Access to Unstructured Data with On-line Chart Review

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INTRODUCTION
- The Information Management team of Duke Health Technology Solutions (DHITS) has created a query tool to allow researchers, clinicians, clinical trial coordinators, and other users access to the Decision Support Repository (DSR), our clinical data warehouse. This query tool is named Duke Enterprise Data Unified Content Explorer or DEDUCE. This tool provides researchers with the ability to define cohorts and extract information based on structured data that was collected in various hospital and outpatient clinic systems. However, not all clinical documentation stored electronically at Duke is available in the DSR as it is collected as unstructured free text or images.

- Researchers and clinicians need to be able to quickly review unstructured data for potential recruits, clinical trial subjects, Quality Improvement (QI) projects, or research studies. DHITS has leveraged the open source Clinical Context Object Workgroup (CCOW) standard by using it to integrate cohorts created by our existing cohort definition technology, DEDUCE, with facilitated on-line chart review. This technology enables investigators to generate cohorts or upload patient lists and then perform on-line chart review using data from all major hospital systems.

OPEN SOURCE ARCHITECTURE

Clinical Context Object Workgroup or CCOW is a technology that was pioneered by Duke and Hewlett-Packard. CCOW has become a widely adopted informatics standard. The technology enables the clinician to synchronize multiple applications on a computer around specific clinical "contexts" including a specific user (single-sign-on), a specific patient, or a specific result. At Duke, the implementation of CCOW has allowed for single-sign-on capabilities for a variety of applications and for the ability to change the patient context within one application and have the other open applications synchronize to that selection. The applications currently linked through CCOW include those designed for ICU nursing, the patient context within one application and have the other open applications synchronize to that selection. The applications currently linked through CCOW include those designed for ICU nursing, the emergency department, radiology images, and the radiologist’s notes during the same work session, without requiring manual entry of patient identifiers.

USE CASES

Research
A retrospective study of emergency department (ED) patients was performed that analyzed information about patient medication use prior to their arrival in the ED. Data was only available in the EMR or the ED application, was free text, and was not part of the data in the DSR. The investigator created a patient cohort using DEDUCE, and used the on-line chart review function to collect data in the same work session, without requiring manual entry of patient identifiers.

Clinical Trial Subject Recruitment
A patient cohort was built in DEDUCE based on inclusion criteria for a study. CCOW enabled access to the PACS system was used to review radiology images, and the radiologist’s notes during the same work session, on-line chart review functionality was able to assist in the identification of patients with a particular radiological result that needed to be excluded from the study.

ON-LINE CHART REVIEW WITH EMR (eBROWSER)