

Health Systems Demonstration Project: The Impact of Clinical and Social Complexity on Diabetes Control



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Background

Despite the well-documented impact of social determinants of health (SDH) on a range of health outcomes, most population management systems do not account for patient complexity, or prevalence of influential SDH, when assessing quality of care.

In this project, the **A**ccelerating **D**ata **V**alue **A**cross a **N**ational **C**ommunity Health Center **N**etwork (ADVANCE) CDRN collaborated with the OneFlorida CDRN to explore the impact of adding data on social complexity to validated measures of clinical comorbidity, and whether accounting for social complexity accounts for variation in health care utilization and quality of care.

Project Aims

Aim 1: Engage patients and clinicians to identify the community-level SDH domains that are critical to test in a model predicting healthcare utilization; engage health systems leaders to identify the quality of care (QOC) measures (outcomes) of greatest interest.

Aim 2: Assess whether clinic level summaries of patients' clinical comorbidity and community-level SDH correlate with the selected primary care quality measures.

Aim 3: Engage stakeholders to identify how clinic level measures of comorbidity and social complexity are useful to health system leaders, clinicians, and patients in managing population health, resources, and decision-making; delivering quality clinical care; and improving treatment adherence and health.

Engagement

We engaged a total of 17 groups consisting of 14 clinicians and Health Systems Leaders and 3 Patient Groups.

These groups prioritized the following community-level SDH: poverty level, neighborhood resources, transportation, substance abuse, neighborhood economic conditions, race/ethnicity, physical environment, mental health, and hospital utilization.

The stakeholders also prioritized the following QOC measures: **care of chronic diseases**, risk factor screening, preventive care visits, cancer screening, ED utilization, avoidable ED visits, and access to care

Methods

Patient Population: Visited an ADVANCE (N=71,391) or OneFlorida (N=13,200) primary care clinic in 2015.

Primary Independent Analysis Variables: Clinical complexity (Charlson Comorbidity Index and an ordinal variable summing the patient's mental and behavioral health diagnoses) and social complexity (Social Deprivation Index).

Outcome variable: Diabetes control, selected from our engagement with the patient and provider groups.

Final Analysis: We used logistic regression models to assess the association of adjustment for clinical complexity and selected CVS variables with glucose control. A variable for mental/behavioral health diagnoses was included in the adjustment for clinical complexity together with a categorized variable for the CCI; we further controlled for age and sex.

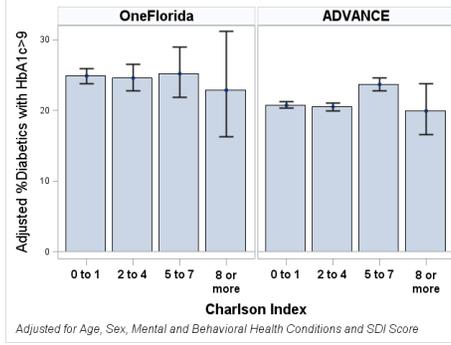


Figure 1. Association between Clinical Complexity (Charlson Score) and Probability of Diabetes in Poor Control

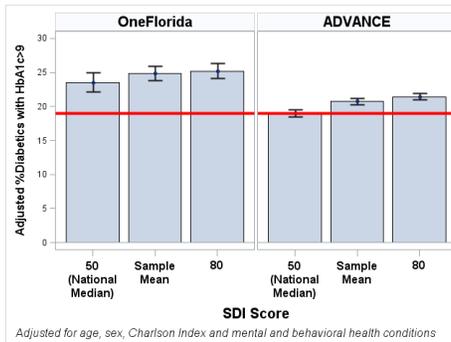


Figure 2. Association between SDI Score and Probability of Diabetes in Poor Control

Results

Clinical complexity (Charlson score) was **not consistently associated with predicted probability of % diabetics in poor control (Figure 1)**.

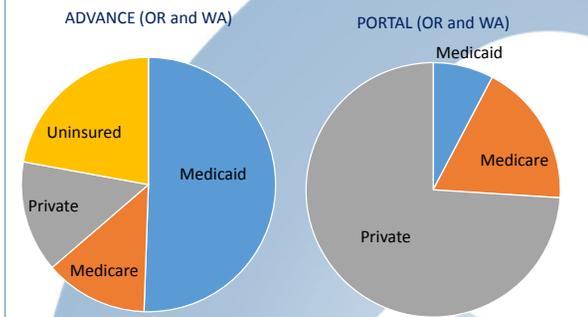
Increasing SDI score had a **small but significant association with the predicted probability of poorer HbA1c control** in both cohorts (Figure 2). The red line represents a commonly used target for percent diabetics in poor control. This graph shows that adjusting SDI to the national mean could move clinics closer to this target.

Safety net clinics have **very high levels of social complexity** relative to the US population; providers from these clinics may benefit from having their performance metrics adjusted for social complexity of their patient population.

Because these cohorts looked at **association within a highly vulnerable cohort**, the effect size of social complexity is likely to be a minimal estimate.

Next Phase

Stakeholders suggested expanding the study cohort to include more heterogeneity, and conducting further analyses to understand the relationship between individual (patient-reported) and community-level SDH data. For Phase III we are collaborating with Kaiser Permanente's PORTAL CDRN to include a broader mix of patient characteristics.



We also aim to evaluate the relative contributions of community and individual-level SDH on explaining variations in health outcomes using patient-reported SDH from two sources: the KPNW "Your Current Life Situation" (YCLS) tool and from patient-reported SDH data collected in OCHIN's EHR.

Impact

This study adds to our understanding of the impact of clinical and social complexity on health care quality and utilization.

Findings have the potential to aid health systems leaders in calculating more accurate quality and utilization measures that account for the clinical and social complexity of their patient populations.

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This project has no financial interests to disclose