

The Electronic Health Record (EHR) in Specialty Care: A Time-Motion Study

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Background

Electronic health records (EHRs) have been implemented with the intent of improving efficiency, quality, and safety. The question remains, however, whether the benefits of EHRs can be achieved without slowing physicians' work substantially. Some previous studies have shown no statistically significant change in overall time utilization during clinic sessions pre- and post-EHR implementation among physicians in primary care, though few data have been available from specialty care. We studied 4 diverse types of specialty clinics prior to and after implementing an EHR.

Methods

This time-motion study was conducted in four specialty clinics at an integrated delivery system: cardiology, dermatology, endocrine, and pain. A total of 17 physicians in 30 sessions were monitored before and/or after the switch from paper records to a web-based ambulatory EHR that was "home-grown" and uses the same core data across provider groups. All physicians were studied at least 6 months after adoption. In each clinic, trained observers recorded the time spent by physicians in one of 85 designated activities. The activities were then grouped into 6 broader categories: Direct patient care, Indirect patient care-Read, Indirect patient care-Write, Indirect patient care-Other, Administration, and Miscellaneous. The main outcome measure was the amount of time spent by all specialists on each patient prior to and after the implementation of EHR. Specialty type, observer, and number of years of physician practice were controlled for in the model.

Results

Including individuals from all four specialties, 15 physicians were observed treating 157 patients while still using paper-based records, and another 15 physicians were observed treating 146 patients after adoption; 13 physicians were observed both before and after implementation. Following EHR implementation, the average adjusted total time spent per patient across all specialties increased slightly but not significantly ($\Delta=0.94$ min., $p=0.83$) from 28.8

(SE=3.6) to 29.8 (SE=3.6) min. The table below summarizes the time spent in major activity categories pre- and post-EHR implementation.

Activity Categories	Average Adjusted Minutes per Patient (SE)		Estimate of Δ	<i>p</i> value
	Pre-EHR	Post-EHR		
Direct Pt Care	14.4 (1.1)	14.7 (1.0)	0.26	0.85
Indirect Pt Care: Write	3.3 (1.3)	5.3 (1.3)	2.1	0.21
Indirect Pt Care: Read	1.7 (0.76)	3.5 (0.74)	1.8	0.07
Indirect Pt Care: Other	3.5 (1.0)	3.0 (1.1)	-0.53	0.49
Administration	1.7 (0.48)	1.3 (0.47)	-0.4	0.55
Miscellaneous (e.g. walking)	5.0 (1.2)	1.9 (1.2)	-3.1	0.03

Conclusion

Realizing the full benefits of EHR depends on minimizing potential physician time-costs associated with implementation. These data suggests that use of an EHR did not significantly increase visit time in specialty clinics. Further assessment will expand on the degree and factors contributing to time-reallocation of specific tasks following EHR implementation. The effects of EHRs on physician time and workflow will likely affect the adoption rate of EHRs.