COMMENTARY

Supporting the Capture of Social Needs Through Natural Language Processing

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Social factors impact morbidity and mortality among patients. Documenting social needs in the clinical notes is currently widely done by family physicians. The unstructured format of information on social factors in electronic health records limits the ability of providers to address these issues. A proposed solution is using natural language processing to identify social needs from the electronic health record. This could support physicians in capturing structured social needs information that is consistent and reproducible without increasing documentation burden. (J Am Board Fam Med 2023;36:513–514.)

Keywords: **Natural Language Processing, Social Determinants of Health**

Social factors have large effects on morbidity and mortality; chronic and acute conditions disease burden is particularly high in neighborhoods and communities that have high levels of social deprivation.[1] Health care systems are now incorporating population health management strategies to improve clinical care; however, the ability to identify groups and individuals who can benefit from more intensive disease management and health promotion with greater precision continues to be an important clinical and research priority. Characterizing how often and where social needs information is collected is a first step to understanding ways for directing resources to patients with unmet social needs.[2] Hendrix, Phillips, and Bazemore[3] utilized the American Board of Family Medicine (ABFM) 2022 Continuous Certification Questionnaire (CCQ) to determine self-reported rates and methods of capturing social needs of patients treated by family physicians. Their findings improve our understanding of how social needs are being tracked in different types of health care settings. They found that 61% of family physicians reported that social needs are being documented in clinical notes, with less captured in structured data or diagnostic codes even as CMS and other entities are developing specific codes to document these data in electronic health records (EHR). Social determinants of health (SDOH) deal with the complexity of the lives of individuals and consistent documentation requires methods that allow physicians to capture the nuances of the situations the patients are dealing with while at the same time support a consistent hierarchy of terms and concepts that lend themselves to reproducibility.

Although self-report questionnaires that measure social risk factors are susceptible to social desirability, Hendrix, Phillips, and Bazemore[3] findings point to natural language process (NLP) as a solution to capture social needs among patients. There are multiple efforts underway to capture SDOH information from the notes and convert it to structured data using NLP.[4] The adoption of NLP approaches could enhance existing clinical workflows, without increasing documentation burden by transforming SDOH documented in notes into a consistent structured set of terms and concepts with an opportunity of reducing EHR burden. Our experience in developing NLP algorithms to identify SDOH in clinical narratives is that many synonyms of SDOH are used in the medical record due to the specifics in cases that evolve over time.[2] Consequently, SDOH represent amorphous and

From the Ralph H. Johnson Veterans Affairs Medical Center (VAMC), Charleston, SC (LJF, CDB); University of Southern California, Los Angeles, CA (CHH)

Funding: Veterans Affairs Health Services Research & Development Merit Grant 1I01HX003379.

Conflict of interest: None.

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evolving situations that have many ways of being described. We have created an annotation guideline in the Veterans Health Administration (VHA) to define social isolation, financial stress, housing instability, and food insecurity to consistently identify mentions of these SDOH.[5] We are in the process of applying the guideline to the VHA health system to create a generalizable NLP method for identifying SDOH for both urban and rural health care settings across the United States.

Further research is needed to understand NLP approaches for SDOH, such as understanding the variability that is inherent in SDOH documentation. For example, combining NLP documented SDOH with data on neighborhood levels of deprivation could be used to develop a more complete picture of groups of patients who need additional resources to improve clinical outcomes.[6] These data could facilitate targeting resources to populations in these areas. Increasing resources through using social workers has already shown reduced hospitalizations and emergency care visits in rural underserved communities, a context where many family physicians work.[7] Enabling social workers and care managers to use NLP documented SDOH to inform their decision making could be an area of research supported by risk models that use SDOH. There are many benefits that can be derived from knowing the social and behavioral context individuals are facing and leveraging it to get them the care they need at the time they need it. The goal would be a system that provides information on when patients need early intervention to improve their outcomes and to help support the family physician in acquiring the resources necessary to improve the outcomes of those patients.

With a majority of family physicians reporting that they sometimes or often document social needs, a data driven method could track the information already stored in the EHR. With social needs primarily occurring in unstructured text, the use of NLP is a possible solution to consistently capture it from current clinical workflows. Such an approach could provide individual level tracking of SDOH without increasing documentation burden. Efforts are needed to create consistent means of identifying SDOH in the EHR through NLP methods. This research adds to the corpus of knowledge around SDOH so the community can converge to standardized representations to track SDOH. Through standardized approaches, metrics on the impact of SDOH can be gathered across health care systems and used to target resources to where they are most needed.

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