

## BECOMING A PHYSICIAN

# Adapting to Duty-Hour Limits — Four Years On

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On July 1, 2003, prompted by the medical profession's concerns about patient safety and the working conditions and education of resident physicians, the Accreditation Council for Graduate Medical Education (ACGME) instituted one of the most substantial redesigns of the country's resident training system in more than a century. Among other changes, the duty hours of residents were tapered to 80 per week, averaged over 4 weeks, and shifts were limited to 30 hours, with a minimum 10-hour rest period between them.

Welcomed or criticized, the ACGME rules were anything but ignored. To comply with them, residency program leaders had to address a complex question: How do you revise a training system and culture characterized by notoriously long hours and relatively low compensation (yet a proven record of producing generations of capable practitioners) while managing an ever-increasing workload — and do so without outside funding?

Since 2003, hundreds of programs have confronted this challenge, some by tweaking their existing systems and others by overhauling them. Many have had to refashion their admitting models multiple times, whether in answer to the regulations or to the unforeseen consequences of their previous redesigns. Internal-medicine programs alone had a range of strategies in place at the beginning of the 2006–2007 academic year (see table).

Since 1990, these programs, which train 30% of the country's 100,000 house officers, have been required by their ACGME Residency Review Committee to adhere to an 80-hour limit and so have had the opportunity to explore many options. In general, the program leaders I interviewed concurred that the 80-hour limit was not a major problem. More difficult has been adhering to the rules set in 2003 that mandated maximum 30-hour shifts and 10-hour breaks between shifts.

Perhaps in no other area is the impact of these two requirements more apparent than in “on-call” scheduling. In the past, interns — internal medicine's beasts of burden — stayed overnight at the hospital when admitting patients and left the next day whenever work was done, regardless of the hour. Now, interns are expected either to leave late on their call day and return the next morning or to stay overnight and leave earlier the next day.

These shortened on-call shifts appear to have had positive outcomes, including a more rested house staff, but they have necessitated the dispersal of interns' responsibilities. Some programs have managed this reassignment by pulling house officers from elective rotations, dropping less popular rotations, or expanding existing “float” rotations of residents who fill in where needed. Less commonly, programs have hired nonphysician staff members, including physician assistants and nurse practitioners, who also

support various house-staff personnel.

Programs choosing to retain overnight call have buttressed staffing on the post-call day. The University of California at San Francisco (UCSF), for example, added “day-float” residents who move from team to team, which allows house officers to leave earlier on the post-call day. It also hired an administrative assistant and, at one point, two nurse practitioners to help with house-staff tasks. According to a 2003 UCSF survey, these changes (and others) improved the quality of life for most residents, although most did not report spending more time in key educational activities such as conference or teaching.

Johns Hopkins opted to trim its extended shift at both ends. When on call, interns arrive at noon for teaching conference (missing morning rounds) and stay overnight, signing out the next afternoon at 3 or 4. The hospital also instituted an effective “short call,” during which house officers take on a smaller load of patients in between their on-call (or “long-call”) days. Brigham and Women's Hospital in Boston modified its long call so that members of most house-staff teams are expected to leave by midnight. In addition, for house officers who report fatigue or have finished particularly long shifts, the hospital has begun to provide round-trip taxi vouchers — because of at least one nationwide study showing that house

Responses to Duty-Hour Limits in Nine Residency Programs in Internal Medicine.*								
Training Program	No. of House Staff	No. of Annual Medicine Admissions	Long-Call Intern Stays Overnight	Assistance or Relief for House Staff				
				Night Float	Day Float	Short Call	PAs, NPs, or Clerks on House-Staff Service	Non-House-Staff Service
<b>University-affiliated</b>								
Brigham and Women's Hospital, Boston (3 hospitals)	170	NA	No	Yes	Yes	Yes	Yes	Yes
University of California at San Francisco (3 hospitals)	160	NA	Yes	Yes	Yes	Yes	Yes	Yes
New York–Presbyterian (2 hospitals)	130	Approximately 13,500	Yes	Yes	No	Yes	Yes	Yes
Johns Hopkins, Baltimore	106	Approximately 14,200	Yes	Yes	Yes	Yes	Yes	Yes
University of Puerto Rico, San Juan	45	3,258	No	Yes	No	Yes	No	No
Naval Medical Center, San Diego, CA	43	4,848	Yes	Yes	No	Yes	No	No
<b>Community</b>								
St. Luke's–Roosevelt Hospital, New York (2 hospitals)†	158	21,176	No	Yes	No	Yes	No	Yes
Henry Ford Hospital, Detroit	110	22,444	Yes	Yes	No	Yes	No	Yes
Huntington Hospital, Pasadena, CA	23	Approximately 12,500	Yes	No	No	Yes	No	Yes

\* Data refer to weekday, inpatient rotations not in intensive care units. “Night float” refers to house staff who cross-cover and admit patients from evening until morning, transferring new patients to a service in the morning. “Day float” refers to house staff who move from team to team on weekdays, generally to help with post-call duties but also sometimes with admitting. “Clerk” is an administrative staff member assigned to a specific inpatient service or team to help with duties such as scheduling appointments. “Short call” refers to the day in the call cycle, typically midway between on-call (or “long call”) days, during which house staff acquire new patients. “Long call” is the day in the call cycle during which house staff acquire the greatest number of patients by staying overnight in the hospital or leaving in the evening. PA denotes physician assistant, and NP nurse practitioner. An expanded version of this table is available at [www.nejm.org](http://www.nejm.org).

† The system described at St. Luke's–Roosevelt Hospital was in place as of October 2005. A new system has since been implemented.

staff are at increased risk for motor vehicle accidents after extended shifts and because of an increase in commuting owing to truncated shifts.

Grady Memorial Hospital of Emory University introduced an enhancement to its “night float,”

the scheduled shift taken by a house officer who assumes many duties typically performed by interns. Grady's night-float team includes an on-site attending physician who leaves the hospital around 4 a.m. and remains available by pager.

In New York, where state-imposed duty-hour restrictions have been in place since 1989, the Columbia campus of New York–Presbyterian Hospital has moved in a direction opposite that of other programs. For years, interns went home in the evening, but

now they stay overnight. This change was intended to increase the likelihood that patients who are admitted and cared for by interns are “primary admits” — that is, they are not worked up or held over by a night-float resident. (The concern over diminished primary admits, among other issues, surfaced in a June 2006 survey by the Association of Program Directors in Internal Medicine as an unintended consequence of the rule regarding the 10-hour break, prompting a shortening of the break to 8 hours for internal-medicine programs that could meet certain requirements.)

Denver Health, a public hospital affiliated with the University of Colorado, addressed its admissions issues by borrowing concepts from industrial systems engineering that favor creating a constant work flow. The program made radical changes to its work distribution after observing that workloads fluctuated greatly, with as many as two thirds of admissions occurring between 1 p.m. and 1 a.m., when fewer residents were present. Originally, five medicine teams took turns admitting every fifth night. This system was replaced by a schedule of three staggered shifts involving six teams that admit on most days.

Decisions to alter admitting models have not always been driven solely by the ACGME’s requirements, although the changes may have aided in the man-

agement of duty hours. Factors such as higher patient volume, economics, and the need to improve resident education have also prompted some programs to create independent nonteaching services, in which hospitalists, physician assistants, and nurse practitioners help to lighten the

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load for house staff. At the Cornell campus of New York–Presbyterian Hospital, for example, admissions have increased by roughly half in the past several years, leading to the initiation of such services. Similarly, Brigham and Women’s Hospital has formed numerous nonteaching services in general medicine and subspecialties staffed by hospitalists, specialists, and physician assistants, who generally manage the care of patients admitted for routine procedures or protocol-driven diagnoses.

As program leaders continue to contend with current ACGME regulations, even tougher restrictions and consequences for noncompliance may loom on the

horizon. The Committee of Interns and Residents, a large national house-staff union, argues that the 30-hour limit on shifts is still too long and has called for government oversight, citing the unreliability of self-reports by programs.

In Congress, Representative John Conyers (D-MI) plans to reintroduce a bill that proposes more stringent versions of current work-hour rules. State lawmakers from New Jersey and Pennsylvania have introduced bills to restrict hours; and a bill was reintroduced this year in Massachusetts, calling for a committee-run study of duty hours, with plans for implementing regulations based on the results.

Whether any of the current duty-hour strategies or others that are still untried will ultimately be successful remains to be seen. The medical community must balance its efforts against the need to maintain the highest standards of patient care, resident education, and professionalism. In doing so, each hospital is likely to chart a different course. Where those paths finally lead — and whether fundamental adjustments in areas other than hours worked will be needed to compensate — may not be evident for many more years.

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