

Keeping Residents in the Dark: Do Night-Float Rotations Provide a Valuable Educational Experience?

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OBJECTIVE: To qualify and characterize resident overnight activity.

DESIGN: A prospective 3-phase study was conducted of surgical residents with attention to activities performed on the overnight rotation: needs assessment, direct observation of activities, and feedback.

SETTING: This study was conducted at the University of Oklahoma Health Sciences Center, Oklahoma City, Oklahoma. This is both a tertiary referral center and the only American College of Surgeons (ACS) verified level 1 trauma center in the state.

PARTICIPANTS: This study included current surgical residents within the residency program.

RESULTS: During the study period, 270 pages were individually recorded, with 60% of these pages defined as time-sensitive activities. In addition, most of the pages involved pressing patient-care issues irrespective of post-graduate year level. Analyses revealed that residents spend most of their time performing educational activities (62%). On feedback, residents reported overall satisfaction with the learning opportunities during night-shift (6.4/7.0) and indicated their perceptions of an adequate balance of service and education on night float (6.6/7.0). This correlates with our annual rotation assessment where residents identify night-float as an overall positive experience which provides educational benefit.

CONCLUSIONS: Work-hour restrictions induce residency programs to adapt to new training models. Our results report a breakdown of resident activities while on night-float and

demonstrate that overnight shifts continue to provide important educational opportunities during training. (J Surg Ed ■■■■-■■■. © 2017 Association of Program Directors in Surgery. Published by Elsevier Inc. All rights reserved.)

KEY WORDS: surgical education, duty hours, pages, surgical training

COMPETENCIES: Patient Care, Medical Knowledge, Practice-based Learning, Communication and Interpersonal Skills, Professionalism and Systems-Based Practice

INTRODUCTION

The evolution of work-hour restrictions has led to adaption by residency training programs to new work environments. Many training programs have adopted a night-float rotation during which residents spend a significant amount of their training cross-covering for multiple services during overnight hours. Questions have arisen regarding the balance between education and service-related goals on such rotations.

Despite increasing limitations on resident work-hours, surgical training programs have changed little since their adoption in the late 19th century by William Halsted.¹ In this apprentice model, residents are given increasing responsibility as they progressed through their training, with a focus on clinical and basic science education. Contrast this with the Accreditation Council for Graduate Medical Education (ACGME) 6 core competencies and focus on the duty hours and patient safety.¹ As resident time in the hospital becomes increasingly regimented, programs must seek to adapt educational goals to train well-rounded residents.

In a study by Reines et al.,¹ residents and attending physicians agreed that 20% of a resident's time should ideally be spent on service activities. However, their findings

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demonstrate that up to 35% of a resident's time is spent on tasks deemed to be of little to no educational value. In another study by Boex and Leahy,² residents reported spending 36% of their time in direct patient care activities, resulting in 64% of their time away from the patient's bedside. Clearly, understanding how residents spend their limited time in the hospital is an important step in expanding educational opportunities as it sets a foundation for time-management. The purpose of this study is to characterize and quantify activities performed by surgical residents on night-float in an effort to identify the service and education intermix on overnight rotations.

MATERIALS AND METHODS

This multiphase single institution study aimed to describe resident educational outcomes from night-float rotations, both through observation and assessment. Our main hypothesis was that valuable education opportunities exist despite a perception of heavy service obligations and we sought to characterize the educational opportunities through recording pages, time-breakdown, and workload on the night-float rotation.

Needs Assessment

After Institutional Review Board approval, we began with a needs assessment of current postgraduate year (PGY) 1 to 5 residents. A 12 question Likert-scale survey was developed and administered to current surgical residents through the MedHub healthcare education management system. These questions were graded on a scale from 1 to 7, with following responses: strongly agree (7), moderately agree (6), slightly agree (5), neither agree nor disagree (4), slightly disagree (3), moderately disagree (2), and strongly disagree (1). Responses were collected anonymously over 1-month period and were reported in aggregate form. Questions were based on resident perceptions of the educational value of the night-float rotation and included topics such as overall educational value, ability to obtain feedback on clinical and technical skills, opportunity to provide education to junior learners, participation and preparation for didactic sessions and level-appropriate autonomy.

Observation

Phase 2 comprised the observational portion of this study. A nonresident observer familiar with surgical residency (fourth-year medical student) was recruited to gather the data through observation of the activities of 4 residents (also known as, the "night-team") on night-float over 11 overnight shifts. At our institution, this "night team" consists of a PGY4 chief resident, a PGY2 in charge of intensive care unit (ICU) patients, and 2 PGY1 residents who cover surgical floor and step-down patients.

In addition, these residents are responsible for trauma activations, emergency general surgery consults while also caring for the emergent and inpatient needs of vascular, thoracic, and cardiac patients. Residents spend approximately 2 months on the night-float rotation. They attend morning handover where overnight admissions are discussed and key issues with inpatients are brought to the various day teams' attention. After completing any remaining tasks, they return home for rest before the next shift. They also attend thrice weekly didactic sessions and morbidity and mortality conference. In addition, there are no fellows on the general surgery services, with the exception of 2 pediatric surgery fellows who respond to priority 1 pediatric traumas under age 6. There is an in-house trauma attending and morning report is supervised by the surgery attending overseeing the trauma ICU.

During data collection, the many variables assessed included number of pages, hourly activities, trauma activations, patient census, and code events. Pages were characterized in terms of acuity based on observation. Critical pages were those that required a response within 1 hour; urgent pages needed a response within 2 hours; time-sensitive pages should be addressed within 4 hours; non-urgent pages could be answered by the end of the shift; the remainder was classified as day-team responsibilities, inappropriate, or in error. In addition, data were recorded regarding the residents' time broken down into categories based on current activities as perceived by the independent observer. This included time in the operating room; direct patient care (at patient bedside), either urgent or nonurgent; indirect patient care (computer work), either urgent or nonurgent; consults, urgent or nonurgent; handover; and dedicated educational time and personal time.

Feedback Survey

For the final portion of the study, residents were also asked to provide feedback regarding their experience at the end of their shift. They completed a brief survey immediately after morning sign-out describing the previous shift's activities in an attempt to put the data collected into context regarding the experiences of the individual residents. Residents were queried regarding their specific educational goals including exposure to the 6 core competencies required by the ACGME. In addition, questions addressed their impression of the available supervision, presence of feedback, and their perception of the educational components of the previous shift especially how it related to the balance of education with service they encountered.

RESULTS

Needs Assessment

This study began with a needs assessment of the surgical residents, including all PGY levels (1-5). Responses were

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