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Designing an Optimal eMAR for Nurses: Preliminary Findings of a Usability Study

by Nancy Staggers, PhD, RN, FAAN

ABSTRACT

Clinical information system applications remain difficult to use even after decades of system development and implementation in North America. Yet, the design of systems significantly impacts patient safety and nurses' productivity, especially in fast-paced environments. This study identified the elements of optimal design of an electronic medication administration record (eMAR) for nurses in acute care facilities.

The study began with a formal task analysis of nurses' medication administration management activities in an institution with both computerized and uncomputerized units. Nurses were interviewed and observed during medication tasks at a medical center in the West and results were depicted in flow diagrams. Essential elements for design were identified. In addition to identifying medication activities, missing and less-than-optimal computerized eMAR elements were noted. Subsequently, a novel, web-based eMAR application was developed by human factors engineers and the presenter.

Essential elements of eMAR design will be explained during this presentation and the resulting display will be shown and critiqued. Easy methods are depicted to select, de-select patients for the eMAR; display due and over-due medications; search for next medications due; and identify which kind of medication is due (a picture of a tablet, for instance). To promote optimal designs for nurses, this particular eMAR design and the essential design principles are presented for adoption by any organization or vendor for their use in the future.

ABOUT THE AUTHOR

Nancy Staggers, PhD, RN, FAAN

During a 20-year career, Nancy Staggers has created visions, developed user requirements, installed and evaluated clinical systems. Early during that time, she often wondered why applications were not designed well. Consequently, she developed a research program centered on clinical information system usability. During the past 4 years, she has been Associate CIO at University of Utah and Program Director, Enterprise Clinical Information Systems over 28 hospitals at Catholic Healthcare West. Currently, she is Associate Professor of informatics at the University of Utah.