

## CORRESPONDENCE



## Surgical Resident Duty Hours

**TO THE EDITOR:** As Bilimoria et al. (Feb. 25 issue)<sup>1</sup> note in their article on the Flexibility in Duty Hour Requirements for Surgical Trainees (FIRST) Trial, the 2011 duty-hour reforms of the Accreditation Council for Graduate Medical Education (ACGME) created controversy in the medical community.<sup>2-5</sup> Several groups have questioned the benefits of these reforms.<sup>1-4</sup> Important to the controversy is underreporting of duty hours by residents.<sup>2,5</sup> Underreporting may be a significant source of bias in studies of ACGME duty-hour reforms.<sup>1,3,4</sup>

To examine underreporting, we surveyed general surgery residents in the United States using methods based on previous studies.<sup>2,5</sup> Our study was approved by the institutional review board at the University of North Carolina, and informed consent was obtained from all participants. We received 1003 responses (response rate, 31.9%) (see Table S1 in the Supplementary Appendix, available with the full text of this letter at NEJM.org); 71.6% of the respondents had exceeded duty-hour limits without reporting violations. Of this subgroup, 67.9% exceeded duty hours at least monthly and 60.4% worked more than 80 hours during an average week (Table 1).

When asked why they exceeded work-hour restrictions, 61.4% of the respondents said they did so to prevent adverse outcomes in patient care, 42.6% thought it was expected of them, 27.7% reported guilt about leaving the hospital, and 24.1% reported external pressure from authority figures (Table 1). Among all respondents, 36.4% reported working from home to avoid duty-hour violations; 50.7% of this subgroup reported doing so at least once a week (Table 1, and Table S2 in the Supplementary Appendix). Although the response rate of 31.9% limits the generalizability of these results, the response rate is higher than that in other studies,<sup>2,5</sup> and

the age, sex, and geographic distribution of the respondents were similar to the demographic characteristics of U.S. general surgery residents overall.<sup>6</sup>

The prevalence of underreporting limits the validity of conclusions drawn by other studies,<sup>3,4</sup> including the recent findings from the FIRST Trial. Our study ran concurrently with the FIRST Trial; 52 of the hospitals enrolled in that trial train residents from programs in our study.

The ACGME is currently considering revising the duty-hour policy on the basis of studies<sup>1,3,4</sup> that are biased because of underreporting. Before any such revision in graduate medical education is considered, the phenomenon of duty-hour falsification should be acknowledged and the reasons why residents falsify their duty hours need to be better understood.

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## THIS WEEK'S LETTERS

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Table 1. Summary of Questionnaire Results.*			
Question	No. of Responses	Percent (99% CI)	
		Yes	No
Have you ever exceeded duty-hour limits but did not report it?	1003	71.6 (67.9–75.3)	28.4 (24.7–32.1)
How often are you exceeding your duty-hour limits?†	705		
Once/yr or less		4.8 (2.7–6.9)	
Several times/yr		27.4 (23.0–31.7)	
Once/mo		19.9 (16.0–23.7)	
2–3 times/mo		24.3 (20.1–28.4)	
Once/wk		8.9 (6.2–11.7)	
2–3 times/wk		10.1 (7.1–13.0)	
4–6 times/wk		3.3 (1.5–5.0)	
Daily		1.4 (0.3–2.6)	
How many hours do you work during an average week?†	705		
<80		39.6 (34.8–44.3)	
81–85		21.1 (17.2–25.1)	
86–90		21.4 (17.4–25.4)	
91–95		8.7 (5.9–11.4)	
96–100		6.8 (4.4–9.3)	
101–105		1.7 (0.4–3.0)	
>105		0.7 (0–1.5)	
Why are you exceeding duty-hour limits?†	705		
Unfinished tasks from the shift		79.3 (75.4–83.2)	
Emergency cases or long procedures		74.2 (69.9–78.4)	
Prevention of adverse outcomes in patient care		61.4 (56.7–66.1)	
Charting and documentation		60.7 (56.0–65.5)	
Thought it was expected		42.6 (37.7–47.4)	
Ward rounding		31.6 (27.1–36.1)	
Guilt about leaving hospital		27.7 (23.3–32.0)	
External pressure from authority figures (including peers, faculty, and staff)		24.1 (20.0–28.3)	
Research or scholarly activities		13.8 (10.4–17.1)	
Other		3.5 (1.7–5.3)	
Do you work from home to avoid duty-hour violations?	987	36.4 (32.4–40.3)	63.6 (59.8–67.6)

\* Not all totals equal 1003 because not all respondents answered every question.

† Questions were asked only of respondents who selected “yes” to exceeding duty hours without reporting.

No potential conflict of interest relevant to this letter was reported.

1. Bilimoria KY, Chung JW, Hedges LV, et al. National cluster-randomized trial of duty-hour flexibility in surgical training. *N Engl J Med* 2016;374:713-27.
2. Drolet BC, Sangisetty S, Tracy TF, Cioffi WG. Surgical residents' perceptions of 2011 Accreditation Council for Graduate Medical Education duty hour regulations. *JAMA Surg* 2013;148:427-33.
3. Rajaram R, Chung JW, Jones AT, et al. Association of the 2011 ACGME resident duty hour reform with general surgery

patient outcomes and with resident examination performance. *JAMA* 2014;312:2374-84.

4. Patel MS, Volpp KG, Small DS, et al. Association of the 2011 ACGME resident duty hour reforms with mortality and readmissions among hospitalized Medicare patients. *JAMA* 2014;312:2364-73.
5. Fargen KM, Dow J, Tomei KL, Friedman WA. Follow-up on a national survey: American neurosurgery resident opinions on the 2011 Accreditation Council for Graduate Medical Education-implemented duty hours. *World Neurosurg* 2014;81:15-21.
6. Accreditation Council for Graduate Medical Education. Graduate medical education data resource book (<http://www.acgme>)

.org/About-Us/Publications-and-Resources/Graduate-Medical-Education-Data-Resource-Book).

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**TO THE EDITOR:** Bilimoria et al. report that their trial shows no risk associated with removing the limit on the number of consecutive hours residents may work and the requirement for minimum time off between shifts. Several serious flaws in research design undermine the authors' claims and warrant caution while the academic medicine community is considering possible revisions to current resident duty-hour restrictions.

The potential for bias given the unblinded design of the trial and the statement of desired outcomes in recruitment materials<sup>1</sup> cannot be underestimated. In addition, the flexible-policy group of the trial is not well defined, and none of the data collected show any meaningful difference between trial groups. Finally, educational outcomes were not assessed, so it is impossible to determine whether the education of trainees was affected by any change in duty hours.

Although current resident work-hour restrictions may not be ideal, we urge the graduate medical education community to closely scrutinize this trial to avoid an ill-informed reactionary response. Patient safety is at stake.

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1. American Board of Surgery, American College of Surgeons. Flexibility In duty hour Requirements for Surgical Trainees Trial — “The FIRST Trial” (webinar) (<http://www.thefirsttrial.org/Documents/Flexibility%20In%20duty%20hour%20Requirements%20for%20Surgical%20Trainees%20Trial-the%20FIRST%20trial%20webinar.pdf>).

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**TO THE EDITOR:** Resident work-hour regulations were established with the best of intentions, but extensive policing may be harming resident education without improving patient care. As surgical residents, we know that residency is the time to gain the experience needed to become careful, competent, and independent practitioners. In the

trial by Bilimoria et al., flexible-policy residents were less likely than standard-policy residents to leave an operation, miss an operation, or hand off an active patient care issue, and the importance of this to resident education cannot be underestimated. As surgeons, we need to be prepared to operate and care for critically ill patients, regardless of the time of day. Handing off our patients to the next physician on call is not always appropriate, and knowing operative details is crucial in managing postoperative complications.

Residency programs should be allowed to have the flexibility to choose schedules that best support the structure of their staffing and education needs. This approach is better than continuing to impose rigorous duty-hour restrictions that have failed to show concrete improvements in patient care or the well-being of residents.

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**TO THE EDITOR:** In the editorial accompanying the article by Bilimoria et al., Birkmeyer<sup>1</sup> concludes that since patient outcomes were not shown to vary according to whether programs have duty-hour restrictions, the hourly limitations on residents' work schedules should not be flexible. Both the article and the editorial speak to patient outcomes versus residents' quality of life, but they omit any discussion of training and acquisition of experience. With these hourly restrictions, plus the time demands of computer charting and electronic medical records, there has been a dramatic decrease in time spent in the delivery room, scrubbing for difficult and long operations, and attending rounds with experienced attending physicians.

Once, when I invited an obstetrics and gynecology resident to assist me with a challenging delivery, I was told that his time was up, he had to leave, and if I actually asked him to stay, I could be sanctioned. I think that some flexibility would allow both residents and attending physicians to use their judgment as to when some extra time could be used for important learning opportunities. The number of hours worked has decreased without the addition of

years of training; sadly, residents have lost large amounts of training time and experience.

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1. Birkmeyer JD. Surgical resident duty-hour rules — weighing the new evidence. *N Engl J Med* 2016;374:783-4.

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**TO THE EDITOR:** The results of the FIRST Trial continue to add fuel to the flames of the duty-hour controversy. The misrepresentation of duty hours is rampant within residency training programs. Although the medical profession is bent on obtaining randomized, controlled trials to prove the truth, no one is addressing the self-report bias in evaluating the effects of new duty-hour restrictions.

When I started my surgical internship, I ate, slept, and breathed surgery. I wanted to do what was best for patients and learn as much as possible. According to my duty hours, I worked from 6 a.m. to 6 p.m., 6 days a week. There was absolutely no incentive to accurately report my work hours. With too many violations, my program would be placed on probation and would risk losing its accreditation status.

Residents, attending physicians, and hospitals know that resident duty hours are underreported. Hours will be accurately documented only if they are automatically recorded. As long as duty hours are self-reported, we in the medical profession will never recognize the true effect of work-hour restrictions on resident training and patient care and outcomes.

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**THE AUTHORS REPLY:** The hypothesis that was tested in the FIRST Trial focused on the selective, occasional use of flexibility in duty-hour policies for patient care and resident education.<sup>1</sup> The letters by Bennett et al. and Wiley et al. discuss the

accuracy of duty-hour reporting by residents. Some persons may be concerned that the comparisons between study groups could be difficult to interpret if the standard-policy group was contaminated by duty-hour violations, the flexible-policy group did not use the flexibility afforded, or both. Although we did not collect data regarding the hours worked daily by surgical residents in trial programs, we did survey residents about how often they worked more than the standard daily limit (16 hours for interns and 28 hours [a 24-hour cap plus a 4-hour transition] for residents), had less than 8 hours off between shifts, or exceeded the 80-hour weekly cap. We have yet to fully analyze these data.

The letter by Wiley et al. is incorrect in all of its points. First, there is no way to conduct such a trial in a blinded fashion — residents and program directors would obviously need to know the rules and schedules to which they must adhere. Second, they refer to some supposed bias in a FIRST Trial presentation that was given to programs when explaining the trial design. In reality, we were simply explaining that the trial needed to be reported by February 2016 if the ACGME board was to be able use the results to inform any future policy changes. Since this was the first national trial of duty-hour policies, our goal was for the results to be informative to the ACGME, no matter the findings. Third, Wiley et al. are incorrect in stating that data were not collected regarding how often the flexibility in duty hours occurred in the flexible-policy group and resident education outcomes. We have to wait for the January 2016 American Board of Surgery (ABS) survey results to be processed and for the current cohort to complete their ABS certifying examinations in May 2016. These data can then be prepared, analyzed, and reported.

Unlike the letter from Wiley et al., the letter from Anderson and Brown is a more relevant appraisal from surgical trainees and, according to our interviews with trial residents, seems to reflect the general sentiment of surgical residents in the United States. Since the release of the trial results, the largest surgical residents organization, the American College of Surgeons Resident and Associate Society, has issued a statement supporting the conduct of the trial, the findings, and the rationale for why flexibility would be important to them.<sup>2</sup>

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Since publication of their article, the authors report no further potential conflict of interest.

1. Bilimoria KY, Chung JW, Hedges LV, et al. Development of the Flexibility in Duty Hour Requirements for Surgical Trainees (FIRST) Trial protocol: a national cluster-randomized trial of resident duty hour policies. *JAMA Surg* 2016;151:273-81.

2. American College of Surgeons. ACS Resident and Associate Society comments on results of the FIRST Trial. February 2, 2016 (<https://www.facs.org/media/press%20releases/2016/firstras0216>).

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## Risk-Reducing Surgery in Hereditary Breast and Ovarian Cancer

**TO THE EDITOR:** A point of contention that I have with the article by Hartmann and Lindor (Feb. 4 issue)<sup>1</sup> has to do with the role of hysterectomy at the time of bilateral risk-reducing salpingo-oophorectomy. The use of tamoxifen for chemoprevention is not a justification to proceed with a concurrent hysterectomy. Better alternatives — aromatase inhibitors such as exemestane, for instance — have now proved to be effective for risk reduction in postmenopausal women, including those who have had their ovaries removed, and do not increase the risk of endometrial cancer. Similarly, the use of combination hormone therapy with continuous estrogen and progesterone has not been associated with an increased risk of endometrial cancer; in fact, some studies suggest the contrary.<sup>2,3</sup> The hysterectomy itself adds substantial risk to a relatively low-risk procedure and cannot be justified without a survival advantage and certainly not by the supposed advantage of hormonal therapy.<sup>4</sup>

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1. Hartmann LC, Lindor NM. The role of risk-reducing surgery in hereditary breast and ovarian cancer. *N Engl J Med* 2016;374:454-68.

2. Phipps AI, Doherty JA, Voigt LE, et al. Long-term use of continuous-combined estrogen-progestin hormone therapy and risk of endometrial cancer. *Cancer Causes Control* 2011;22:1639-46.

3. Goss PE, Ingle JN, Alés-Martínez JE, et al. Exemestane for breast-cancer prevention in postmenopausal women. *N Engl J Med* 2011;364:2381-91.

4. Aarts JW, Nieboer TE, Johnson N, et al. Surgical approach to hysterectomy for benign gynaecological disease. *Cochrane Database Syst Rev* 2015;8:CD003677.

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**TO THE EDITOR:** Hartmann and Lindor state that recommendations for managing the care of *BRCA1* and *BRCA2* carriers should be based on the incidence of breast and ovarian cancer. We believe that the mortality associated with breast and ovarian cancer is also of major interest. Using the penetrance estimates in the analysis by Antoniou et al.<sup>1</sup> and applying data on age-specific mortality-to-incidence ratios<sup>2</sup> from the Surveillance, Epidemiology, and End Results (SEER) Program of the National Cancer Institute<sup>3</sup> (assuming no difference in survival curves between carriers and noncarriers<sup>4</sup>), we found that *BRCA1* carriers (up to 70 years of age) have a greater chance of dying from ovarian cancer (22%) than from breast cancer (12%). For *BRCA2* carriers, mortality from ovarian and breast cancer was similar (6% and 7%, respectively).

If risk-reducing salpingo-oophorectomy is carried out for *BRCA1* carriers only after they have received a diagnosis of breast cancer, the penetrance of ovarian cancer (assuming an 85% reduction in the risk of ovarian cancer after risk-reducing salpingo-oophorectomy) drops from 39% to 24%, and the mortality from ovarian cancer consequently drops from 22% to 12%. This analysis quantifies the importance of recommending risk-reducing salpingo-oophorectomy for *BRCA1* carriers who receive a diagnosis of breast cancer.

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