Workflow Management and Electronic Health Record Systems

Charles Webster

JMJ Technologies, Atlanta, Georgia, USA

Abstract

Workflow management systems technology has promise to increase electronic health record usability and productivity. Characteristics of electronic health record workflow management systems are explored. Results from a productivity study are presented and explained. Finally, specific principles of electronic health record usability are arrayed against the potential contributions of workflow management systems.

Keywords:

Workflow management systems, electronic health records.

Introduction

Electronic health record (EHR) systems are evolving from patient documentation systems into tools for physicians to accomplish their many tasks and to manage others with whom they work in close conjunction: to document, to direct, and to delegate. EHRs used in this way must have customizable workflow, which, in effect, means they must become EHR workflow management systems (WfMSs) [1, 2]. Workflow management system technology is currently being introduced into commercially available EHRs [3].

A Workflow Management Productivity Survey

Productivity results from twenty primary care practices ranging in size from one to fifteen providers and five to ninety-five users demonstrate increases in visit volume, charges per visit, billing, revenue and quality review scores; and decreases in staff-to-provider ratios, charting time, patient wait time, visit duration, phone message and refill request turnaround times.

Among the most intriguing results are the ways in which workflow management contributed to decreases in visit duration (and hence increases in visit volume). The workflow management systems component reduced the number of non-value added EHR activities, introduced more parallelism among EHR value-added activities, and coordinated EHR activity delegation, all of which contributed to decreased visit duration.

Workflow Management and EHR Usability

EHR workflow management systems are more usable than EHRs without workflow management capability. Consider these usability principles: *naturalness, consistency, relevance, supportiveness,* and *flexibility*. EHR WfMSs more naturally match the task structure of a physician's office through execution of workflow definitions. They more consistently reinforce user expectations. Over time this leads to highly automated and interleaved team behavior. On a screen-by-screen basis, users encounter more relevant data and order entry options. An EHR WfMS tracks pending tasks—which patients are waiting where, how long, for what, and who is responsible—and this data can be used to support a continually updated shared mental model among users. Finally, to the degree to which an EHR WfMS is not natural, consistent, relevant, and supportive, the underlying flexibility of the WfMS can be used to mold workflow system behavior until it becomes natural, consistent, relevant, and supportive.

References

[1] Webster C and Copenhaver J. Structured data entry in a workflow-enabled electronic patient record. Journal of Medical Practice Management 2001, Sept/Oct: 157-161.

[2] van der Aalst and van Hee K. Workflow Management: Models, Methods, and Systems. Cambridge: MIT Press, 2002.

[3] Andrew W and Bruegel R. Workflow management and the CPR. Advance for Health Information Executives. 2003: 7(2): 49-58, 80.

Address for correspondence

Charles Webster, MD, MSIE, MSIS
Vice President, Medical Informatics
JMJ Technologies
3100 Cumberland Blvd
Atlanta, Georgia 30339 USA
chuckwebster@yahoo.com