Association for Surgical Education

Medical student perception of night call in a night float system

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Abstract

BACKGROUND: Because of work hour regulations, many surgical residency programs have moved to a night float system. Previously, our medical students took call for 24 hours, whereas currently they also follow a night float system. This study looked at their evaluations of these 2 systems.

METHODS: Students were anonymously surveyed to evaluate the rotation (on a 5-point scale) as well as various components including night call. Responses from each group were compared.

RESULTS: There were 104 students included: 46 in the traditional 24-hour call group and 58 in the night float group. Students rated night call significantly higher in the night float system (4.62 ± 0.64 vs 3.52 ± 1.00, P < .001). There was no difference in the other components or the overall evaluation.

CONCLUSIONS: After switching to a night float system, students had a much more positive perception of their night call experience. We believe more clerkships should switch to a night float system.

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In 1988, New York became the first state to regulate resident work hours.1 Starting in 2003, the Accreditation Council for Graduate Medical Education (ACGME) adopted formal restrictions on resident work hours.2 This represented the original “80-hour work week.” In 2008, the Institute of Medicine released even more restrictive recommendations,3 and a modified version of this was accepted by the ACGME (effective in 2011).4 A major component of these new duty-hour rules was that consecutive hours of work by first-year residents were limited to 16. As a result, interns were no longer able to work a 24-hour shift. As such, programs were essentially mandated to move to a night float system at least for first-year residents.

In a night float system, there are designated day teams and night teams. Typically, the day team will be responsible for weekdays, typically 5 or 6 nights a week. There are different variations of this system,1,5 but the common theme is consecutive nights of night call with no daytime responsibilities.

At the current time, none of these work hour restrictions apply to medical students. Until recently, medical students at our hospital used a traditional 24-hour call schedule during their surgical clerkship. Recently, they were switched to a night float schedule. The purpose of this study was to measure student impressions of this new schedule.

Methods

Medical students from 3 medical schools currently rotate through our hospital for their third-year surgical clerkship. There has always been a night call component to the clerkship, averaging about 1 night call per week. Up until March 2010, students took 24-hour calls. On their call days, they would show up for a regular day and then stay overnight until the next day. Although the 2003 ACGME guidelines did not apply to them, they were given the next...
“post-call” day off. This was considered the traditional 24-hour call system.

Starting in March 2010, the call system was changed for the medical students. During 1 week of their rotation, students would take call at night from 7 PM to 7 AM Monday to Saturday. In addition to these night calls, students took 2 weekend day calls (7 AM to 7 PM) during the rest of their rotation. This was considered the night float system.

Both systems had the same amount of overnight call and the same amount of day shifts off. With the 24-hour call system, the night call was tacked on to the end of a regular day shift, and the next day the student was off. In the night float system, the night calls were all in a row, and the day shifts off were all in a row. In both systems, students missed some lectures at the hospital. However, the main lecture curriculum at the school took place on Monday afternoons. Neither system included call on Sunday night in order to accommodate students attending these lectures.

At the end of each rotation, medical students were given surveys designed to give feedback to the clerkship site director. These surveys were anonymous and were generally returned as a group in order to keep anonymity. Students were asked to evaluate the overall rotation as well as the individual components of the clerkship. Students were asked to evaluate the lectures, the operative experience, and the night call experience. Initially, they were also asked about the emergency room experience, but this question was later changed to ask about resident interaction. Students were asked to circle 1 of 5 choices for each question: poor, fair, good, very good, or excellent. In addition, there was space to write in comments after each question (Appendix 1).

The study included all students rotating through our hospital between August 2008 and August 2011. The students were divided into those on the traditional call system and those on the night float system. Results from the multiple-choice questions were scored from 1 to 5. Only the answers to components that remained consistent throughout the study period (ie, lectures, operative experience, and night call) as well as the overall evaluation were included. The answers of the traditional and night float groups were compared, and an analysis of variance test was used to test for significance.

Comments made regarding the night call experience were evaluated and scored as either being positive, negative, or mixed (Table 1). Results from the 2 groups were compared, and the Pearson chi-square test was used to check for significance. Statistics were performed using SPSS version 17.0 (SPSS, Chicago, IL), with P values less than .05 considered significant.

### Results

There were 118 students on their surgery clerkship during the study period. We received feedback forms from 108 students (92%). Four were incompletely filled out, leaving 104 students in the study group. There were 46 in the traditional call group and 58 in the night float group.

In terms of their overall experience, there was no significant difference between the 2 groups. Students also rated the lecture schedule and their operative experience with no significant difference between the 2 groups. However, their night call experience scored significantly higher in the night float system (4.62 ± .64 vs 3.52 ± 1.00, P < .001, Table 2). Of the 4 questions included in the study, night call went from the poorest score in the traditional call schedule to the highest score under the night float system.

There were 61 students (59%) who provided a comment in the question about night call: 26 in the traditional call group and 35 in the night float group. In the traditional group, these comments were classified as 35% positive, 27% negative, and 39% mixed. In the night float group, these comments were 89% positive, 3% negative, and 9% mixed (Table 3). The difference between the groups was highly significant (P < .001).

<table>
<thead>
<tr>
<th>Table 1</th>
<th>Examples of open-ended comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive</td>
<td>“This was the time I got the most exposure to the care of patients, and the most resident interaction. Really enjoyed nights!”</td>
</tr>
<tr>
<td></td>
<td>“Learned a lot and great for one-on-one interaction.”</td>
</tr>
<tr>
<td></td>
<td>“Best part of the rotation!! As the only medical student on the team there was a lot of opportunity for hands on experience and time with the residents.”</td>
</tr>
<tr>
<td></td>
<td>“Night calls are ridiculous for students. We learn the same things during the day.”</td>
</tr>
<tr>
<td>Negative</td>
<td>“We just end up being in sign-out the whole time...It is not a very high yield experience.”</td>
</tr>
<tr>
<td></td>
<td>“Not well organized. Very random.”</td>
</tr>
<tr>
<td></td>
<td>“Learned so much, on consult especially. Being at sign-out though was not so useful.”</td>
</tr>
<tr>
<td>Mixed</td>
<td>“Depends on who the consult resident is.”</td>
</tr>
<tr>
<td></td>
<td>“Varied week to week. My week was relatively slow in comparison to other students’ experiences.”</td>
</tr>
</tbody>
</table>
Students based on their perception or the actual time spent on educational activities. On the other hand, White et al\textsuperscript{16} showed that students perceived their educational experience to be worse after work hour regulations were adopted for the residents. In addition, there has been some research regarding the experience of medical students and night call. Students on rotations with night call have been shown to have more burnout.\textsuperscript{17} McMullin et al\textsuperscript{18} showed that students were involved in less educational activities during night call. Nonetheless, most faculty and residents agree that students benefit from taking call at night.\textsuperscript{19} Some efforts have been made toward restricting student hours during clerkships.\textsuperscript{20} However, no study to date has looked at how students responded to a night float system.

Our study shows that students responded very positively to a night float system. In fact, many students even reported that the week on night float was the best part of the rotation. This seems to be in contradiction to some of the earlier studies about student experiences and educational activities during night call. We believe there are multiple reasons for this.

For one, many of the studies are asking students whether they liked being in the hospital during the day or the night or they are asking whether the student would prefer having no night call at all. Our students take it for granted that a surgery clerkship includes night call. This sets up a certain baseline expectation for night call and allows them to evaluate their experience of night call on this particular rotation vs other rotations.

Second, there is a big distinction between residents and students. Residents get their education from attendings, who for the most part are not in the hospital at night. On the other hand, students get much of their education from the residents.\textsuperscript{21} The residents are available at night, and, in fact, they often have more time to teach at night. This allows students to get a strong educational experience at night. Even if there is some downtime and the percentage of time in educational activities is less,\textsuperscript{18} the quality of education can be higher in this less pressured time setting.

Finally, a major factor in the positive experience is the participation as part of the team. In our residency program, all years of residents are on a night float system. As such, there is a complete new team of residents at night. It is a relatively small hospital, and the night team consists of 2 interns, 1 midlevel resident, and 1 senior resident. The same 4 residents function as a team each night. When the student joins, the student becomes part of the team and interacts with the same group of residents for the entire week. Because there is only 1 student at a time or occasionally 2, this allows the residents to really get to know the students well. As the relationship grows over the week, the residents are more likely to spend even more time educating the students.

Our study has some limitations. For one, it was a relatively small study. However, the findings were extremely significant, and we do not believe the small sample size is a factor. Second, our residency program has completely adopted a night float model. It is possible that in

### Table 2
Comparison of multiple-choice evaluations between groups

<table>
<thead>
<tr>
<th></th>
<th>Traditional call</th>
<th>Night float</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall</td>
<td>4.32 ± .66</td>
<td>4.50 ± .58</td>
<td>.149</td>
</tr>
<tr>
<td>Lectures</td>
<td>4.47 ± .65</td>
<td>4.33 ± .80</td>
<td>.341</td>
</tr>
<tr>
<td>Operative Experience</td>
<td>4.09 ± .81</td>
<td>4.07 ± .79</td>
<td>.910</td>
</tr>
<tr>
<td>Night Call</td>
<td>3.52 ± 1.00</td>
<td>4.62 ± .64</td>
<td>&lt;.001</td>
</tr>
</tbody>
</table>

### Table 3
Comparison of open-ended comments between groups

<table>
<thead>
<tr>
<th></th>
<th>n</th>
<th>Negative (%)</th>
<th>Mixed (%)</th>
<th>Positive (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traditional call</td>
<td>26</td>
<td>7 (26.9)</td>
<td>10 (38.5)</td>
<td>9 (34.6)</td>
</tr>
<tr>
<td>Night float</td>
<td>35</td>
<td>1 (2.9)</td>
<td>3 (8.6)</td>
<td>31 (88.6)</td>
</tr>
</tbody>
</table>

\( P < .001. \)
programs in which some of the residents stay for 24-hour calls that medical students would find that kind of call system beneficial. Finally, our study only looked at student perceptions of their night call experience. We did not measure the actual contribution to their education nor did we measure any impact on their level of knowledge or final grade. Perhaps this is an area for future research, but we would maintain that student perception in itself is important. Student perception of their clerkship experience has been shown to be strongly related to their interest in the field as a career choice.22–24

In conclusion, switching to a night float system has led students to have a vastly improved perception of their night call experience. We advocate that more surgical clerkships should adopt a night float call schedule for their medical students.

References


Appendix 1

Student clerkship evaluation

1. What is your overall impression of the educational value of this clerkship experience? (circle) Excellent Very Good Fair Poor Comments: __________________________________________________________________________

2. What is your feeling in regard to the various elements of the program?
   a. Lectures Excellent Very Good Fair Poor Comments: __________________________________________________________________________
   b. O.R. sessions Excellent Very Good Fair Poor Comments: __________________________________________________________________________
   c. Resident Interaction* Excellent Very Good Fair Poor Comments: __________________________________________________________________________
   d. Night Call Excellent Very Good Fair Poor Comments: __________________________________________________________________________

   * Before November 2010, this question asked about emergency room experience.