

Better Handoffs Cut Medical Errors 30% in Multicenter Trial

Laurie Barclay, MD | November 06, 2014

The I-PASS (illness severity, patient summary, action list, situation awareness and contingency plans, and synthesis by receiver) system of bundled communication and training tools for handoff of patient care between providers reduced injuries caused by medical errors by 30%, according to a multicenter study. The improvements in patient safety and quality of care occurred without significantly burdening clinical workflows, researchers report in an [article published](#) in the November 6 issue of the *New England Journal of Medicine*.

As previously [reported](#) by *Medscape Medical News*, I-PASS effectively lowered medical errors at two inpatient units at Boston Children's Hospital. The current report extends the findings to the pediatric residency programs at nine hospitals throughout the United States. A.J. Starmer, MD, MPH, from the Department of Medicine, Division of General Pediatrics, Boston Children's Hospital, Massachusetts, and colleagues suggest the principles of I-PASS apply to care in any hospital inpatient setting.

"Miscommunications and handoff errors are two of the most significant causes of medical errors in hospitals in the U.S.," senior author Christopher Landrigan, MD, MPH, from Boston Children's Division of General Pediatrics, said in a news release. "This is the first multicenter handoff improvement program that has been found to reduce injuries due to medical errors."

Approximately 80% of the most serious medical errors in US hospitals, such as diagnostic delays, preventable surgical complications, and medication overdoses, are thought to result from miscommunication between providers, especially during patient handoffs. These errors are a leading cause of mortality and morbidity.

The investigators studied patient handoffs by residents and medical errors during a 6-month preintervention period; during a 6-month intervention phase, in which residents learned the I-PASS system; and during a 6-month posttraining phase. The overall study sample consisted of 10,740 patient admissions.

After I-PASS training and implementation, the overall rate of medical errors fell by 23%, going from 24.5 to 18.8 errors per 100 admissions ($P < .001$), whereas preventable adverse events declined by 30%, going from 4.7 to 3.3 errors per 100 admissions ($P < .001$).

Error reductions were significant at six of nine sites. Across sites, the inclusion of all prespecified key elements in written documents and oral communication during handoff increased significantly ($P < .001$).

The investigators suggest these safety improvements could markedly lower healthcare costs related to medical errors, although the study lacked this type of analysis.

I-PASS did not increase time required for patient handoffs or reduce time spent with patients or on other tasks, according to time-motion analyses. A poststudy survey showed significant improvements after I-PASS implementation in residents' verbal and written communications at each of the nine centers, as well as in residents' satisfaction with the quality of their patient handoffs.

"We recognized that it would take a great deal of work to make the handoff program a sustainable system and encourage its adoption across hospitals," Dr Starmer noted in the news release. "We partnered with experts in research, curriculum development and administration, as well as local faculty and executives at the nine centers, to develop a comprehensive and multi-faceted handoff and communication program. Now the new I-PASS program works seamlessly with existing tools and is part of each institution's culture."

The I-PASS components include standardized communication and handoff training, verbal handoff procedure centered on the mnemonic "I-PASS," computerized handoff tools allowing providers to share patient data using an I-PASS structure, observation and overseeing handoff communications by supervising attending physicians, and a promotional campaign to implement I-PASS as part of the institutional process.

"Because we know that miscommunications so commonly lead to serious medical errors, and because the frequency of handoffs in the hospital is increasing, there is no question that high-quality handoff improvement programs need to be a top

priority for hospitals," Dr Starmer concluded. "It's tremendously exciting to finally have a comprehensive and rigorously tested training program that has been proven to be associated with safer care and that meets this need for our patients."

The US Department of Health and Human Services, the Agency for Healthcare Research and Quality, the Medical Research Foundation of Oregon, Physician Services Incorporated Foundation, and Pfizer supported this study, which also received input from the Initiative for Innovation in Pediatric Education and the Pediatric Research in Inpatient Settings Network. The coauthors have reported receiving grant support from various organizations and Pfizer. Full conflict-of-interest information is available on the journal's [website](#).

N Engl J Med. 2014;4;371:1803-1812. [Full text](#)

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Cite this article: Better Handoffs Cut Medical Errors 30% in Multicenter Trial. *Medscape*. Nov 06, 2014.

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