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# A night float week in a surgical clerkship improves student team cohesion



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Team cohesion;  
Medical education;  
Surgical clerkship;  
Night float;  
Resident duty hours

## Abstract

**BACKGROUND:** We hypothesize that night float rotations in the third-year surgical clerkship improve student learning and perceptions of team cohesion.

**METHODS:** A 1-week night float (NF) system was implemented during the 2013 to 2014 academic year for students. Each student completed 1 week of NF with the Trauma/Emergency General Surgery service. The Perceived Cohesion Scale survey was prospectively administered and National Board of Medical Examiners academic performance retrospectively reviewed.

**RESULTS:** We surveyed 70 medical students, 37 traditional call and 33 NF students, with 91% response rate. Perception of team cohesion increased significantly, without perceived loss of educational benefit. Examination scores increased significantly comparing pre- and postintervention groups, with this trend continuing in the following academic year.

**CONCLUSIONS:** A week-long student NF experience significantly improved perception of team cohesion and standardized examination results. A dedicated period of NF during the surgical clerkship may improve its overall educational value.

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As of 2012, approximately 70% of all residency programs use a night float (NF) system, in which residents work consecutive overnight shifts of 10 to 15 hours instead of traditional rotation call. NF is especially common on the busiest surgical services, including Trauma and Emergency Surgery.<sup>1-3</sup> Given the critical impact of resident involvement on medical student education,<sup>4-6</sup> especially on surgical services, resident duty-hour restrictions and resultant

scheduling changes have understandably affected medical student experiences during clerkships. In clerkship programs that follow the traditional 24-hour call schedule, a student often leaves the hospital after call when their primary surgical team arrives for the day. Furthermore, a once-weekly call schedule for medical students limits their continuous exposure to the night Emergency General Surgery (EGS) and Trauma resident teams. These discrepancies result in a disconnect between the student and both the resident day and night teams, which impedes the formation of team cohesion between medical students and the residents. This may impair medical student morale and their sense of belonging, ultimately affecting the educational value of their surgical rotation.

The authors have no conflicts of interest.

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Some clerkship programs have addressed this problem by removing the 24-hour call requirement for medical students entirely to ensure that they remain on the same schedules as their primary team.<sup>7</sup> Although this solution preserves team cohesion, it has the potential to negatively affect student learning, as a significant number of patients admitted to the hospital are initially evaluated by the NF team.<sup>8,9</sup> Medical students who lack an overnight experience lose the opportunity to assess and diagnose a large population of patients.

Team cohesion has been associated with improvements in group performance.<sup>10</sup> It has been demonstrated that higher levels of cohesion among team members leads the team to set challenging goals, remain committed to accomplishing those goals, and perform at a higher level compared with a team with less cohesion.<sup>11</sup> Team cohesiveness and the student investment in team goals are critical to student education and a positive clerkship experience.<sup>12,13</sup> A recognition of the importance of team cohesion to its ultimate success has led to the development of multiple team cohesion assessment tools. Bollen and Hoyle<sup>14</sup> first described a 6-item Perceived Cohesion Scale (PCS) in 1990. They hypothesized that college students would have a higher level of perceived cohesion among themselves compared with other residents of the same large city. They used this tool to compare the perceived cohesion between groups and found a significantly higher sense of cohesion among the college students. They concluded that the PCS could be used as an accurate measure of perceived cohesion in large groups. Chin et al<sup>15</sup> later modified the questions of the PCS to be used to assess cohesion in small groups. They validated the modified PCS with an experiment where small teams of college students were asked to complete an experimental task and demonstrated that the modified PCS was a valid means of assessing perceived cohesion in small groups.

To balance team cohesion and student learning, a number of clerkships have begun to incorporate NF rotations into the clerkship schedule. The pediatric clerkship at the University of Missouri-Kansas City School of Medicine replaced the requirement of once-weekly call over a period of 4 weeks with a single week of NF. They demonstrated that student experiences on the clerkship dramatically improved without any negative effect on the student National Board of Medical Examiners (NBME) performance.<sup>16</sup> Similarly, the surgical clerkship at the Bronx-Lebanon Hospital Center compared the preferences of medical students who rotated through either the traditional 24-hour call system with those with a week-long NF experience and found that the NF experience was vastly preferred to the traditional call system.<sup>17</sup>

At our institution, we adopted a resident NF system by 2006 for the EGS and Trauma services. These teams manage all general surgery and trauma consults and cases each night and also care for critically ill patients in the intensive care unit (ICU). During the 2013 to 2014 academic year, we implemented a 1-week EGS/Trauma

NF system for medical students on their third-year surgical clerkship in place of a traditional call system. We hypothesize that an NF system improves the sense of team cohesion with the night resident team among medical students and that the overall value of the clerkship educational experience has improved. The purpose of this study was to measure student perceptions of team cohesion and compare their educational experience pre- and post-NF implementation.

## Methods

We performed a prospective survey of medical students during the third-year surgical clerkship and a retrospective review of surgical clerkship NBME performance at the Oregon Health and Science University (OHSU). OHSU is an accredited level 1 trauma center and the major tertiary referral center for the state of Oregon. Prospective survey data were collected during the 2013 to 2014 academic year. Retrospective NBME data were reviewed for 2 academic years, from 2013 to 2014 and 2014 to 2015. We received a waiver of human subjects research from the OHSU Institutional Review Board for this project.

Since 2006, an NF resident call system has assumed coverage of the overnight EGS and Trauma services at the OHSU. In the traditional surgical clerkship at our institution, third-year medical students were assigned to various general surgery services for their 6-week rotation. They would take inhouse call approximately every fifth night with the overnight EGS and Trauma resident service. Starting in the second half of the 2013 to 2014 academic year, the surgical clerkship transitioned from this traditional call model to a dedicated 1-week NF call from 6 PM to 6 AM with the resident NF EGS/Trauma team. The students spend the remainder of their rotation with their assigned general surgery service without an overnight call requirement. We defined the pre-intervention group as the first half (summer and fall) of the 2013 to 2014 academic year and the postintervention group as the second half (winter and spring) of the 2013 to 2014 academic year. Sample pre-intervention and postintervention clerkship call schedules are provided in [Fig. 1](#).

The primary end point in this study was an assessment of team cohesion by third-year students in the pre-intervention and postintervention groups concerning their experience with overnight call with the EGS/Trauma resident team. We administered the modified PCS for small groups<sup>15</sup> to all third-year clerkship students at the end of the NF week. The PCS is a 6-question survey with responses recorded on a 7-point, Likert-type scale with the following anchors: strongly disagree, disagree, slightly disagree, neither, slightly agree, agree, and strongly agree ([Table 1](#), questions 1 to 6). In addition to the 6 questions described by Chin et al, we added 2 additional questions to probe the educational value of the NF rotation ([Table 1](#), questions 7 and 8). Responses to the modified PCS were compared in the

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