JOHN BENDER

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Required Skills:
(List skills needed) -
Web (HTML / JS / CSS)

Preferred Team Communications:
Google Hangouts, Slack

Data Sources:
Data requirements include clinical data, and raw data from community-based public health programs. In addition to using synthetic clinical data, we intend to use de-identified data from (1) The Salud y Vida Chronic Care Management Program, (2) "Mind, Exercise, Nutrition, Do it!" (MEND) Program, and (3) Brownsville-based diabetes prevention program, and (4) others to simulate data from various non-standardized community programs.

Other Items:
Any US time zone

Team Info:
Developer, Analyst, DBA, Project Manager. Allows one team of 4-6 members.

Additional Collaborators:
Additional collaborators include: (1) Joseph McCormick and Belinda Reininger, The University of Texas Health Science Center School of Public Health, Brownsville; (2) Alyson Goodman, Centers for Disease Control and Prevention; (3) Andrew Lombardo, Rio Grande Valley Health Information

INTEGRATING INSIGHTS FROM NON-STRUCTURED COMMUNITY DATA INTO EHRS

Community public health interventions are effective at modifying behavior and improving health (Jain et al., 2014; Magnezi, Kaufman, Ziv, Kalter-Leibovici, & Reuveni, 2013; Yukawa et al., 2010). While in recent years, there has been substantial advancement in the interoperability of electronic health records (EHRs), software systems used by community public health and social programs largely remain siloed, or face substantial barriers to integrating with clinical data systems (King et al., 2012). While efforts exist to create standardized ontologies and theoretical definitions for communicating structured data from community public health and social programs with clinics and hospitals, they are in their infancy, and would require broad adoption by social service organizations and the health information technology industry before widespread data sharing could be realized (Dixon, Kharrazi, & Lehmann, 2015; Liyanage, Krause, & De Lusignan, 2015; Sullivan, Mistretta, Casucci, & Hewner, 2017). In the interim, community public health and social service programs will continue to be challenged with ad-hoc data integration efforts and antiquated methods for sharing health information.

We seek to create a solution to analyze unstructured data from various community public health and social service organizations to identify relevant information for presentation to healthcare providers. By accommodating unstructured data, we will remove most integration challenges between community public health and clinical organizations. Leveraging SMART on FHIR will allow us to present integrated data to providers within EHRs while avoiding storing the data directly in EHRs.

This project will be conducted with an intended implementation in Cameron County, Texas. Cameron County neighbors the Mexico City of Matamoros with a population of 93.2% Hispanic or Latino in 2010. It is burdened with poverty, and contained some of the most impoverished cities in the U.S. based on the 2009-2013 U.S. Census (United States Census Bureau, 2015). Cameron County has a high prevalence of chronic disease, including 31% diabetes, 49% obesity, and 32% hypertension. The population is also 70% uninsured, highlighting the critical need for effective preventative health practices (UTHealth School of Public Health, 2012). Additionally, Cameron County is located in Texas Region 11, which had the second highest prevalence of diabetes and highest prevalence of overweight and obesity in Texas in 2008 (Texas Department of State Health Services, 2010).

An interim solution is desperately needed to address data integration between community public health and clinical organizations. Delivering these data to providers will allow for increased care coordination for patients, and new collaboration opportunities for community public health and clinical organizations.

PROJECT OBJECTIVES

We seek to develop a method to integrate non-structured data from community public health and social service programs with electronic health records. We plan to use contextual interviews with providers to identify program data most relevant to them, like attendance dates, missed appointment

Exchange; and (4) other subject matter experts.

Intellectual Property:
We ask that the project IP be open source.

dates, relevant findings from the program, and whether the patient is improving or not. Then, we plan to extract the most important and relevant information from raw, non-standard data exports using natural language processing and (potentially) machine learning techniques prior to presenting the insights to clinicians in a SMART on FHIR app or via CDSHooks cards. We also require FHIR to extract relevant data for patient matching, and for identifying the appropriate time to display results from community public health and social service programs.

SUCCESSFUL PROJECT

To be discussed...