and she was admitted to the medical service after telephone consultation with the attending physician. Her brief hospital stay was notable for delirium and continued fevers. After treatment with meperidine and haldoperidol, she suffered a cardiopulmonary arrest and expired. Her cause of death, as listed by the medical examiner, was bilateral bronchopneumonia.[4] Points of controversy regarding her care included resident knowledge of her home prescription medications and their possible drug interactions, adequacy of junior resident supervision by senior residents and attending physicians, and the contribution of resident fatigue caused by prolonged work hours.[4]

The woman's father, Sidney Zion, was a prominent newspaper columnist and former federal prosecutor. The resulting publicity led the state health commissioner to convene an ad hoc advisory committee on emergency services, led by Bertrand Bell, MD, professor of medicine at Albert Einstein College of Medicine, New York, NY. This committee, commonly called the Bell Commission, made the following recommendations regarding resident work hours: (1) an 80-hour work week, averaged over four weeks; (2) a 24-hour limit per work shift; (3) eight hours between work shifts; and (4) at least one 24-hour period per week not on call. Surgical residencies would be exempt from the 24-hour limit on work shifts under the following circumstances: (1) residents, while on call at night, are generally resting with infrequent interruptions for patient care; (2) residents are on call no less than every third night; (3) residents receive rest periods of 16 hours after on-call shift; and (4) residents may be relieved of duty if fatigued while on call.[5]

These recommendations were passed into law by the New York State legislature. On July 1, 1989, section 405 of the New York State health code ("Bell Commission regulations") went into effect. Initially, New York State hospitals were frequently found to be in violation of the regulations. Reports documenting failure to comply were issued with great publicity in 1994 and 1997.[4] Subsequently, the New York State Department of Health began to fine hospitals in violation of the regulations.

In 1999, a cardiology fellow training in New York State died in an automobile accident after a night on-call.[4] Again, negative publicity ensued and ultimately led to enactment of the passage of the state's Health Care Reform Act of 2000. Included in this legislation are significant funds to actively monitor hospital compliance with resident work hour limitations, as well as increased financial penalties for institutions found in violation of resident work hour regulations.

The situation elsewhere

In 2000, the Institute of Medicine (IOM) reported that each year medical errors cause more than 1 million patient injuries and as many as 98,000 patient deaths.[6] Although the methodology and results of the publications cited in this report have been questioned,[7] the findings have generated great publicity in the lay press. As one potential solution to medical errors, the IOM stressed the need to explore physician workload, work hours, "and their relationship to fatigue, alertness,

and sleep deprivation."[6] The report also addressed the relationship between worker safety and patient safety. In particular, it noted that "limiting long work hours [is] aimed at protecting workers but can also protect patients."[6] The estimated number of injuries and deaths linked to medical errors were frequently quoted in the lay press, including reports examining resident work hours. Notably, limiting resident work hours is assumed to be an easy way to prevent medical errors and associated patient injuries and deaths. Although this belief is intuitively attractive, rigorous data giving it support are lacking.[8,9]

Resident work hours again came to national attention through a petition filed with the Occupational Safety and Health Administration (OSHA) in 2001.[10] Signers of the petition included: Public Citizen, a consumer and health advocacy group; the Committee on Interns and Residents; a house staff union; the American Medical Student Association; Dr. Bell; and Kingman Strohl, MD, director of the Sleep Disorders Research Center at Case Western Reserve University. The petition called for national resident work hour limits modeled on those in New York State. It noted the health risks posed to residents by "excessive hours," including motor vehicle crashes, mental health issues, and obstetric complications.[10] The petition also observed that resident work hours have been limited in other countries, including Australia, Denmark, Germany, the Netherlands, and the United Kingdom, with all European Union countries planning to impose caps in 2003. The petition further noted that the U.S. federal government has established work-hour limits for the aviation, highway, maritime, and railroad industries.[10]

The petition received widespread coverage in the lay press,[1] and soon the issue of resident workhours caught the attention of members of Congress. Rep. John Conyers, Jr. (D-MI), introduced The Patient and Physician Safety and Protection Act of 2001, H.R. 3236.[3] Noting that "overwork has detrimental effects on the health and well-being of residents, of even more concern is the impact of physician fatigue on patient safety."[11] The bill calls for resident work hour limits based upon the Bell Commission regulations and also addresses hospital enforcement of the standards. Standard whistle-blower protections would apply to residents who report hospitals that are in violation of the regulations. Finally, the bill would increase hospital funding for the hiring of additional ancillary support staff.[11] Sen. Jon Corzine (D-NJ) has recently introduced The Patient and

Principles for successful general surgery training

under compliance with reduced work-hour regulations at the State University of New York at Buffalo[17]

Program management-based principles

- *Computerize database to document resident case experience.*
- *Structure resident assignments to meet caseload requirements.*
- *Eliminate redundant experiences.*
- *Prioritize and limit procedural experiences according to national standards.*
- *Prioritize and control resident time and activity.*
- *Dedicate program to achieving and documenting outcomes.*
- *Increase program coordinator authority and responsibility.*
- *Transfer some clinical service activities to mid-level providers.*
- *Integrate and incorporate educational sessions.*

Communication-based principles

- *Make residents aware of goals and performance.*
- *Communicate issues and outcomes to residents and faculty frequently.*
- *Use Web-based reporting of resident compliance.*

Time-based principles

- *Strict stop/start times.*
- *Maximum use of administrative turnover time.*

Career development-based principles

- *Focus on career development.*
- *Limit resident activity to career-enhancing experiences.*
- *Emphasize professional and supervisory responsibility of senior residents.*
- *Stress time management and priority setting.*
- *Encourage residents to be self-directed learners.*
- *Allow residents to take control of and responsibility for career development.*

Physician Safety and Protection Act of 2002, S. 2614, the companion to Representative Conyers' bill in the house.[3]

Meanwhile, state regulation of resident work hours has been proposed in New Jersey by Assemblyman Eric Munoz, MD, FACS. Additionally, the Massachusetts Medical Society has adopted a resolution in support of limited resident work hours.

Response from physicians

Physicians historically have been opposed to regulation of resident work hours. Reasons cited include the loss of autonomy by physician training programs and medicine as a whole, poor continuity of care, inadequate preparation for the rigors of practice after residency, loss of professionalism in medicine (shift-work mentality), and increased costs to hospitals. Contributing to physician skepticism about the benefits of constrained resident work hours is the lack of data supporting their implementation. Previously published articles have been noted to suffer from methodological deficiencies, including small sample sizes, lack of control groups, and the absence of clinically relevant end points, such as medical errors or resident education.[8,9]

Surgical training in particular seemed poorly suited to limited work hours. Surgical illnesses often occur at night and can change markedly over 36 hours. Work hour limits would force surgical residents to leave the operating room at the end of a shift. Surgeons-in-training would miss the opportunity to learn from changes in a patient's condition or complications of a previous surgery. Thomas R. Russell, MD, FACS, Executive Director of the American College of Surgeons, noted that "constrained work hours do not prepare residents for the real world of surgical practice."[12]

A recent trend toward fewer applicants for general surgery residencies has led surgical educators to critically examine graduate surgical education.[13,14] The reduced interest of medical students in general surgery training is felt to be due, in part, to "lifestyle issues" and the long hours inherent in general surgery training are perceived to be part of the problem. Potential solutions offered are based upon reducing resident service requirements while strengthening clinical and educational experiences. There were not, however, calls for restricting resident work hours.

Some surgeons seem resigned to restrictions on resident working hours,[13] while others predict that an 80-hour workweek would have a "disastrous effect" on the future of graduate surgical education.[14]

ACGME response

In 2000, David C. Leach, MD, executive director of the ACGME, acknowledged the increasing controversy surrounding resident work hours.[15] He noted the frequency of residency review committee (RRC) violations in both surgical and nonsurgical specialties. (The percentage of programs in violation of RRC guidelines has dropped markedly since 1999).[16] These violations lead to the "abuse [of] our trainees and compromise patient care."[15] In summary, he deemed resident work hours the "Achilles heel" of medicine and called for better adherence to existing RRC requirements.[15]

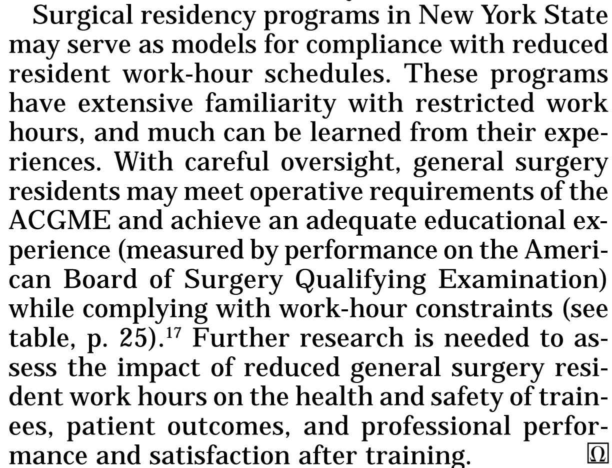
Subsequently the ACGME board of directors created the Work Group on Resident Duty Hours and the Learning Environment in September 2001. Led by Paul Friedman, MD, FACS, the group also included two other surgeons. The committee was charged with developing a comprehensive approach to work hours that addresses resident education and resident and patient safety. The new official ACGME guidelines on resident work hours, again modeled on the Bell Commission regulations, were unveiled in June 2002. The constrained work hours will go into effect for all training programs July 1, 2003. Although the work-hour limits are similar to those proposed in the petition to OSHA and before Congress, the ACGME proposal does serve to maintain control of physician training within the medical community.

Future direction

As previously noted, the lack of rigorous data regarding resident work hours casts a shadow of doubt over whether the proposed changes will have a beneficial effect on resident health and safety or reduce medical errors. Although clear evidence likely will come too late to influence policy, two prospective trials currently under way may better evaluate the effect of training on patient safety and resident health.

One prospective observational study will survey all physicians beginning training in the U.S. in July 2002. Using an Internet-based template, residents will self-report on both medical errors and

health/quality-of-life issues. A second interventional crossover study will compare a standard medical intensive care unit call schedule (every third night call with resulting 30-plus hour shifts) with a call schedule designed to minimize sleep deprivation (such as 12-hour shifts). Residents will self-report errors and take computerized performance tests. Errors made on a computerized medication entry system will be noted and observers will monitor resident performance. Unfortunately, the results of these trials will not be available until after the national changes in residency work hours have been implemented. Because these study designs are the most rigorous and complete to date, it is anticipated that the results will be used to guide the formulation of appropriate resident work-hour limitations. However, it is hard to imagine that the ACGME will allow a return to the previous work hours, even if these studies show no link between work hours and patient outcomes or resident health and safety.



Surgical residency programs in New York State may serve as models for compliance with reduced resident work-hour schedules. These programs have extensive familiarity with restricted work hours, and much can be learned from their experiences. With careful oversight, general surgery residents may meet operative requirements of the ACGME and achieve an adequate educational experience (measured by performance on the American Board of Surgery Qualifying Examination) while complying with work-hour constraints (see table, p. 25).[17] Further research is needed to assess the impact of reduced general surgery resident work hours on the health and safety of trainees, patient outcomes, and professional performance and satisfaction after training. Ω

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