

## Waterfalls and Handoffs: A Novel Physician Staffing Model to Decrease Handoffs in a Pediatric Emergency Department



To the Editor:

We read with interest the study by Yoshida et al,<sup>1</sup> aiming at decreasing the number of handoffs in a pediatric emergency department (ED). Although we acknowledge that the authors achieved their objective in reducing the proportion of patients who were handed over, we question the hypothesis underlying their study.

The authors suggested that the risk associated with handoff is well documented. In fact, 2 of the cited references for this assertion studied only communication errors associated with handoffs and not adverse outcomes, and the third described the results of a survey, which was subject to recall and hindsight bias. To our knowledge, no study to date has reported a higher risk of adverse outcomes associated with the practice of handoff. In contrast, several studies have suggested an opposite effect, in which handoffs present a possibility for a second opinion and may be associated with a decreased risk of medical error.

In a landmark study aimed at proving the risk of handoff, Kajdacsy-Balla Amaral et al<sup>2</sup> reported that nighttime cross coverage was in fact associated with better prognoses for ICU patients. Similarly, in a pilot study, we found that participation of more than one physician in patient care may reduce the rate of medical errors.<sup>3</sup> We subsequently reported in an interventional randomized trial that the implementation of systematic cross-checking reduced the risk of medical error by 40%.<sup>4</sup>

We believe that the old paradigm that handoffs constitute a risk for patients should be reevaluated, and in this context, we question the results of the study by Yoshida et al.

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1. Yoshida H, Rutman LE, Chen J, et al. Waterfalls and handoffs: a novel physician staffing model to decrease handoffs in a pediatric emergency department. *Ann Emerg Med*. 2019;73:248-254.
2. Kajdacsy-Balla Amaral AC, Barros BS, Barros CAPP, et al. Nighttime cross-coverage is associated with decreased intensive care unit mortality. A single-center study. *Am J Respir Crit Care Med*. 2014;189:1395-1401.
3. Freund Y, Goulet H, Bokobza J, et al. Factors associated with adverse events resulting from medical errors in the emergency department: two work better than one. *J Emerg Med*. 2013;45:157-162.
4. Freund Y, Goulet H, Leblanc J, et al. Effect of systematic physician cross-checking on reducing adverse events in the emergency department: the CHARMED cluster randomized trial. *JAMA Intern Med*. 2018;178:812-819.

In reply:



We appreciate the comments from Dr. Freund in regard to our study. We read Dr. Freund's and Dr. Kajdacsy-Ballar Amaral's articles with great interest.<sup>1,2</sup> Our field has more work to do to identify the root cause of errors in a busy emergency department (ED) environment. In our experience, we can identify many instances in which errors or omissions occurred during handoffs,<sup>3,4</sup> and communication errors can negatively affect the care that we provide our patients.<sup>5</sup> Reporting vital signs, laboratory results, and medical decisionmaking accurately is important and inaccuracies can lead to delays and rework for not only that patient but also for other patients in our care. In addition, we have found that our model has benefits that go beyond reducing the sheer number of handoffs. It allows us to optimize our productivity at the beginning of our shift, when we are fresh, rather than spending an extended period getting to know a large number of patients before starting to treat new ones. Also, having fewer handoffs gives us more time with patients and trainees and improves continuity with families.

Dr. Freund's study on reducing adverse events in the ED by having systematic physician cross-checking is interesting. Although we do not currently have a formal system of reviewing cases, we agree that having the option for a second opinion may be positive for patient care. A benefit of our new "waterfall" scheduling model's overlapping shift times is that we are often alongside another attending physician colleague in the ED, which