



AMERICAN ASSOCIATION FOR THORACIC SURGERY

February 9, 2016

Thomas J. Nasca, MD, MACP
Chief Executive Officer Accreditation Council for Graduate Medical Education
515 North State Street, Suite 200
Chicago, Illinois 60654

Dear Dr. Nasca:

This letter is provided by the leadership of the American Association for Thoracic Surgery (AATS) in response to your January 29, 2016 request for position papers in regards to resident duty hours and key dimensions of the learning and working environment. The AATS was directly responsible for the development of the American Board of Thoracic Surgery (ABTS) in 1948 which certifies thoracic surgeons. The AATS currently provides members to the ABTS as well as the Residency Review Committee for Thoracic Surgery. As such, the AATS has played a critical role in the evaluation of resident training and surgeon certification for almost 70 years and continues to do so today. The mission of the AATS is to *Promote Scholarship, Innovation, and Leadership in Thoracic and Cardiovascular Surgery* with its core values in line with the ACGME core competencies.

In the past, the AATS has worked closely with the Society for Thoracic Surgeons (STS) to develop a unified approach to policy matters such as this important ACGME review. As such, the STS has completed a formal review by the Work Force on Thoracic Surgery Resident Issues authored by Dr. Ara Vaporciyan. In fact, Dr. Vaporciyan is currently one of the official AATS representatives to the ABTS, demonstrating the close working relationship between these two major thoracic surgery organizations. We feel the enclosed document outlines the importance of revising the duty hour requirements for the betterment of resident training with improved continuity and patient care. To summarize, the AATS proposes the following three recommendations (as rationalized in the enclosed document from the STS Workforce):

1. Hold the GME and programs accountable for measurement of errors and near misses by adding specific requirements in section VI.A. (Professionalism, Personal Responsibility, and Patient Safety). All hospital systems have a mechanism in place for reporting these events. Since the goal of duty hour regulations were to minimize these events, then we should measure these outcomes directly rather than assuming that a trainee who is required to go home will make fewer errors. Part of the accountability will be to ensure that efforts are in place to reduce medical errors through a combination of faculty supervision and control of resident fatigue. This is in contradiction to the current model of just broadly reducing duty hours and hoping for a reduction in errors.
 - o Strengthen consequences of the not adhering to the Common Program Requirements VI.C. (Alertness Management/Fatigue Management):

2015-2016

President
Joseph S. Coselli, M.D.
Houston, Texas

President-Elect
Thoralf M. Sundt, III, M.D.
Boston, Massachusetts

Vice President
Duke E. Cameron, M.D.
Baltimore, Maryland

Secretary
Marc R. Moon, M.D.
St. Louis, Missouri

Treasurer
Shaf Keshavjee, M.D.
Toronto, ON, Canada

Councilors
David H. Adams, M.D.
New York, New York

Pedro J. del Nido, M.D.
Boston, Massachusetts

J. William Gaynor, M.D.
Philadelphia, Pennsylvania

David R. Jones, M.D.
New York, New York

Jennifer S. Lawton, M.D.
St. Louis, Missouri

Friedrich W. Mohr, M.D.
Leipzig, Germany

Executive Director
Cindy VerColen
Beverly, Massachusetts

- In section VI.C, there should be a requirement to document all episodes when fatigue mitigation processes are activated (VI.C.1.c) or the process to ensure continuity of care when a resident is unable to perform his/her duties due to fatigue is utilized (VI.C.2).
 - Additionally there needs to be a clearly delineated process for how programs can assess residents post call for signs of fatigue that are severe enough that the resident is not fit to remain in house post call compared to a well-rested resident who is post call but fully capable of participating in patient care with proper supervision (as outlined in recommendation #3 below for section VI.G.4.b)
 - Similarly, strengthen the consequences of the not adhering to the Common Program Requirements VI.D (Supervision of the Residents). Any relaxation in duty hour regulations would need to have a concurrent strengthening of the consequences of failing to adhere to the requirements addressing supervision during periods following fatigue assessment.
 - Provide examples of oversight (section VI.D.3.c) during periods following fatigue assessment similar to how we will request documentation of episodes of when the fatigue management process is activated.
2. The 16 hour restrictions in surgery should be revoked. While the majority of the duty hour regulations have improved quality of life for trainees and reduced burnout, the 16 hour duty limitations have imposed significant workload compression for interns in 1-6 Thoracic Surgery training programs. The burnout due to workload compression is real and the benefits appear to be limited.
- Remove the 16 hour maximum for PGY-1 residents (VI.G.4.a)
3. Relax post-call restrictions to allow CT surgical trainees to once again take overnight call and remain on duty (assuming they do not demonstrate evidence of fatigue). This would allow trainees the opportunity to remain in the hospital and participate in patient care and education after a relatively mild night of call with proper supervision.
- Change section VI.G.4.b regarding the duty hour maximum of only 24 hours to allow residents to remain on duty the following day after call if they...
 - Do not display any evidence of significant fatigue through a clearly delineated procedure (see our recommendations above to section VI.C)
 - Have access to and use alertness management strategies as delineated in requirement VI.G.4.b.(1).
 - Are engaged in activities pertaining to documentation
 - Are engaged in simulation labs or other scheduled educational activities that do not require patient contact
 - Or meet the requirements delineated in section VI.G.4.b.(4) where an unusual circumstance arises where the resident remains to continue to provide care to a single patient.
 - It would also require slight (10-15%) increase in the total allowable duty hours per week. However, if we rigidly adhere to monitoring and immediately supporting a fatigued trainee, then the overall goal of reducing errors while maintaining high quality education will be achieved.

- Remove the need to apply for and receive an exception for up to a 10% increase for surgical programs (VI.G.1.a). Instead make it standard that thoracic surgical disciplines will have up to 88 hours.

Thank you for allowing the American Association for Thoracic Surgery to participate with the ACGME in this essential review process.

Respectfully yours,

A handwritten signature in black ink that reads "Marc Moon". The signature is written in a cursive, flowing style.

Marc R. Moon, M.D.
Secretary

Enclosure

cc: Joseph S. Coselli, M.D.

The Society of Thoracic Surgeons Position Paper
Regarding the ACGME Review of Resident Duty Hours
and Key Dimensions of the Learning and Working Environment

Ara Vaporciyan, MD, Chair

and members of the STS Workforce on Thoracic Surgery Resident Issues

February 1, 2016

The Society of Thoracic Surgeons (“STS” or the “Society”), in response to the ACGME’s request for input to assist in its review of the accreditation requirements for resident duty hours and key dimensions of the learning and working environment, has composed the following position paper specifically addressing the four topics outlined in its request dated December 21, 2015. As the request came over the holidays and necessitated input from various stakeholders within the Society, it was difficult to perform formal impact analyses and obtain broad input in the short time available to us. Therefore, the responses reflect the position STS has on these topics substantiated by supporting literature rather than secondary to direct data collection and analysis.

Your organization’s formal position on the current ACGME resident duty hour requirements, including impact analysis, from your organization’s perspective, on costs and impact of implementation.

Direct Costs - The exact cost of implementation of duty hour requirements is difficult to estimate; however, there have been a number of attempts to do so in literature. Law et al. reviewed the estimated costs reported in U.S. literature, which ranged from \$1.1 to \$1.6 billion per year. The cost of hiring lower-level or mid-level providers to render services previously performed by residents was estimated to be between \$673 million and \$1.1 billion per year¹. These estimates were distributed across the entire system of graduate medical education and are not specific to cardiothoracic (“CT”) surgery. However, all elements that were included in this cost estimate pertain to CT surgery, including both direct and indirect costs. Examples of direct costs incurred by our specialty include the personnel costs secondary to hiring physician extenders to provide the continual care to patients in the perioperative period that residents provided prior to duty hour requirements. These extenders are needed to not only cover patient care during the post-operative recovery, but also to assist in the operating room. The level of skill needed to do these tasks is significant and commands a high price to secure and retain individuals who can meet these needs. In the U.S., the median salary is \$100,591 (with a range of \$79,297 - \$137,946)² for a physician assistant and \$76,000³ for nurse practitioners. This is compared to the average salary of a PGY 6, 7 and 8 (the highest paid CT residents) of \$61,000 to \$66,000⁴.

Indirect Costs - An additional set of costs that are clearly relevant to CT surgery (as well as other surgical disciplines) is the increased volume and composition of work that is shifted to the faculty due to reduction in resident duty hours. Bandiera et al. reviewed a number of publications which highlighted the changes that occurred both from the perception of the faculty and by the trainees. Faculty clearly anticipated an increase in their work hours. In addition, once duty hour requirements were implemented, the majority of faculty reported a greater role in supervising patient care, which directly impacted the time available for research and resident education. The latter change of reduced time for teaching was confirmed by multiple investigators and validated by learners as well⁵. The cost impact of this transfer of responsibility to the faculty is difficult to measure, but it is possible that there is an effect on the number of cases the surgeon can perform secondary to the need to free up time to maintain one’s research and educational commitments.

Exposure to the Specialty – It became quickly apparent that the implementation of duty hour restrictions significantly curtailed the ability of general surgery residents to have opportunities to rotate

on cardiothoracic surgical services during their training. This interaction between junior trainees and CT faculty is instrumental in developing an interest in CT surgery that leads to pursuit of the specialty as a career. CT surgery identified a significant decline in the number applicants in the specialty. Vaporciyan et al. (Ann Thorac Surg. 2009;87(5):1351-9) surveyed general surgery trainees and identified multiple factors that were at the heart of the reduction in interest CT surgery, including lifestyle issues and concerns about the field's viability. Another key identified factor was mentorship. The analysis indicated that a respondent's interest in pursuing CT surgery after general surgery was directly proportional to the time he/she spent rotating on a CT surgical service. Clearly, constraints in rotation structures brought about by adherence to duty hour regulations limits a general surgery program director's ability and/or desire to rotate his or her residents. In an effort to recapture general surgery interest in the field, STS established the Looking to the Future scholarship program in 2006, which will cost the Society more than \$120,000 in out-of-pocket expenses alone this year (setting aside the value of surgeon leadership and staff efforts devoted to this time-intensive initiative). The American Association for Thoracic Surgery offers similar programs. The costs of these programs could be assumed to be indirectly attributable to the duty hour regulations.

Accountability and Quality of Teaching - Another impact of implementation is the reduction in accountability of the trainee to the patients and its impact on the quality of their education. This finding is germane to all specialties but is particularly relevant to the surgical disciplines, where knowledge of the intraoperative events is tied directly to the clinical decision making in the postoperative period. It is difficult to learn the subtle changes that can occur in a patient's clinical picture that are secondary to intraoperative events without maintaining continuity of care. This has been demonstrated in a number of studies focused on surgical specialties. Lindeman et al. surveyed trainees before and after implementation of the July 2011 duty hour regulation. Although they hypothesized no changes in resident education, they identified a significant decrease in residents' perceptions towards the adequacy of their clinical skill progression and diminished ability to independently evaluate patients' problems⁶. When examined more broadly across the literature, the overall consensus parallels these findings. Ahmed et al. performed a systematic review in 2014, examining the impact of both the 2003 and 2011 ACGME duty hour restrictions and 16-hour duty maximums on patient safety, resident wellness/fatigue/burnout and resident education. In the area of education, the majority of the studies showed either worse or unchanged measurable outcomes. When reviewing articles that addressed perceptions of duty hour restrictions on education, the results parallel the findings seen with objective measures of educational success⁷.

Patient Safety – There are no high quality studies of duty hour impacts on CT surgical patient safety; however, neurosurgery has published extensively in this area. Neurosurgery is similar to CT surgery in the acuity of the patients being managed and, as such, the results have relevance to our specialty. Studies evaluating specific procedures, such as craniotomy for meningioma and spine surgery, used the Nationwide Inpatient Sample (NIS) and consistently identified worse outcomes in teaching hospitals after implementation of the duty hour regulations^{8,9}. In a more general analysis of all patients undergoing neurosurgical procedures, the NIS data did not reveal a significant impact¹⁰. The systematic review by Ahmed et al. was also inconclusive when they examined objective evidence of patient safety

(rates of morbidity, mortality, length of stay, etc.), but perceptions of patient safety (surveys of faculty and trainees) were consistently worse following implementation of duty hour regulations⁷.

Burnout and Fatigue – This is likely the one area where duty hour regulations appear to have had a measurable impact. The general duty hour regulations appear to have improved the quality of life of junior residents, as demonstrated in the systematic reviews by both Harris et al. for orthopedic surgeons¹¹ and Ahmed et al. for all surgical residents⁷. The data is vaguer with respect to the impact of the 16-hour duty limitations. Hanna et al. reviewed the work performed by a number of investigators and found that while the hours slept per week increased marginally, there were negative impacts in most all other measured areas, including emotional exhaustion and personal accomplishment, both indicators of burnout¹². Similar findings were reported by Antiel et al., who longitudinally studied 11 university based general surgery residencies in the U.S.¹³.

All the factors discussed are relevant to cardiothoracic surgery, although they are also relevant to surgical training in general. All surgical disciplines share the need to train their residents in motor skills that are difficult to teach outside of the operating room. The significant increase in the pursuit of fellowship training after completion of a residency in surgery - and even CT - surgery may be a reflection of diminished confidence by trainees in their surgical competency. While we cannot rest all the blame on duty hour restrictions, we can certainly acknowledge that they bear some of the responsibility, based on the data reviewed above. In addition, surgical disciplines have intraoperative specific factors that impact postoperative clinical decision making. Continuity of care is a vital element to learn how to make these decisions. The impact of duty hour regulations has been therefore acutely felt in surgical disciplines, especially disciplines with high acuity patients whose conditions can change rapidly, i.e., CT surgery, neurosurgery.

Your organization's formal recommendations regarding dimensions of resident duty hours requirements, and justification (wherever possible) for these recommendations with evidence.

Focus on Outcomes - The primary goal of duty hour regulations is to reduce fatigue and its impact on clinical decision making and hospital errors. Proponents frequently point to the unfortunate case of Libby Zion as a watershed event that provided the impetus to address what was an obvious problem: that of overworked and under supervised trainees. The problem, however, is that the focus has been entirely on duty hours, almost to the exclusion of the outcomes that their regulation was meant to address. In fact, Kenneth Ludmerer's¹⁴ *Let Me Heal* describes duty hour limits as the "fiercest controversy in medical education since the Flexner report."

STS acknowledges the significant importance of burnout and fatigue in surgical trainees. While the majority of the duty hour regulations have improved quality of life for trainees and reduced burnout, the 16-hour duty limitation has imposed some workload compression for interns. While the majority of our trainees enter as fellows in their PGY 6, the availability of integrated CT surgery training pathways beginning after medical school now makes this issue relevant to our discipline as well.

However, our society also has a desire to not significantly lengthen training requirements, to maintain cost-effective training, and to continue to implement solutions that will improve patient outcomes and

reduce errors. The bulk of evidence suggests that duty hour regulations, as they are currently implemented in surgery, appear to address the issue of fatigue but have at best no impact and at worst a negative effect on all other outcomes. Debra Weinstein, a member of the Institute of Medicine who helped construct that organization's report on GME, provides a commentary on duty hours and, more importantly, the issue of accountability in medical education¹⁵. Based on comments such as hers and the data presented above demonstrating the limitations of what the duty hour regulations have achieved, STS proposes the following recommendations:

- Revoke the 16-hour restrictions in surgery. The burnout due to workload compression is real and the benefits appear to be limited.
- Relax post-call restrictions to allow CT surgery trainees to once again take overnight call and remain on duty (assuming they do not demonstrate evidence of fatigue). This would allow trainees the opportunity to remain in the hospital and participate in patient care and education after a relatively mild night of call. Most programs have done away with frequent call since trainees cannot be present the next day to do cases. This forces the program directors to make a choice. Either they have their trainees take call and then miss any opportunity to operate the following day or they have their trainees take home call or night float call and lose the opportunity to observe the development of acute changes in CT surgical patients that frequently occur the evening after major surgery. As case logs are the dominant form of assessment, it is easy to guess which choice most program directors will make.
 - This would require strengthening the consequences of non-compliance with Common Program Requirements VI.C. (Alertness Management/Fatigue Management), specifically what the programs must do (VI.C.1.a, VI.C.1.b, VI.C.1.c, VI.C.2).
 - Similarly, there would need to be a strengthening of the consequences resulting from non-compliance with Common Program Requirements VI.D (Supervision of the Residents). Lack of supervision was a key component of the Libby Zion case. Any relaxation in duty hour regulations would need to have a concurrent strengthening of consequences for failing to adhere to the requirements related to supervision.
 - It would also require a slight (10-15%) increase in the total allowable duty hours per week. However, if the first element is rigidly adhered to, that of monitoring and immediately supporting a fatigued trainee, then the overall goal of reducing errors and maintaining high quality education will be achieved.
- Hold the institutions' GME departments and residency programs accountable for the measurement of errors and near misses. All hospital systems have a mechanism in place for reporting these events. Since the goal of duty hour regulations is to minimize these events, outcomes should be measured directly rather than assuming that a trainee who is forced to go home will make fewer errors. Part of this accountability would be to ensure that efforts are in place to reduce medical errors through a combination of better faculty supervision and control of resident fatigue. This is in contradiction to the current model of just broadly reducing duty hours and hoping for a reduction in errors.

Internally, the specialty has also incorporated multiple efforts to allay the impact of duty hour restrictions on resident education. New paradigms in training, such as the 4/3 (a form of early specialization in CT surgery) and the integrated 6-year program (beginning CT surgery training directly after medical school), provide increased opportunities for trainer-trainee interaction compared to the conventional 2- and 3-year programs that begin after general surgical training. In addition, the significant growth in the use of simulation training has been undertaken by our specialty (and other surgical disciplines). While this will not likely address all educational deficiencies, it will allow the more limited trainer-trainee interactions to be of greater value by offloading the instruction of more basic skills into the simulation lab. Finally, STS and our discipline are investing heavily in online learning. Again, while this will not address all the educational needs of our trainees, it will allow trainees to develop a base of knowledge independently and thus enhance the value of time spent with a trainer. Increasing the length of training and the utilization of simulation technology has been advocated as a means of addressing work hour restrictions in the United Kingdom¹⁶. Of note, each of these efforts adds a significant cost to what is already an expensive and largely unfunded activity¹⁷ (especially at the PGY 6, 7, and 8 levels).

Your organization's formal recommendations regarding standards governing key aspects of the learning and working environment, and justification (wherever possible) for these recommendations with evidence.

The following recommendations are offered by STS based on the evidence presented earlier in this document.

- Section VI.A. (Professionalism, Personal Responsibility, and Patient Safety): add specific requirements regarding the monitoring of errors and near misses.
- Section VI.B. (Transitions of Care): no recommendations
- Section VI.C (Alertness Management/Fatigue Mitigation):
 - Require documentation of all episodes when (a) fatigue mitigation processes are activated (VI.C.1.c) or (b) the process to ensure continuity of care when a resident is unable to perform his/her duties due to fatigue is utilized (VI.C.2).
 - Establish a clearly delineated process for how programs will assess residents post call for signs of fatigue that are severe enough that the resident is not fit to remain in house post call (see our recommendations below to section VI.G.4.b).
- Section VI.D (Supervision of Residents):
 - Provide more clear documentation of supervision, including the availability of call schedules for review demonstrating which faculty are supervising each trainee (section VI.D.2).
 - Provide examples of oversight (section VI.D.3.c) similar to how we will request documentation of episodes of when the fatigue management process is activated.
- Section VI.E (Clinical Responsibilities): no recommendations.
- Section VI.F (Teamwork): no recommendations

- Section VI.G (Resident Duty Hours):
 - Remove the need to apply for and receive an exception for up to a 10% increase for surgical programs (VI.G.1.a). Instead, make it standard that surgical disciplines will have up to 88 hours. The data presented above should justify the educational rationale for surgical programs.
 - Remove the 16-hour maximum for PGY-1 residents (VI.G.4.a).
 - Section VI.G.4.b: revise the duty hour maximum of only 24 hours to allow residents to remain on duty the following day after call if they
 - do not display any evidence of significant fatigue through a clearly delineated procedure (see our recommendations above at section VI.C),
 - have access to and use alertness management strategies as delineated in requirement VI.G.4.b.(1),
 - engage in activities pertaining to documentation,
 - engage in simulation labs or other scheduled educational activities that do not require patient contact, or
 - meet the requirements delineated in section VI.G.4.b.(4) where an unusual circumstance arises where the resident remains to continue to provide care to a single patient.
 - Section VI.G.5 (Minimum Time Off between Scheduled Duty Periods): consider making the requirement be a 10 hour period free of duty between assignments averaged over a month. This more accurately reflects practicing surgeons who will have periods where patient demands are high as well as other periods where demand is low.
 - Section VI.G.6 (Maximum Frequency of In-House Night Float): no recommendations.
 - Section VI.G.7 (Maximum In-House On-Call Frequency): no recommendations.
 - Section VI.G.8 (At-Home Call): no recommendations.

These recommendations are supported by the evidence provided in the preceding two sections and are centered on our desires to increase the accountability of institutional GME departments, to teach faculty and trainees, and to monitor and improve patient safety through zero tolerance of fatigued residents engaged in patient care, while still making every effort to maximize the educational opportunities for trainees.

Your organization's willingness to participate in a Resident Duty Hours in the Learning and Working Environment Congress, to be held in March 2016 in Chicago, Illinois.

The Society of Thoracic Surgeons would eagerly accept any opportunity to participate in the ACGME's efforts to evaluate the resident duty hours and learning and working environment elements of the common program requirements.

REFERENCES:

1. Law M.P, O. E. (2014). Organizational interventions in response to duty. *BMC Medical Education*, 14(suppl 1):S4.
2. *Pay Scale Human Capital*. (2016). Retrieved from 2016 PayScale, Inc.:
http://www.payscale.com/research/US/Job=Cardiothoracic_Physician_Assistant/Salary
3. *Simply Hired*. (2016). Retrieved from 2016 Simply Hired, Inc.:
<http://www.simplyhired.com/salaries-k-nurse-practitioner-cardiac-surgery-jobs.html>
4. *MedScope Multispecialty*. (2016). Retrieved from Medscape:
<http://www.medscape.com/features/slideshow/public/residents-salary-and-debt-report-2015%20-%20page=4>
5. Bandiera G., H. M. (2014). Duty hour restrictions: organizational dynamics, systems issues, and the impact of faculty. *BMC Medical Education*, 14(Suppl 1):S5.
6. Lindeman B.M, S. B. (2013). Multifaceted longitudinal study of surgical resident education, quality of life, and patient care before and after July 2011. *Journal of Surgical Education*, 70:769-776.
7. Ahmed N., D. K. (2014). A systematic review of the effects of resident duty hour restrictions in surgery. *Annals of Surgery*, 259:1041-1053.
8. Dumont T.M., T. B. (2012). Trends in neurosurgical complication rates at teaching vs nonteaching hospitals following duty-hour restrictions. *Neurosurgery*, 71(5):1041-1046.
9. Babu R., T. S. (2014). Morbidity, mortality, and health care costs for patients undergoing spine surgery following the ACGME resident duty-hour reform. *J Neurosurg Spine*, 21:502-515.
10. Norby K., S. F. (2014). The effect of duty hour regulations on outcomes of neurological surgery in training hospitals in the United States: duty hour regulations and patient outcomes. *J Neurosurg*, 121:247-261.
11. Harris J.D., S. G. (2015). What effects have resident work-hour changes had on education, quality of life, and safety? A systematic review. *Clinical Orthopaedics and Related Research*, 473:1600-1608.
12. Hanna J., G. D. (2014). Finding the elusive balance between reducing fatigue and enhancing education: perspectives from American residents. *BMC Medical Education*, 14(suppl 1):S11.
13. Antiel R.M., R. D. (2013). Effects of duty hour restrictions on core competencies, education, quality of life, and burnout among general surgery interns. *JAMA Surg*, 148(5):448-455.

14. K.M., L. (2015). *Let me heal: The opportunity to preserve excellence in American Medicine*. New York: Oxford University Press.
15. D.F., W. (2015). The elusive goal of accountability in graduate medical education. *Academic Medicine*, 90:1188-1190.
16. Datta S.T., D. S. (2014). Training for the future NHS: training junior doctors in the United Kingdom within the 48-hour European working time directive. *BMC Medical Education*, 14(Suppl 1)S12.
17. Calhoun J.H., B. C. (2014). Thoracic surgical resident education: A costly endeavor. *Ann Thorac Surg*, 98:2012-5.