Improving the quality of medical care using computer understanding of human language

April 9 2015

How can computer-based analysis of free text—the narrative comments found in medical records and expressed in everyday language or technical terminology - help improve the quality of medical care?

Timothy Imler, M.D., of the Regenstrief Institute and Indiana University School of Medicine, will present "Quality Monitoring Utilizing Natural Language Processing" at the 2015 Healthcare Information and Management Systems Society's Conference and Exhibition in Chicago on April 14, a gathering of thousands of health care, government, public health, industry and other health information technology leaders.

"There is a vast quantity of medical knowledge in text documents. Employing natural language processing, a linguistic technique using sophisticated software to extract meaning from spoken or written language, allows the computer to 'understand' medical records in ways that were not possible previously," Dr. Imler, a Regenstrief Institute investigator and Indiana University School of Medicine assistant professor of medicine in the Division of Gastroenterology and Hepatology, said.

"For example, with natural language processing we can use computers to track quality of care at the individual provider, service line and health-care systems levels. That gives us a practical, new tool for enhancing quality," Dr. Imler said.

The Regenstrief Institute's Center for Biomedical Informatics is an

innovator in the clinical application of natural language processing. At the HIMSS gathering Dr. Imler will explore how the utilization of natural language processing can be implemented to improve care. A gastroenterologist and informatician, he recently published a multi-center study of the impact of natural language processing on colonoscopy, including quality and completeness of reporting of the findings, as well as recommendations for the surveillance interval.

"Text documents have historically been black boxes to researchers and quality experts, because they had to be laboriously evaluated by hand, one at a time," Dr. Imler said. "With natural language processing we can utilize mountains of data we already have to improve care and, as appropriate, provide information to those who need it including physicians, payers and accountable care organizations.

"We want access to the treasure trove of information contained in narratives and we have already accomplished that in Indiana through the Indiana Network for Patient Care, developed by the Regenstrief Institute and now supported by the Indiana Health Information Exchange."

The Indiana Network for Patient Care currently has more than 90 million documents with narratives on 3.3 million patients. With the application of natural language processing, these documents are read and analyzed by computers, and interpreted by clinicians and quality control experts.

To date most hospital systems do not use natural language processing, according to Dr. Imler, a deficiency he says can be corrected with expertise but without much additional expense, as the difference in cost of processing one text field and a million is negligible.

The HIMSS Annual Conference & Exhibition ranks as one of the largest health IT gatherings in the world.

Provided by Indiana University

Citation: Improving the quality of medical care using computer understanding of human language (2015, April 9) retrieved 6 May 2024 from https://medicalxpress.com/news/2015-04-quality-medical-human-language.html