National Center for Excellence in Primary Care Research

An EHR-based Predictive Model to Identify Higher Likelihood of Social Needs Among Patients with Multiple Chronic Conditions

AHRQ Impact: Researchers examined how to best identify health-related social needs and then provide support to patients with multiple chronic conditions (MCC). The systematic approaches developed can be used to improve how primary care practices serve these complex patients, potentially integrating and improving the effectiveness of the care provided and improving health outcomes.

One in three American adults and a growing number of children are living with MCC. Patients with MCC have two or more chronic conditions at the same time, such as diabetes, hypertension, and asthma. Individuals with MCC account for a disproportionate share of healthcare utilization and costs in the United States.[1] The prevalence of MCC is greater among low-income individuals and minoritized communities, who are more likely to develop MCC at earlier ages. Unfortunately, health-related social needs (such as food insecurity) limited transportation options, and unaffordable housing, create barriers to effective clinical care for patients with MCC– negatively impacting patient health outcomes.[2,3]

Dr. Richard W. Grant became aware of this issue early in his career while caring for individuals with MCC:

> **I had this experience, like other providers, where I know we need to get Mr. Jones' A1C under control and Mr. Jones says to me "Well, I'm homeless right now..." There is a real sense of powerlessness in these cases because I know how to prescribe metformin, but I don't know how to help with housing or get Meals on Wheels to Mr. Jones if he has no home address. So, by its very nature, social needs are incredibly relevant to primary care."**

– Dr. Grant, study Principal Investigator

[1] Advancing Patient-Centered Care for People Living With Multiple Chronic Conditions. Content last reviewed July 2023. Agency for Healthcare Research and Quality, Rockville, MD. Available at https://www.ahrq.gov/patient-safety/settings/long-term-care/resource/multichronic/mcc.html.

[2] Galea S, Tracy M, Hoggatt KJ, Dimaggio C, Karpati A. Estimated deaths attributable to social factors in the United States. Am J Public Health. 2011;101:1456-1465. doi: 10.2105/AJPH.2010.300086.

[3] Charkhchi P, Fazeli Dehkordy S, Carlos RC. Housing and Food Insecurity, Care Access, and Health Status Among the Chronically Ill: An Analysis of the Behavioral Risk Factor Surveillance System. J Gen Intern Med. 2018;33:644-650. doi: 10.1007/s11606-017-4255-z.

In an AHRQ-funded study, Dr. Grant and his research team at Kaiser Foundation Research Institute developed an electronic health record (EHR)-based predictive model based on patient self-reported social risk factors to identify the primary care patients with MCC who were at higher risk of experiencing food insecurity, financial distress, and/or housing instability. The final model consisted of 30 predictor variables, including tobacco use, application for medical financial assistance, having moved to a lower income census tract in the prior three years, a high no-show medical appointment rate, and diagnoses such as depression and post-traumatic stress disorder.

> **Our overarching hypothesis is that it's very hard to control your diabetes, your hypertension, and your heart disease if you don't have transportation to your clinic, if you have unstable housing, if you can't afford copays for medicines. We think that social health is an important part of one's overall health."**
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> **– Dr. Grant,** study Principal Investigator

The research team found that the predictive modeling strategy accurately predicted patients with health-related social needs 68% of the time.[4] The study piloted use of the predictive model in three Kaiser Permanente health systems to help direct outreach efforts.

Since the conclusion of the study, Dr. Grant and his team have worked with Kaiser Permanente's National Social Health Team to adapt the predictive model for use with a broader set of Kaiser patients. Using tailored variables, Kaiser was able to translate the predictive model developed under the AHRQ grant to allow clinicians the ability to run a social needs risk score on all adult Kaiser Permanente patients.

> **This AHRQ project has really boosted Kaiser Permanente's efforts to integrate social health into their health care process… We are creating knowledge about how healthcare systems can help patients have their social needs met."**
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> **– Dr. Grant,** study Principal Investigator

The study has also laid the foundation for additional research funded by AHRQ and the Patient-Centered Outcomes Research Institute (PCORI). Dr. Grant and his team aim to better understand what clinical teams can do once a patient with MCC that has high social needs is identified. In another AHRQ grant, Dr. Grant and his team are assessing how "whole person navigators" can support patients with MCC and social needs by both connecting them to community-based resources and helping them navigate the medical care system. The team will conduct a randomized controlled trial to compare patient-reported outcomes (such as reduction in treatment burden and unmet social needs) and improvement in chronic disease care for patients receiving support from a whole person navigator to patients receiving usual care.

This work can help clinics identify patients with high social needs and connect them with resources and support – leading to improved health outcomes. If you would like to learn more about the predictive model or how it may be tailored to your health system, please contact Dr. Richard W. Grant at Richard.W.Grant@kp.org.

Learn more about how Kaiser Permanente is integrating social health into their healthcare process.

[4] Grant RW, McCloskey JK, Uratsu CS, Ranatunga D, Ralston JD, Bayliss EA, Sofrygin O. Predicting Self-Reported Social Risk in Medically Complex Adults Using Electronic Health Data. Med Care. 2024 Sep 1;62(9):590-598. doi: 10.1097/MLR.0000000000002021. Epub 2024 Jun 4. PMID: 38833715

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