Reorganizing Emergency Department Information Systems to Reduce Physician Cognitive Load

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Abstract
Emergency physicians (EPs) require comprehensive patient data delivered in the emergency department information system in a supportive manner. While the HL7 Emergency Care Domain Analysis Model provides a set of standards for EDIS systems it does not specify usability of EDIS functions. This poster describes the preliminary consensus work of the American College of Emergency Physicians ED Information Systems Task Force.

Introduction
Emergency physicians (EP) practicing in freestanding and hospital-based emergency departments (ED) require on-demand access to patient information from multiple sources beyond the institutional EHR. Currently, EPs must adapt to local implementations of various emergency department information system (EDIS) when they work at different EDs. Fragmentation of patients’ records and a lack of EDIS user interface standards creates increased cognitive work for EPs. Improvements in EDIS functionality with integration of health information exchange (HIE) records¹ may greatly aid EPs in the assessment and treatment of emergency patients while reducing the cognitive burden on providers.² An ED Information Systems Task Force is addressing the issues of information system safety and cognitive load. We report the results of preliminary efforts to arrive at consensus on best practices in EDIS design.

Methods
The HL7 Emergency Care Workgroup (ECWG) published a set of models for ED data and EHR functions, the HL7 Domain Analysis Model of Emergency Care (EC-DAM).³ The EC-DAM specifies standardized models for ED data, information, workflow processes and EDIS functions (figure 1) but lacks specification on EDIS usability. A Task Force consisting of ED informatics specialists used a consensus process based on wireframe diagrams to incrementally improve the organization of EDIS functionality and display of integrated HIE data.

Results
Early results indicate the need for a chief complaint driven view of patient information and emergency department workflow status. Functionally, HIE data should be integrated into a comprehensive view of available patient data rather than directing the EP to different information sources. Consensus EDIS interface design elements focus on a chief complaint-based organization of data and workflow steps.

Conclusion
The EDIS Task Force seeks to create a comprehensive, standardized patient data view to improve EP cognitive load. Building atop existing standards for HIE data integration these results inform ongoing efforts to standardize ED information systems by the HL7 ECWG.

References