A Landmark EHR Usability Study Measuring Productivity Improvement for EHR Data Capture with a Dictation Method

"Natural Language Processing–Enabled and Conventional Data Capture Methods for Input to Electronic Health Records: A Comparative Usability Study" has been published in JMIR Medical Informatics. The NIH-funded study measures improved EHR usability and over 60% greater efficiency with dictation and NLP structured data extraction vs. conventional EHR keyboard and mouse entry.

Islandia, NY (PRWEB) December 08, 2016 -- ZyDoc, a New York-based medical informatics company, is pleased to announce that "Natural Language Processing–Enabled and Conventional Data Capture Methods for Input to Electronic Health Records: A Comparative Usability Study" has been published in JMIR Medical Informatics.

Results of the comparative usability study demonstrate that a dictation-based method ("NLP Entry") using ZyDoc's MediSapien™ natural language processing (NLP) application for EHR data entry performed better in efficiency, thoroughness, quality, and usability, as compared to "Standard Entry" using keyboard and mouse. The NLP Entry method was shown to be over 60% more efficient with dictation and NLP structured data extraction vs. conventional EHR keyboard and mouse entry.

ZyDoc's Phase I SBIR research study, "Applying NLP to Free Text as an EHR Data Capture Method to Improve EHR Usability," regarding alternative EHR data entry with dictation, was sponsored by the National Institutes of Health, with additional funding by NYSTAR. Co-authors of the journal article are David R. Kaufman (corresponding author); Barbara Sheehan, Peter Stetson; Ashish R. Bhatt; Adele I. Field; Chirag Patel; and James M. Maisel, Chairman of ZyDoc and Principal Investigator for the project.

The research, performed with Columbia University Medical Center neurology, cardiology, and nephrology specialists, compared the documentation quality, efficiency, user satisfaction and usability of conventional EHR data entry using keyboard and mouse (Standard Entry) in their Allscripts EHR environment to an alternative method (NLP Entry) that allowed physicians to dictate typical admitting documents for the three medical specialties.

The alternative NLP Entry method that was tested generated transcribed documents from dictations. The transcription was processed with ZyDoc's natural language processing (NLP) application, MediSapien™, to extract structured data for insertion, along with the narrative, into the EHR. The structured data extracted for EHR insertion included standard structured ICD-9, ICD-10, SNOMED®, RxNorm and LOINC® terms, clinical concepts and corresponding modifiers. The NLP-derived structured data merged with the EHR sections was compared with data captured from the traditional keyboard and mouse Standard Entry method for usability, time requirements, document quality measures and user satisfaction.

A hybrid method using standard keyboard and mouse EHR data capture for the history and physical portions of the exam while dictating with the NLP Entry method for the assessment and plan sections was twice as fast as Standard Entry, with no difference in quality and was also rated as significantly more usable than the conventional method for both parts of the examinations.

The complete details of the study, “Natural Language Processing–Enabled and Conventional Data Capture Methods for Input to Electronic Health Records: A Comparative Usability Study,” including supporting data and conclusions can be accessed online at http://www.zydoc.com/comparative-usability-study-data-capture-methods-ehr-input/. Selected highlights follow below.

Conclusions: Results of the study demonstrate that dictation-based NLP Entry using MediSapien for EHR data entry performed better in efficiency, thoroughness, quality, and usability, as compared to Standard Entry using keyboard and mouse. The study concluded that this novel dictation-based approach has the potential to reduce the time required for documentation and improve usability while maintaining documentation quality.

Efficiency: In the study, dictation-based EHR entry (NLP Entry) performed over 60% or 2.5 X faster than the Standard method of EHR data entry.

Quality and Thoroughness: The documents generated by NLP Entry were more thorough and not statistically different in quality from those generated by Standard EHR entry. Physicians rated the dictation-based NLP Entry method as highly preferable at $p<.01$ significance.

The study demonstrated that NLP can extract extensive structured data from unstructured transcription. The results were similar for the three specialties studied of neurology, cardiology and nephrology, and were independent of age, sex and medical experience of the physicians using the AllScripts EHR.

Usability and User Satisfaction: The total score of a 10-component System Usability Scale (SUS) survey of participants demonstrated significantly higher user satisfaction for NLP Entry over Standard Entry.

According to Dr. Maisel, “Doctors prefer to dictate their documentation. This study quantitates that dictation is 61% more efficient than conventional EHR data entry without compromising quality. ZyDoc is pursuing active commercialization of this disruptive, enabling technology. Full integration has been accomplished at two hospitals with their EHR systems.”

Columbia University researchers participated in the study. A research collaborator on the study, David Kaufman, PhD, formerly a research scientist at Columbia University and now at the Arizona State University, offers this perspective, “Although EHRs are promising tools for improving healthcare, it is widely known that the user experience is frequently suboptimal resulting in dissatisfaction and low quality documentation. This is partly due to the fact that clinicians spend many hours interacting with unwieldy systems that increase rather than reduce workload. MediSapien is a promising instrument that may serve to reduce the cognitive burden on clinicians and enable EHRs to be instruments of clinical communication and tools that can greatly enhance patient care.”

About ZyDoc and MediSapien
Since its inception in 1993, ZyDoc’s mission has been to increase the efficiency of physicians through the use of software technology and services to improve patient care and outcomes, lower malpractice risk, and maximize reimbursement. Based in Islandia, New York, ZyDoc has developed award-winning, HIPAA-secure, cloud-based e-transcription infrastructure and medical informatics technologies, serving medical practices, hospitals, public health agencies, and other entities in the medico-legal, academic and pharmacology sectors.

Augmenting ZyDoc’s transcription business, MediSapien is a web-based, knowledge management platform that uses disruptive natural language processing and AI technologies to convert unstructured text to fully coded

structured data for EHRs, PACS, RIS, analytics, and reporting. For clinician end-users, MediSapien can be utilized in conjunction with EHR installations, and can facilitate analytic applications for individual or population disease management for ACOs, hospitals or large groups. ZyDoc is a certified Philips Reseller and a VMWare Professional Solution Provider Partner. For more information about ZyDoc and MediSapien, please visit www.zydoc.com or contact James M. Maisel, M.D. at 800.546.5633.

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