

LETTER TO EDITOR

The Authors Reply “The Effect of Hospitalist Continuity on Adverse Events”

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We greatly appreciate the thoughtful points made by Dr. Kerman regarding our recently published study evaluating the association of hospitalist continuity on adverse events (AEs).¹ We agree that a 7-on/7-off staffing model may limit discontinuity relative to models using shorter rotations lengths. Many hospital medicine programs use a 7-on/7-off model to optimize continuity. Longer rotation lengths are uncommon, as they may lead to fatigue and negatively affect physician work-life balance. Shorter rotation lengths do exist, and we acknowledge that a study in a setting with greater fragmentation may have detected an effect.

We respectfully disagree with Dr. Kerman’s concern that our methods for AE detection and confirmation may have been insensitive. We did not rely on incident reports, as these systems suffer from under-reporting and often represent only a fraction of true AEs. We used a modified version of the classic 2-stage method to identify and confirm AEs.² In the first stage, we used computerized screens, based on criteria from the Harvard Medical Practice Study and Institute for Healthcare Improvement global trigger tool, to identify potential AEs.^{3–5} A research nurse created narrative summaries of potential AEs. A physician researcher then reviewed the narrative summaries to confirm whether an AE was truly present. This time-consuming method is much more sensitive and specific than other options for patient safety measurement, including administrative data analyses and incident reporting systems.^{6,7}

With respect to other outcomes that may be affected by hospitalist continuity, we recently published a separate study showing that lower inpatient physician continuity was significantly associated with modest increases in hospital costs.⁸ We found no association between continuity and patient satisfaction, but were likely underpowered to detect one. Interestingly, some of the models in our study suggested a slightly reduced risk of readmission with lower continuity. We were surprised by this finding and hypothesized that countervailing forces may be at play during

handoffs of care from 1 hospitalist to another. Transitions of care introduce the opportunity for critical information to be lost, but they also introduce the potential for patient reassessment. A hospitalist newly taking over care from another may not be anchored to the initial diagnostic impressions and management plan established by the first. Of course, the potential benefit of a reassessment could only occur if the new hospitalist has time to perform one. At extremely high patient volumes, this theoretical benefit is unlikely to exist.

We did not include length of stay (LOS) as an outcome because hospitalist continuity and LOS are interdependent. Although discontinuity may lead to longer LOS, longer LOS definitely increases the probability of discontinuity. Thus, we controlled for LOS in our statistical models to isolate the effect of continuity. The study by Epstein and colleagues did not take into account the interdependence between LOS and hospitalist continuity.⁹ Observational studies are not ideal for determining the effect of continuity on LOS. The Combing Incentives and Continuity Leading to Efficiency (CICLE) study by Chandra and colleagues was a pre-post evaluation of a hospitalist staffing model specifically designed to improve continuity.¹⁰ In the CICLE model, physicians work in a 4-day rotation. On day 1, physicians exclusively admit patients. On day 2, physicians care for patients admitted on day 1 and accept patients admitted overnight. On days 3 and 4, physicians continue to care for patients received on days 1 and 2, but receive no additional patients. The remaining patients are transitioned to the next physician entering the cycle at the end of day 4. Chandra and colleagues found a 7.5% reduction in LOS and an 8.5% reduction in charges. Interestingly, they also found a 13.5% increase in readmissions that did not achieve statistical significance ($P = 0.08$). The CICLE study suggests continuity does affect LOS, but is limited in that it did not account for a potential preexisting trend toward lower LOS.

Dr. Kerman presents data showing that it takes longer for a physician to care for a patient who is new to him or her than for a patient who is previously known. This finding has face validity. However, as we have suggested, the extra time spent by the oncoming physician may have both advantages and

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disadvantages. The disadvantages include time-consuming cognitive work for the physician and the potential for information loss affecting patient care. The potential advantage is a second physician reassessing the diagnosis and management decisions established by the first, potentially correcting errors and optimizing care.

Ultimately, more research is needed to illuminate the effect of hospitalist continuity on patient outcomes. For now, we feel that hospital medicine group leaders need not institute lengthy rotations or staffing models that prioritize continuity above all other factors, as continuity appears to have little impact on patient outcomes.

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