February 1, Tina Hernandez-Boussard, Generating Value from EHRs for Quality Measure Analytics in Prostate Cancer Patients

SYNOPSIS:

Prostate cancer is the most common malignancy in men and newly diagnosed men face complex treatment choices, each with different risks of acquired morbidities, including patient-centered outcomes (PCOs). Current government initiatives highlight the need to incorporate PCOs into healthcare quality metric evaluations and the widespread implementation of electronic health records (EHRs) provides opportunities to do so. However, efforts to assess quality metrics in EHRs have been limited because most relevant data are not reliably captured in structured formats. Instead they are buried as non-structured, free text recorded by clinicians. Leveraging the power of computational resources for processing the vast amount of medical information residing in EHRs, we achieve automation and precision in the evaluation of both process and outcome quality metrics, including metrics focused on PCOs.

To develop our approach, we first built a patient cohort using ICD-9/10 diagnosis codes to identify prostate cancer patients. Patients are confirmed in the California Cancer Registry, which returns tumor characteristics and treatment data on all patients with a confirmed cancer diagnosis, including complete historical record of disease pathology. Next we create novel ontological representations of quality metrics, many that are non-prostate specific. Each quality metric determines the target terms and concepts to extract from the EHRs. These terms may include diagnostic procedures and tests and their results, therapeutic procedures, and drugs. Terms are mapped to a standardized medical vocabulary (e.g., SNOMED or RxNorm), enabling us to represent the elements of a metric by a concept domain and its permissible values. The structured representation of the quality metric terms are used to create quality phenotypes, which are rules involving the temporal order of components of the quality metrics. Finally, we use data mining algorithms, including Natural Language Processing (NLP) technologies to parse the clinical narrative text and extract pertinent structured information. While we test our methodology in prostate cancer patients, these approaches are applicable to all cancer patients and are the basis of a learning healthcare system. This presentation will demonstrate the feasibility of using our methods to increase the usability of existing EHRs and enhance the efficiency and accuracy of quality measurement in cancer patients, including PCO measurements.

Session details...

BIO:

Dr. Tina Hernandez-Boussard is an Associate Professor of Medicine (Biomedical Informatics) and Biomedical Data Sciences at Stanford University. Her background and expertise is in the field of computational biology, with concentration on accountability measures and health policy. A key focus of her research is the application of novel methods and tools to large clinical datasets for hypothesis generation, comparative effectiveness research, and the evaluation of quality healthcare delivery.

SUMMARY:

Topic: Generating Value from EHRs for Quality Measure Analytics in Prostate Cancer Patients

Speaker: Tina Hernandez-Boussard, Ph.D.

Date: Wednesday, February 1, 2017

Time: 11 AM – 12 PM ET

Room: 2E908

You are invited to listen to Dr. Hernandez-Boussard's presentation in the NCI Shady Grove Building on Medical Center Drive or via WebEx.

Presentation: A screen cast of the presentation will be available for viewing after the event on the NCI CBIIT Speaker Series YouTube Playlist

About the NCI CBIIT Speaker Series:

The National Cancer Institute (NCI) Center for Biomedical Informatics and Information Technology (CBIIT) Speaker Series presents talks from innovators in the research and informatics communities. The biweekly presentations allow thought leaders to share their work and discuss trends across a diverse set of domains and interests. The goals of the Speaker Series are: to share leading edge research; to inform the community of new tools, trends, and ideas; to inspire innovation; and to provide a forum from which new collaborations can begin. For additional information, including past speaker series presentations, visit the CBIIT Speaker Series page.

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