

Off-Hours Care: Not So Off

Lisa Bellini, MD

Department of Medicine, University of Pennsylvania, Philadelphia, Pennsylvania.

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The word “housestaff” came from an era when you moved into the hospital (house) for your internship (staff). In those days, call every other night meant you missed half the learning opportunities. In those days, supervision was as remote as it could get. My, have things changed.

In 2003, the Accreditation Council for Graduate Medical Education (ACGME) implemented duty hour standards that called for restricting resident duty hours to no more than 80 hours per week, and no more than 24 continuous hours with an additional 6 hours for transfer of care.¹ The expectation was that limiting work hours would have positive effects on outcomes, such as resident fatigue, the educational experience, and patient safety. A recent systematic review commissioned by the ACGME reviewed three decades worth of research on duty hours and patient safety. It reviewed “laboratory” studies of resident performance on clinical simulations, and tests of cognitive and fine motor skills under conditions of sleep deprivation. The results of these studies imply that limiting residents’ duty hours should have positive effects on patient safety. However, that assumption has not been borne out. Paradoxically, examination of studies of alternative duty hour schedules, as well as the follow-up studies on the impact of the New York duty hour rules and ACGME duty hour regulations have documented few measurable effects on patient safety.² Thus, the simplistic view that fewer hours worked equals better patient care deserves a second-look. In fact, a cause-and-effect relationship between resident fatigue and medical errors has yet to be proven.

The hospitalist movement was in full swing by 2003 and had already transformed the care of hospitalized patients. The early studies of hospitalists focused on cost and comparing outcomes with those of other providers. As many studies showed the economic benefit of hospitalists, residency programs began redesigning their inpatient services with hospitalists at the helm. Institutions sponsoring graduate medical education programs saw hospitalists as a necessary resource to enable and maintain compliance with duty hour reform. Some institutions created hospitalist-only services with no housestaff (nonteaching services). Others created hospitalist teaching services that used indirect supervision at night from a hospitalist on-call from home, while others had on-site hospitalists at night that provided direct supervision of housestaff. It is clear that hospitalists are a versatile and valuable resource.

In this issue of the *Journal of Hospital Medicine*, Khanna and colleagues³ describe a retrospective medical record

review at a large, urban academic hospital that evaluates the potential association between night admissions by night-shift-based hospitalists and a resident night float system, and hospitalization-relevant outcomes. The outcomes included length of stay, hospital charges, Intensive Care Unit (ICU) transfers, Emergency Department visits within 30 days of discharge, 30-day readmission rates, and poor outcomes within the first 24 hours of admission. Their results showed that night or weekend admission was not associated with worse hospitalization-relevant outcomes. The extension of on-site faculty supervision to nights, as well as awards for nursing excellence, likely had a strong positive impact on these outcomes. In some cases, night or weekend admission was associated with better outcomes, particularly in terms of ICU transfer during hospitalization and hospital charges. Maybe off-hours care is not so “off” after all.

I am not sure where we are going, but the duty hour standards have been revised again. The new duty hour standards limit continuous duty hours for 1st-year residents to 16, and all others to 24. Upper-level residents can stay an additional 4 hours for transfer of care.⁴ Functionally, this proposed standard eliminates overnight call for 1st-year residents. Although I would never advocate returning to the “days of yore” where autonomy and independence were the rule, I mourn the loss of extended shifts for 1st-year residents. The loss of the extended shift will come at the expense of overnight call in many programs. I worry about the loss of some unique teaching moments for all residents, and the increased number of transitions in a patients’ care. The hospital is a different place at night. It is less chaotic with fewer visitors, and there are less interruptions in patient care. There is time for teaching and learning because the work intensity is lower. The bedside teaching among senior and junior residents, during an acute patient episode in the middle of the night, is an experience that many of us would recount as an invaluable part of our training. It is also a time when on-site faculty supervision and nurse staffing ratios are typically reduced. In other words, the entire system of care is different at night. This dichotomy in “day” versus “night” medicine has spurred research into whether patient outcomes differed between the two. Various investigators have looked at the differences in care, and there is some data to support that patient care outcomes are worse at night than during the day.^{5–8}

The results from Khanna and colleagues³ are welcome news, since graduate medical education is undergoing a

paradigm shift with further reductions in duty hours. Hospital-based medicine is a 24-hour operation, 7 days a week. We don't get to pick when patients are admitted or need care. In fact, this study demonstrates that 58% of the admissions came after 7 PM. It turns out that this pattern of admissions is not atypical.⁹ In light of the new standards, programs are left deciding where to deploy their 1st-year resident resources. There are essentially two types of models to provide patient care off-hours in the absence of an extended shift option: night float and night medicine. Night float implies that a trainee, usually a resident, comes from a different site or rotation to provide nocturnal care of a group of patients. That resident may do one isolated night of coverage or several nights in a row. The resident may perform cross-cover functions, admit patients, or do both. Night medicine refers to having teams of housestaff at night along with an educational program as part of a rotation. The latter implies that trainees will get the full educational experience whether working days or nights. If one designs a model of care that puts 1st-year residents where the volume is, they would come in late and leave early in the morning the next day. Both create more handoffs in patient care, which critics of these models have said lead to worse patient outcomes. This research challenges such earlier work and should make us all feel more comfortable that care at night does not need to be different if the proper systems are in place to manage it.

The graduate medical education community needs to take a step back and ask: "Where are we going?" As a long-standing program director, I don't know anymore. As training has become competency-based, and milestones are being developed for each level of training, we need to ask if reducing hours further is in the best interests of graduate medical education and, ultimately, the general public. I have long been interested in work intensity as a contributor to resident fatigue, burnout, and errors. A systematic review of resident workload and work activity looked at 21 studies examining resident time allocation and suggests that at least one-third of resident time is spent on activities of limited educational value. Eight of the nine studies evaluating the impact of resident workload on patient care showed a negative impact on outcomes, including length of stay, mortality, patient satisfaction, medication errors, and lab utilization.¹⁰ If we are going to further restrict duty hours, then we need to transform the learning environment in a similar fashion. It does not seem logical to restrict duty hours further without a major redesign of the learning environment. I fear that all we have done is create more work compression because the system of care will be further strained in its weakest areas.

Hospitalists are uniquely poised to mitigate some of these concerns by being available for direct and indirect supervision, as well as being highly skilled at working in our complex systems. They are experts in systems-based practice. The extension of direct faculty supervision to nights

may be a major factor in eliminating the variances in care between nights and days. Not every program or institution will have the ability to employ night hospitalists, let alone have them in a supervisory and teaching role. Those that do can take great comfort in this research. Those that don't must challenge themselves to think about how to get there.

We all share the collective goal of producing the next generation of well-trained physicians who will practice safe and effective care. As we begin to embrace competency-based training, the prism through which we view patient safety must extend beyond duty hours and include learning environment reform. While the Khanna et al.³ study supports that "off-hours" care is no longer "off," we need to be careful that we don't drift too far towards shift work as the fundamental structure of medical training. In the beginning, "residents" lived in the hospital, thus the term. As we move through these stormy seas, we don't want to trade patient safety for transient trainees. There is a middle ground here that will be informed by future research. There is something to be said for living in your house.

Address for correspondence and reprint requests:

Lisa Bellini, MD, Department of Medicine, University of Pennsylvania, 100 Centrex, 3400 Spruce Street, Philadelphia, PA 19104; Telephone: 215-662-2200; Fax: 215-662-7919; E-mail: lisa.bellini@uphs.upenn.edu Received 30 August 2010; revision received 25 October 2010; accepted 13 November 2010.

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