Shifting Indirect Patient Care Duties to After Hours in the Era of Work Hours Restrictions

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Abstract

Purpose
Few data describe how often residents defer indirect patient care tasks to after hours or show whether residents report this time in duty hours logs. Thus, the authors examined how often residents perform one such task, discharge dictation, outside scheduled hours.

Method
The authors tracked all discharge summaries dictated by internal medicine residents at a single teaching hospital from January to June 2009. They determined the length and timing of discharge dictations by querying the hospital voice-dictation system. Definite work hours violations occurred when residents completed dictations on the postcall day after reaching mandated duty hours limits or on scheduled days off. Potential work hours violations arose when residents dictated after 6 PM or during the month subsequent to their rotation. The authors compared the number of residents they determined to have incurred duty hours violations with the number self-reporting violations.

Results
The authors obtained data on 1,152 dictations performed by 39 residents. Residents spent a mean 6.5 hours dictating per month, averaging 13 minutes per dictation. Using objective criteria, the authors determined that the majority of residents (32; 82%) incurred definite duty hours violations. Far fewer (2; 5%) self-reported violations. Team census, total time spent dictating, and dictation length were associated with dictating during restricted hours.

Conclusions
Indirect patient care tasks, such as dictating discharge summaries, may contribute substantially to unrecognized duty hours violations. Accurate and objective ways to assess resident workflow can help create effective solutions for resident efficiency and inform changes to resident schedules.

In 2003, the Accreditation Council for Graduate Medical Education (ACGME) limited resident duty hours to 80 per week with no more than 30 consecutive hours on duty in response to concerns about the impact of long hours on resident education, resident well-being, and patient safety. Although these mandates seem to have improved resident quality of life and some educators have raised concerns about unintended negative consequences on resident teaching and resident education. Some fear, for example, that duty hours limitations will cause residents to spend a greater portion of their time completing indirect patient care tasks (e.g., paperwork, the scheduling of tests and appointments, dictations) rather than providing direct patient care. In a recent study, residents reported that the time they spent performing administrative tasks did not change after the work hours restrictions were implemented. Indirect patient care duties, such as dictating discharge summaries, may therefore be a source of resident work hours violations, or, if they detract from direct patient care, they may negatively impact resident educational experiences.

Although survey data are prevalent and provide a broad overview of resident self-reported practice, information from studies that examine objective data on actual resident responses to work hours are scarce. As further restrictions on shift length will be implemented this year, medical educators need objective data to understand both resident workflow and the current sources of work hours violations. Thus, we used an objective measure to examine residents’ actual use of time. Using data from a voice dictation system, we examined resident practice patterns around the completion of one indirect patient care task, the discharge summary dictation, to determine whether this task was a source of unrecognized work hours violations. To our knowledge, no objective data exist regarding resident dictation practices in relation to current work hours regulations.

Method
Study design, residency program, and participants
This was a consecutive case series study, examining the dictations of internal medicine residents on an inpatient medicine service at a university-based teaching hospital, from January to June 2009. On this service, the senior (i.e., postgraduate year 2 or 3) residents start at 7 AM daily, taking a 30-hour overnight call every fourth night. To adhere to ACGME work hours regulations, residents are expected to leave the...
hospital by 1 PM on the postcall day. Residents work six days per week. Each resident has one 24-hour period off each week, and we require residents to restrict their weekly hours to 80. We also require them to log their duty hours daily in a Web-based reporting system. Senior residents are responsible for dictating discharge summaries into a voice dictation system within 14 days of patient discharge. We undertook our study in the second half of the academic year in an attempt to study the practices of residents who were already familiar with dictating. We included only residents who rotated for the entire month; thus, we excluded two postgraduate year 2 residents: one who took a sick leave and the other who covered for him/her. Our institution’s Committee on Human Research approved the study.

Measurements
The university’s voice dictation system records the date and time a provider initiates and terminates the call, as well as the final length, in minutes, of each transcription. The system requires a unique and anonymous provider identification number which the provider—in this case the resident—enters at the time of the call. We queried the dictation system, using this unique identifier, to obtain transcription data for the month of and the month after each resident’s time on service. To ensure that the subsequent month reflected only outstanding dictations, we verified that no resident remained on this rotation for a second month. Because dictating generally also involves additional time spent in chart review and the editing and rerecording of verbal errors, the final dictation length may underestimate the total time spent dictating. Thus, to more accurately assess time spent on the dictation, we used the time of initiation and termination of the call, rather than the final dictation length. We obtained retrospective data on team census, that is, the number of patients cared for by the team on a given day, through a manual review of the electronic medical record. Departmental administrators gather these data at 8 AM each day on an ongoing basis.

We compared transcription data, residents’ online schedules, and reported days off in order to calculate the total number and average length of dictations that residents completed during and after scheduled work hours. We scored dictations that residents completed after working more than 30 consecutive hours (i.e., during a call cycle), as well as dictations completed during a resident’s mandatory 24-hour period off, as definite duty hours violations for these clearly violated ACGME regulations. We scored dictations that residents completed after 6 PM on regular weekdays and during the month subsequent to their inpatient rotations as potential duty hours violations. We could not determine dictations at these times to be true violations; instead, these represent an increased risk for violating work hours. We set 6 PM as the cutoff time because residents who stay after 6 PM on a weekday that starts at 7 AM have worked more than 11 hours in a day, and with a call schedule that includes a 30-hour shift every fourth night, residents who work shifts longer than 11 hours are at high risk for violating the 80-hour workweek. Similarly, residents work full schedules, so time spent dictating in the month after the internal medicine rotation could easily put them over the top of duty hours limits for the next month’s rotation.

Analysis
We compared resident-reported perceptions of the number and length of completed dictations with objective data, and we determined significant differences through a paired t test. We analyzed potential predictors of work hours violations (e.g., resident year, average team census, total time spent dictating in a month, dictation length, and number of dictations) with independent t tests for dichotomous predictors (e.g., resident year) and with linear regression for continuous variables (e.g., dictation length). Given the need to preserve resident anonymity, we could not assess the contributions of resident age or gender, the number of call days per month, or the number of previous ward months that residents had experienced. We performed all statistical tests using the SAS statistical application program (release 9.2, Cary, North Carolina).

Results
Of the 42 residents meeting inclusion criteria during the study period, 39 (93%) had complete schedule, survey, and transcription data available. Table 1 details the demographic characteristics of the participants.

After examining discharge dictations, we determined definite work hours violations to be widespread; 32 (82%) of the residents incurred definite work hours violations, and 36 (92%) of the residents incurred either potential or definite work hours violations as a result of dictation timing (Table 2). During the study period, only 2 (5%) of the 42 residents self-reported work hours violations using the Web-based reporting system.

Dictation timing
We collected data on 1,152 dictations. On average, residents completed 30 dictations (range: 16–45) in one month, spending an average of 6.5 hours (range: 2.5–13) on dictations. The average dictation length was 13 minutes (range: 4.6–30). Residents most frequently dictated while taking call; on average, 42% of each resident’s total dictation time occurred during the 30-hour call cycle (Table 3). We found that 14% of a resident’s time dictating, including 10% on days off, was definitely in violation of

Table 1
Population Demographics of 39 University of California San Francisco Residents on an Inpatient Rotation, January to June 2009

<table>
<thead>
<tr>
<th>Demographic and measure</th>
<th>Data</th>
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<tbody>
<tr>
<td>Resident age, median (range)</td>
<td>30 (28–39)</td>
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<tr>
<td>Second-year residents, number (%)</td>
<td>38 (97)</td>
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<tr>
<td>Team census, average (range)</td>
<td>9.0 (5.5–12.5)</td>
</tr>
<tr>
<td>Calls/month, average (range)</td>
<td>7.5 (7–8)</td>
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<tr>
<td>Ward months completed previously, average (range)</td>
<td>0.8 (0–1)</td>
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work hours restrictions. Another 15% of dictation time was the source of potential work hours violations, and dictation time after 6 PM constituted the majority of these potential violations. Although residents spend only an average of 54 minutes dictating during restricted hours, the range was wide (from 0 to 5.2 hours).

**Dictation perceptions**
The overall contribution of dictations to resident work hours in a month is a small fraction of total hours (<2%); however, residents consistently perceived a greater time investment. Compared with matched objective data, residents significantly overestimated the time they spent on each dictation (18.21 versus 13.28 minutes, \( P < .001 \)), the actual number of dictations they completed (40 versus 30, \( P < .001 \)), and the amount of time they spent dictating weekly (120 versus 92 minutes, \( P < .001 \)).

**Predictors of violations**
We examined the factors associated with dictating outside of regular duty hours. Longer dictations, a greater total time spent on dictation, and team census were all positively associated not only with increased definite work hours violations but also with increased definite and potential (combined) work hours violations (\( P < .001, <.001, \) and \( <.05 \), respectively). The total number of dictations completed was not positively associated either with definite work hours violations independently or with definite and potential (combined) work hours violations (\( P < .003 \)).

**Discussion**
In this case series study of internal medicine residents, 92% of the residents incurred a definite or potential work hours violation as a result of dictating discharge summaries after hours. In our study, resident surveys, which are the most common way to obtain information about resident workflow and duty hours, were inaccurate: Residents significantly overestimated the time they spent on dictations and underreported duty hours violations. Team census, total time spent dictating, and dictation length were significantly associated with increased dictation-related work hours violations. Our results show that although residents spent the majority of their time dictating during regular hours (a large portion of residents dictate while taking call), many residents violated work hours regulations by dictating on days off or after working more than 30 consecutive hours. For most residents, the contribution of dictation time to weekly work hours was minimal; however, outliers who spent considerable time on dictations existed. We found that the total number of dictations residents complete in a month did not contribute significantly to work hours violations (perhaps because dictations are required only for patients who stay greater than 48 hours).

Despite the relatively low number of hours that residents spend dictating, the proportion of residents violating work hours is high. This finding adds credence to the hypothesis that residents have responded to work hours restrictions by deferring indirect patient care tasks to after scheduled hours. More concerning is that discharge dictations may represent just a fraction of the ways residents might violate work hours after leaving the hospital. For example, residents may answer pages or review electronic medical records from home. Our results illustrate the limitations of using resident surveys alone to study and improve resident workflow. Instead, creative methods to obtain objective data, such as time-in-motion studies, offer more accurate data for guiding changes to resident indirect patient care tasks.

Residents consistently overestimated the time they spent dictating as well as the number of dictations they completed in a month. The lack of perceived educational value for these tasks may have inflated their perceptions of the time they spent. Studies have suggested that perceived workload, rather than the absolute number of work hours, is a better

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**Table 2**

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<thead>
<tr>
<th>University of California San Francisco Residents With Definite and Potential Work Hours Violations, Discharge Dictations, January to June 2009</th>
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<tbody>
<tr>
<td><strong>Residents practices</strong></td>
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<tr>
<td>Residents with <em>definite</em> work hours violations from dictations</td>
</tr>
<tr>
<td>Residents dictating on days off</td>
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<tr>
<td>Residents dictating after a 30-hour overnight shift</td>
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<tr>
<td>Residents with <em>potential</em> work hours violations from dictations</td>
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<tr>
<td>Residents dictating after 6 PM</td>
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<tr>
<td>Residents dictating the following month</td>
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<tr>
<td>Residents with either definite or potential work hours violations due to dictations</td>
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**Table 3**

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<thead>
<tr>
<th>Timing of University of California San Francisco Resident Discharge Dictations, January to June 2009</th>
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<tr>
<td><strong>Use of time</strong></td>
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<tr>
<td>Time spent on dictations completed during scheduled work hours</td>
</tr>
<tr>
<td>Dictations completed on noncall days</td>
</tr>
<tr>
<td>Dictations completed during a 30-hour on-call shift</td>
</tr>
<tr>
<td>Time spent on dictations that is a <em>definite</em> violation of work hours restrictions</td>
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<tr>
<td>Dictations completed postcall after 1 PM</td>
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<tr>
<td>Dictations completed on days off</td>
</tr>
<tr>
<td>Time spent on dictations that is a <em>potential</em> violation of work hours restrictions</td>
</tr>
<tr>
<td>Dictations completed after 6 PM on noncall days</td>
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<tr>
<td>Dictations completed in following month</td>
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<tr>
<td>Time spent on all dictations</td>
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predictor of resident fatigue. Therefore, indirect patient care tasks that have little perceived educational value for residents and/or cause a resident to violate work hours restrictions may contribute disproportionately to fatigue and burnout.

At our institution we used these data to educate residents about the importance of discharge summaries as a tool for ensuring safe care transitions, thereby turning dictating from “just” an administrative task into one that is vital for improving continuity of patient care. We provided residents with specific training in producing focused and concise discharge summaries, emphasizing the communication of essential information (e.g., medication changes and pending tests) to primary care physicians. Residents now receive feedback regarding their discharge summary performance not only through reports from Medical Records on the quality and timeliness of their discharge documentation but also in the formal rotation evaluations that attendings write. In response to the presence of work hours violations, the residency program renewed its efforts to explore and ameliorate the factors that cause residents to work after hours. We emphasized to the residents that preventing and eliminating work hours violations is a priority; we enlisted support from attending physicians to help residents leave the hospital in a timely fashion; and we strongly discouraged the performance of indirect patient care tasks during restricted hours.

We are also using these data to develop a systems-level solution in the form of an electronic discharge summary that integrates data from the medical record into a templated summary that requires less effort to complete. This document is combined with the resident’s day-of-discharge daily progress note, thereby incorporating an additional administrative task into one already built into the daily workflow.

Our study has several limitations. It is a single-site study, and, as such, its findings may not be representative of dictation practices at other institutions. Furthermore, our sample size is small, limited by the number of residents in our program on an internal medicine rotation at one site at a given time.

Time spent on the phone dictating may underrepresent the total time invested in producing a dictation, because it does not reflect time spent reviewing the chart in preparation. Although we were able to capture the large majority of our residents, an element of response bias is possible: Residents who did not respond to the survey may have been more efficient with dictations and unconcerned about reporting their data. Conversely, nonresponders may have been hesitant to participate if they had more work hours violations even though we guaranteed anonymity. As a case series, we can describe dictation practices, but we cannot form causal relationships about why residents choose to dictate after hours or why they overestimate their dictation times. The survey portion of the study is also subject to recall bias; however, we were interested only in residents’ perceptions of dictation length, number, and timing, and we did not use these self-reported measures as a substitute for objective data.

Conclusions
Previous studies on duty hours restrictions have largely ignored the role of indirect patient care tasks on work hours compliance. As new regulations on work hours will be implemented this year, residency leaders must understand and address work hours violations that are caused by indirect patient care tasks. These tasks should, when possible, help educate residents on systems-based practice and quality of care, and academic hospitals should invest in systems-level solutions to make indirect patient care tasks more educational and efficient.

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Ethical approval: The University of California San Francisco’s institutional review board, The Committee on Human Research, granted expedited approval of this study.

References

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