Accreditation Council for Graduate Medical Education (ACGME)

The ACGME's Approach to Limit Resident Duty Hours 12 Months After Implementation: A Summary of Achievements

Rationale for the Duty Hour Limits

Changes in health care delivery, and concerns that restricted sleep has a negative effect on performance resulted in a need to limit resident duty hours. As the accrediting body for more than 7,900 residency programs, the Accreditation Council for Graduate Medical Education is the entity charged with setting and enforcing duty hour limits. In July 2003, ACGME instituted a comprehensive approach that includes: (1) standards for resident hours and institutional oversight; (2) promoting compliance; and (3) increasing knowledge on the effect of the standards and on innovative ways to conduct education and patient care under limited resident hours. ACGME considers duty hour limits an important element of its comprehensive approach to promote high-quality education and safe patient care.

The Standards

ACGME's common duty hour standards acknowledge scientific evidence that long hours and sleep loss have a negative effect on resident performance, learning and well-being. The duty hour standards include:

- An 80-hour weekly limit, averaged over four weeks;
- An adequate rest period, which should consist of 10 hours of rest between duty periods;
- A 24-hour limit on continuous duty, and up to six added hours for continuity of care and education;
- One day in seven free from patient care and educational obligations, averaged over four weeks;
- In-house call no more than once every three nights, averaged over four weeks;
- The option for programs in some specialties to request an increase of up to 8 hours in the weekly hours, if this benefits resident education, with approval by their sponsoring institution and the Residency Review Committee (RRC) in the given specialty.

ACGME chose 80-hours as the upper limit to safeguard against the negative effects of chronic sleep loss, and selected a limit of 24 hours plus up to six hours to address the effects of acute sleep loss, and to allow for adequate time for patient hand-off and didactic learning.[1]

Achievements in the first 12 Months

In the first 12 months after the July 2003 implementation, ACGME, the RRCs and the residency education community rose to the challenge of applying the duty hour standards to 7,973 accredited specialty and subspecialty programs. Programs and sponsoring institutions made changes in the clinical training of residents, their patient care activities and the mechanisms for duty hour monitoring and oversight. Many programs used schedule changes, night float and other rotation changes to bring duty hours below the common limits. Others replaced resident services with care by nurse practitioners, physician assistants or hospitalists. A few programs completely re-engineered their patient care and education system to function well under reduced hours. Virtually all programs increased the clinical responsibilities of faculty physicians. Highlights from the first 12 months under the new standards include:

- ACGME collected data on duty hour compliance from the program directors of all accredited programs, with more than 98% of ACGME-accredited programs responding by the March 2004 deadline. Senior officials at each sponsoring institution verified this information.
- ACGME instituted systems to track compliance, including the number of programs cited for duty hour violations, complaints related to resident hours, and programs applying for duty hour exceptions.
- During 2,019 full accreditation reviews conducted between July 2003 and June 2004, ACGME site visitors interviewed program directors, faculty, residents and sponsoring institution representatives and conducted primary reviews of documents that detail resident duty hours, including rotation schedules, call rosters and some institutional duty hour surveys to verify compliance with the standards.
- Of the 2,019 programs reviewed, 99 programs (4.9%) received one or more citations related to non-compliance with the duty hour standards. The majority of citations related to compliance with the 80-hour weekly limit (51 citations), followed by the requirement for one day in seven free of program

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[1] Accreditation Council for Graduate Medical Education, Report of the Work Group on Resident Duty Hours and the Learning Environment, June 11, 2002; (http://www.acgme.org, accessed July 16, 2004).

duties and the 24 + up to 6-hour limit on continuous duty (27 citations each). RRCs requested that 15 programs provide them with reports that detail their efforts to bring duty hours into compliance. Detailed information on duty hour citations, including programs' overall citations and time to next RRC review, is shown at ***Exhibit 1***.

- ACGME interviewed between 11,000 and 13,000 residents during scheduled accreditation site visits, and via an electronic resident survey collected data on duty hour compliance from 25,176 residents in 1,489 programs. Among the respondents, 834 residents (3.3% of the responding residents) in 370 programs (24.8% of responding programs) reported working more than 80 hours per week during the previous 4 weeks. That a small group of residents work beyond the duty hour limits likely relates to factors associated with individual residents' learning and practice performance, rather than program level non-compliance with the standards. At the same time, the survey found a few programs where the majority of residents worked significantly beyond the duty hour limits. ACGME is following up with programs where the resident survey data suggests a potential program-level compliance problem.
- ACGME received 53 complaints related to non-compliance related to resident hours. Eleven were dismissed as unfounded. For the remainder ACGME instituted appropriate follow-up activities, including its procedure for "Rapid Response to Alleged Egregious Accreditation Violations or Catastrophic Institutional Events" for the most serious complaints. Details are shown at ***Exhibit 2***.
- The RRCs approved 75 requests by individual programs to extend the weekly limit to 88 hours, and denied another 17 requests. ***Exhibit 3*** shows requests by specialty. ACGME denied a request by the surgical RRCs to increase the weekly limit for the surgical chief resident year to 88 hours, due a lack of data thus far showing a negative effect of the limits, and ability of programs to request an increase in their weekly limit for chief residents to 88-hours, with the approval of their institution and RRC.
- Eleven RRCs have standards that are more restrictive than the common duty hour limits or do not permit programs to apply for the increase in the weekly duty hour limit, as shown at ***Exhibit 4***.
- ACGME communicated its approach to limit resident duty hours and its compliance efforts to the academic community and the public through published articles, interviews and information presented on the ACGME Web site and in the quarterly ***ACGME Bulletin***.
- In August 2003, ACGME communicated with approximately 100,000 residents in accredited programs through the officials at their sponsoring institution, informing them about the duty hour standards and compliance monitoring activities, including residents' rights to raise concerns about violations of the standards with their institutions and, ultimately, ACGME.
- ACGME is sensitive to the issue that reporting alleged non-compliance with the standards may place such "whistleblowers" at risk for retaliation or retribution, and its confidential complaint management process and institutional requirements seek to safeguard these individuals. In addition, ACGME has emphasized to program directors and institutional leaders the need to protect "confidential reporters," beginning with an article in the fall 2003 ***ACGME Bulletin***.
- ACGME kept the academic community informed about compliance activities and "innovative ideas" for meeting the standards thorough articles in the ***ACGME Bulletin***, question and answer sections on the ACGME Web site and presentations to the academic community. Successful approaches for reducing hours that preserve a balance between education and service could be adopted or adapted by other programs and institutions. A sampling of innovative ideas is presented at ***Exhibit 5***.

Potential Future Refinements to the Standards

ACGME has solicited feedback on the elements of the standards that may reduce educational quality or have other unintended effects, with the goal of assessing the need for future refinements. It is aware that public attention is focused on the issue of resident hours and the mechanisms to ensure compliance and believes that a period of at least 12 to 18 months without changes to the standards is needed to give programs time to adapt education and patient care activities to the limits and to collect data on their effect. ACGME may make future refinements in areas where key indices suggest the standards may be problematic from an educational or patient care perspective. Revisions to the standards would be made only in response to convincing data that they are necessary and would benefit education and/or patient care, and after a process of soliciting broad input and support for any changes from the education community and the general public.

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Programs with Duty Hour Citations, July 1, 2003 - May 1, 2004 ***Exhibit 1***

Specialty	No. of programs reviewed	No. programs cited	% Cited	80 hours per week	1 Day in 7 free	10 hour rest period	Continous duty 24h + 6	Call no more than every 3rd night	Moonlighting	Total Duty Hour Citations	Avg. Cycle Length (1)	Avg. Total Citations (1)	Duty Hour Reports Requested
Allergy and Immunology	21	3	14.3%		3					3	1.0	7.7	0
A. and I. Subspec.	10	0	0.0%							0	--	--	--
Anesthesiology	41	2	4.9%	2						2	2.5	8.5	2
Anesth. Subspec.	53	5	9.4%	5						5	3.7	6.2	2
Colon and Rectal Surgery	10	0	0.0%							0	--	--	--
Dermatology	26	0	0.0%							0	--	--	--
Dermatology Subspec.	14	0	0.0%							0	--	--	--
Emergency Medicine	29	1	3.4%	1						1	4.0	6.0	0
Emerg. Med. Subspec.	19	0	0.0%							0	--	--	--
Family Practice	154	26	16.9%	11	4	3	16	1	1	36	3.4	10.3	5
Family Practice Subspec.	35	0	0.0%							0	--	--	--
Internal Medicine	73	10	13.7%	9	3	2	1	2	1	18	2.4	11.6	0
Internal Med. Subspec.	322	9	2.8%	3	6		1		1	11	2.8	6.7	0
Medical Genetics	12	1	8.3%						1	1	--	--	--
Molec. Genetic Pathol.	4	0	0.0%							0	--	--	--
Neurological Surgery	17	0	0.0%							0	--	--	--
Neurology	29	2	6.9%	1	1	2		2		6	3.3	6.0	1
Neurology Subspecialties	50	0	0.0%							0	--	--	--
Nuclear Medicine	13	0	0.0%							0	--	--	--
Obstetrics and Gynecology	68	4	5.9%	1	1		2			4	3.0	13.5	0
Ophthalmology	20	0	0.0%			1	1			2	5.0	3.0	0
Orthopaedic Surgery	29	3	10.3%	2			1			3	3.7	4.0	0
Ortho. Surg. Subspec.	32	0	0.0%							0	--	--	--
Otolaryngology	29	0	0.0%							0	--	--	--
Otolaryngology Subspec.	6	0	0.0%							0	--	--	--
Pathology	41	0	0.0%							0	--	--	--
Pathology Subspec.	88	2	2.3%		2					2	--	4.0	0
Pediatrics	41	2	4.9%	1					1	2	5.0	5.0	1
Pediatrics Subspecialties	124	4	3.2%	2	1	1	1	1		6	3.3	6.5	1
Phys. Med. & Rehab.	19	0	0.0%							0	--	--	--
PM and R Subspec.	8	0	0.0%							0	--	--	--
Plastic Surgery	44	2	4.5%	1						1	4.0	1.0	1
Plastic Surgery Subspec.	9	0	0.0%							0	--	--	--
Preventive Medicine	18	1	5.6%	2				1		3	4.0	6.0	0
Prev. Med. Subsp.	3	0	0.0%							0	--	--	--
Psychiatry	44	1	2.3%	1						1	5.0	1.0	0
Psychiatry Subspecialties	57	1	1.8%				1			1	5.0	4.0	0
Radiation Oncology	21	0	0.0%							0	--	--	--
Diagnostic Radiology	52	0	0.0%							0	--	--	--
Diagn. Radiol. Subspec.	98	0	0.0%							0	--	--	--
General Surgery	73	5	2.1%	3	2	1				6	3.0	2.3	2
General Surgery Subspec.	71	1	2.1%		1					1	4.0	5.0	0
Thoracic Surgery	31	3	9.7%	3	1	1	1	1		7	3.7	6.0	0
Transitional Year	30	9	30.0%	3	2		2			7	2.5	7.2	0
Urology	27	2	7.4%							0	--	--	--
Urology Subspecialties	4	0	0.0%							0	--	--	--
Overall Citations	**2019**	**99**	**4.9%**	**51**	**27**	**11**	**27**	**8**	**5**	**129**	**3.3**	**7.3**	**15**

Source: ACGME Citation Database, June 2004

(1) Programs with duty hour citations.

Exhibit 2

Complaints about Alleged Non-Compliance with the Duty Hour Standards and their Disposition

July 1, 2003 through June 30, 2004

Specialty	No. of Complaints	% of all Complaints	Residents in specialty	% of all residents
Internal Medicine	15	28.3%	21,675	21.6%
Pulmonary/Critical Care Medicine	2	3.8%	1,174	1.2%
Gastroenterology	1	1.9%	1,163	1.2%
General Surgery	7	13.2%	7,452	7.4%
Orthopaedic Surgery	4	7.5%	3,085	3.1%
Obstetrics Gynecology	3	5.7%	4,674	4.7%
Family Practice	3	5.7%	9,869	9.8%
Diagnostic Radiology	3	5.7%	4,117	4.1%
Anesthesiology	2	3.8%	4,921	4.9%
Pediatrics	2	3.8%	7,796	7.8%
Psychiatry	2	3.8%	4,682	4.7%
Child and Adolescent Psychiatry	1	1.9%	706	0.7%
Emergency Medicine	2	3.8%	3,980	4.0%
Transitional Year	2	3.8%	1,275	1.3%
Neurology	1	1.9%	1,478	1.5%
Neurosurgery	1	1.9%	747	0.7%
Plastic Surgery	1	1.9%	466	0.6%
Thoracic Surgery	1	1.9%	310	0.3%
Total, Specialties with complaints	*53*	*100.0%*	*79,570*	
Residents in Specialties without duty hour complaints	*0*		*20,944*	
Grand Total	**53**		**100,514**	**.05%**

Disposition of Complaint	Number	% of all complaints
Monitor at time of next site visit	14	26.42%
Site visit scheduled	10	18.87%
Disposition pending	6	11.32%
Reviewed by RRC without a site visit	5	9.43%
Requested progress report	4	7.55%
Proposed Probation	1	1.89%
Confirmed Probation	1	1.89%
Program warned and time to site visit shortened	1	1.89%
Complaint dismissed as unfounded	11	20.75%
Total	**53**	**100.00%**

Exhibit 3

Requests for Extend the Weekly Limit to 88 Hours

By Specialty:	Total Number of Programs	Requests for Duty Hour Exceptions		
		Requested	Denied	Approved
Allergy and Immunology (1)	83			
Anesthesiology (1)	324			
Colon and rectal surgery	37	0		
Dermatology (1)	155	0		
Emergency Medicine (1)	163			
Family Practice (1)	569			
Internal Medicine (1)	1,842			
Medical Genetics (1)	58	0		
Neurological surgery	95	41	7	34
Neurology (1)	301			
Nuclear medicine	64			
Obstetrics and Gynecology	254	6	5	1
Ophthalmology	120	0		
Orthopaedic Surgery (1)	331	8	0	8
Otolaryngology (1)	118	2	0	2
Pathology (1)	507	0		
Pediatrics (1)	842			
Phys. Med. And Rehabilitation (1)	106	0		
Plastic Surgery (1)	108	0		
Preventive Medicine (1)	86			
Psychiatry (1)	446			
Radiation oncology	77	0		
Radiology - Diagnostic (1)	464			
Surgery - General (1)	461	23	5	18
Thoracic surgery	92	11	0	11
Urology (1)	139	1	0	1
Transitional year	131	0		
Totals	**7,973**	**92**	**17**	**75**

Shaded: RRC does not permit an increase to 88 weekly hours

(1) Includes subspecialty programs

Source: ACGME Accreditation Database, June 2004

Specialty-Specific Duty Hour Requirements that Exceed the Common Duty Hour Requirements
July 1, 2003

Allergy and Immunology: V.F.6. The RRC for Allergy & Immunology will not consider requests for an exception to the limit to 80 hours per week, averaged monthly.
Anesthesiology: V.F.3.b: During the 6 additional hours (after the end of the on-call period), residents may not administer anesthesia in the operating room for a new operative case or manage new admissions to the ICU. The resident should not manage non-continuity patients in the 6 hours post-call. V.F.2.d. The RRC will not consider requests for a rest period of less than 10 hours. V.F.6. The RRC for Anesthesiology will not consider requests for an exception to the limit to 80 hours per week, averaged monthly.
Emergency Medicine: IV.A. 7.a.2) While on duty in the emergency department, residents may not work longer than 12 continuous scheduled hours. There must be at least an equivalent period of continuous time off between scheduled work periods. IV.A. 7.a. 3) A resident should not work more than 60 scheduled hours per week seeing patients in the emergency department and no more than 72 duty hours per week. Duty hours comprise all clinical duty time and conferences, whether spent within or outside the educational program, including all on-call hours. V.F.6. The RRC for Emergency Medicine will not consider requests for an exception to the limit to 80 hours per week, averaged monthly.
Family Practice: V.F.2.d. The RRC will not consider requests for a rest period of less than 10 hours. V.D.6. The RRC for Family Practice will not consider requests for an exception to the limit to 80 hours per week, averaged monthly.
Internal Medicine: In-house call must occur no more frequently than every third night *(this standard does not permit averaging the frequency of in-house call).* V.D.6. The RRC for Internal Medicine will not consider requests for an exception to the limit to 80 hours week, averaged monthly.
Neurology: V.F.6. The RRC for Neurology will not consider requests for exceptions to the limit to 80 hours per week, averaged monthly.
Nuclear Medicine: V.F.6. The RRC for Nuclear Medicine will not consider requests for exceptions to the limit to 80 hours per week, averaged monthly.
Pediatrics: V.F.6. The RRC for Pediatrics will not consider requests for exceptions to the limit to 80 hours per week, averaged monthly.
Preventive Medicine: V.F.6. The RRC for Preventive Medicine will not consider requests for an exception to the limit to 80 hours per week, averaged monthly.
Psychiatry: V.F.6. The RRC for Psychiatry will not consider requests for exceptions to the limit to 80 hours per week, averaged monthly.
Diagnostic Radiology: V.F.6. The RRC for Diagnostic Radiology will not consider requests for exceptions to the limit to 80 hours per week, averaged monthly.

Selected Innovative Approaches

Internal Medicine: *Reducing Internal Medicine Duty Hours at the University of Virginia*
In March of 2002, information on resident hours at this major university teaching hospital showed that 25% oft the residents worked more than 80 hours per week. A volunteer resident task force developed options to bring the program into compliance and the residents chose a plan which maintained a schedule of call every fourth night, but mandated that one member of the intern-resident team go home at 10 pm, when the admitting cycle ended. This schedule resulted in residents taking overnight call every eight night, and decreased the percentage of residents working over the 80-hour limit from 25% to 8%.

To bring all residents into compliance, an additional day off was added to each four-week ward block. Each team member takes off Thursday or Friday during the week the team has Saturday call. This adds a fifth day off to each four-week inpatient rotation and produced 100% compliance with the duty hour limits. It also maintains continuity of care. Since the implementation of this plan, documented attendance at conferences has not decreased, suggesting that the structured educational experiences have not been affected by the changes in residents' scheduling patterns.

Neurological Surgery: *The Neurological Surgery Program at the University of Florida*
In this neurological surgery program, faculty and residents have worked together to create and refine a system that complies with the common duty hour requirements, while preserving and maximizing the educational mission of the residency program. To make up for the reduced availability of residents the department hired nurse practitioners (NPs) for each of two services where residents train. Despite the added financial burden, the NPs have worked out well. They handle many of the less "educational" aspects of residency, such as routine consults, preoperative histories and physicals, routine labs, lumbar punctures and discharge orders. Patient and family satisfaction has increased significantly, especially in the area of discharge teaching. The department has also begun to include residents who are off service or in the laboratory in the call rotation, and has moved to home call for chief residents who back up junior residents, and for two clinical services that are smaller and have less medical acuity.

Residents are required to complete and return a weekly time card. A few residents were caught falsifying their time cards early in this process, and the department informed them that severe consequences would follow if duty hours were not accurately reported. The program director and all residents meet monthly to discuss duty hour issues, and explore the need for adjustments to the system.

Neurology: *Reducing Neurology Resident Hours at UT Medical Branch, Galveston*
In early 2003, this neurology program revised its resident scheduling patterns to conform to the ACGME duty hour limits. The program's nine residents all take night call with no differences between senior and junior residents. Rotating residents do not participate in call. At the heart of the system is that each resident is scheduled for a two-week long "night float" rotation three times per year. The other residents are on a regular rotation with more limited call. No resident works more than 80 hours per week or 24 hours of continuous duty. The primary benefit is that residents no longer complain of being "post-call" and do not fall asleep in conferences. Residents and faculty consider the plan a success.

Surgery: *Models for Surgical Resident Education at Northwestern University, Chicago*
A think tank at the McGaw Medical Center of Northwestern University developed four resident rotation models the surgery residency program currently uses. The goal was to develop models programs can adopt to comply with the standards while maintaining or enhancing resident education. In the *Stretch Model*, residents take call every fourth night (or less) and leave the next morning. This is the easiest approach to get to an 80-hour week, but it has no real educational advantages other than reducing duty hours, presumably giving residents more time to read. The *Night Float Model* consists of a traditional resident team system, except that a percentage of the program's residents are designated to a "night-float" shift, usually for a month at a time. Each resident rotates on night float two to three months per year. The day team has one hour of overlap with the night- float team to allow for a robust "sign-out." Teams

working during the day would take no in-house night call. The "night float" team works a night shift six days per week, although larger programs may be able to accommodate a five nights per week schedule.

The *Apprentice Model* involves one resident working exclusively with one or two faculty members over several months. Residents work side-by-side with their mentors in the operating room and outpatient setting and take home call when their mentor is on call, and participate only in the care of their mentors' patients. Faculty members are selected carefully based on dedication to education and an appropriate practice profile. This model lends itself well to subspecialty areas like colorectal or breast surgery, but also can be used for general surgery rotations. Apprentices take no in-house call, and are on duty less than 80 hours, even if they have to come in at night once or twice a week. In the *Mastery (Case-Based) Model*, cases are assigned to residents solely based on their learning needs. Knowledge and skills associated with diagnoses and operations are measured by personal progress, not by time. Proficiency is verified through formal assessment, and residents are allowed to advance to other areas and are not required to scrub on operations they have mastered unless they want to refresh their knowledge. Residents are responsible for making arrangements to review the cases with the appropriate attending. They round on their own patients in the morning and go to the clinic or operating room depending on their assignments for that week. They are not required to take night call, but could take call from home. Learning expectations are made clear at the start and are mastery-based, but broken down by year of training for planning purposes.

Surgery: *From more than 110 to less than 80 hours at St. Luke's Hospital, Bethlehem*
After analyzing the responsibilities and tasks of its residents and the service requirements of their various clinical rotations, the leadership of this surgery program instituted a modified night float system. From Sunday through Thursday one resident is on a night-float rotation from 6 pm to 8 am and to 11 am for Friday morning conferences. Two different residents are on call Friday night, Saturday day and night, and Sunday during the day. The night-float resident changes weekly. Chief residents take call from home and come to the hospital when needed.

The modified night float system has advantages in a small surgery program: (1) residents miss few clinical opportunities; (2) residents are able to attend surgical clinics and attending faculty office hours; (3) residents can participate in time-protected conferences during the morning; (4) residents have more time for rest and personal learning; (5) the night float resident is still involved in operative procedures in that he/she participates in late elective surgical cases and is involved in emergency surgical cases at night. Making the modified night float system a success requires a commitment by the faculty, nursing and administration to make the residency primarily an educational experience. It also requires understanding on the part of residents and faculty that the ACGME duty hour standards improve the educational experience of residents. Finally, a robust sign-out of patients at the beginning and end of the night-float period is a key element of a successful night-float model.