Commentary

# A Road Map to Integrate Social Determinants of Health into Electronic Health Records

Ana Palacio, MD, MPH,[1,2] Maritza Suarez, MD,[1]
Leonardo Tamariz, MD, MPH,[1,2] and David Seo, MD[1,3]

## Introduction

THE SOCIAL COMPOSITION of the population affects the performance of health systems.[1] The impact that individual and environmental conditions such as income, race/ethnicity, health literacy, sex, or community context have on health outcomes has led to the conceptualization of these factors as social determinants of health (SDH)[2] and as possible mediators of health disparities.[3–6] In an attempt to reduce such disparities, the Department of Health and Human Services has recommended that health systems explicitly collect SDH to measure their impact on outcomes and that Congress develop policies to incentivize systems for caring for populations with a high prevalence of social risk factors.[7]

However, most health systems and providers have not implemented the infrastructure to systematically collect SDH or the resources to address them. Value-based purchasing strategies and reporting mandates such the Physician Quality Reporting System and the Healthcare Effectiveness Data and Information Set (HEDIS) may incentivize health systems to collect SDH for the improvement of quality of care.

The University of Miami Health System cares for a diverse population and recently committed to the collection of SDH measures into the electronic health record (EHR). This was considered a key component of population health approaches that improve processes, prevent adverse events, and reduce unnecessary costs.

To this end, faculty from a newly created Division of Population Health and Computational Medicine launched the collection of evidence-based SDH variables recommended by the Institute of Medicine (IOM).[8] This experience may assist other health systems with their implementation approaches.

Our initial step was to engage key stakeholders in clinical, administrative, and information technology (IT) leadership and conduct a SWOT (strengths, weaknesses, opportunities, threats) analysis for the innovation (Table 1). Our SWOT findings led to a set of implementation principles:

- Collect SDH across the system without disrupting existing clinical workflows
- Providers should have access to SDH data to improve patient care
- Analyze SDH data to identify and test system-wide strategies that improve processes of care and reduce disparities among patients with high social risks.
- Develop community partnerships to tackle social barriers to care.

Based on these principles, we developed a road map for the integration of SDH into the EHR, which included the following steps:

## Developing a Core Group of Champions

Given the complex nature of the health system, it was key to obtain buy-in from all stakeholders. Our meetings included the chief executive, chief operating, and chief information officers and dean, clinical committees, clinic administrators, quality improvement committees, nursing and ancillary staff for specific clinics, and patients. In these meetings, we described the relationships between SDH and relevant health outcomes. We asked participants to share their experiences on the role that SDH play in practice metrics (eg, no-shows, rehospitalization, HEDIS metrics) and we brainstormed about interventions that could be deployed to reduce barriers (eg, limited English proficiency, depressive symptoms, lack of transportation, pharmacy co-payments, isolation). Finally, we asked participants about barriers to and facilitators of the collection and use of SDH data.

This exercise created buy-in and allowed us to identify champions and a comprehensive list of operational concerns that needed to be addressed. Among these:

### Processes of collection

The SDH collection should not impact clinic wait times and work effort by the clinic staff. Our approach was to pilot

---

[1]Department of Medicine, University of Miami Miller School of Medicine, Miami, Florida.
[2]Geriatric Research Education and Clinical Center, Veterans Affairs Medical Center, Miami, Florida.
[3]Division of Cardiology, University of Miami, Miami, Florida.

TABLE 1. SWOT ANALYSIS OF THE INITIATIVE

| Strengths | Weaknesses |
|---|---|
| Presence of health disparities champions | Complex organizational structure |
| Access to dedicated IT resources | Mandates to streamline scheduling and registration |
| Buy-in from leadership | Limited space for collecting SDH in clinics |
| Enterprise-supported patient portal | Low percentage of patients using the patient portal |
| Commitment to create firewalls to protect data and ensure use to improve quality | Limited experience managing at-risk groups |
| Prior experience collecting SDH for research | |
| Deployment of registries | |
| **Opportunities** | **Threats** |
| Expansion of the value-based purchasing portfolio | Competing demands for IT resources |
| Improve quality of care and pay-for-performance gaps | Multiple requests for EHR-based surveys |
| Intramural and extramural recognition of the impact of SDH on outcomes and metrics | Potential changes in leadership and priorities |
| Development of better risk models | Lack of guidelines on how to use SDH in clinical operations |
| Community partnerships | Privacy and legal concerns |
| | Lack of buy-in by clinic personnel |

EHR, electronic health record; IT, information technology; SDH, social determinants of health; SWOT, strengths, weaknesses, opportunities, threats.

different collection strategies to determine the most effective. These included deploying the survey through the enterprise patient portal, phone outreach, on-site kiosks or tablets in the waiting room, and collection by the nursing staff during the clinical intake process.

### Appropriate use of the data

Our vision was to make the SDH survey results available to clinicians within the EHR. However this generated 2 outstanding concerns:

1. Our initial version of the survey included depression, alcohol, and domestic violence screening. However, not all of our collection approaches would allow timely reaction to the information. The consensus was to collect these data during clinic encounters where these factors could be addressed in real time.
2. Most stakeholders recommended having an accountable party–a team with the necessary oversight with the role and authority to monitor and protect the data and to present reports and opportunities for improvement to appropriate leaders.

### Develop System-Wide Data Resources to Support Population Health Initiatives

The stakeholder engagement process led to the recognition of the tension between protecting the data and its systematic use to improve quality of care. The challenge was to develop a user-friendly system that solved technical and regulatory issues to provide data access to large numbers of individuals while protecting patient privacy and ensuring appropriate analytic approaches. Although still a work in progress, we concluded that IT-driven system-wide data resources were a key component to support any population health initiative. Health systems considering population health approaches should engage a variety of stakeholders to develop the technical, operational, and regulatory tools to collect and react to SDH data.

### Finalize the SDH Measures Relevant to Our Population

Given our Florida location, we were concerned that the set of SDH measures proposed by the IOM could miss factors that were relevant in our regional populations. Based on prior evidence, we added to our survey country of origin, years living in the United States, language of preference, acculturation, health literacy, food insecurity, living arrangements, and transportation. We pilot tested the survey in a sample of patients and fine-tuned the questionnaire based on feedback. We worked with the IT department to create smart data elements from the survey, integrate geocoding data, and define relevant EHR data elements that would be merged into the survey data automatically and create an environment for ad hoc merges.

### Operationalize the Innovation

An important lesson learned was to include staff members and administrators early in the operational meetings. We gathered key information regarding average number of patients/day, waiting time, patient flow, nurse/patient ratio, and number of patients with active MyChart accounts. The staff and administrators also offered content suggestions. For example, they have found that transportation issues and parking fees impact our no-show rate.

A key component of the operationalization was the identification of hospital, community services, and partners who could help address SDH.

### Consider Ethical and Legal Issues

During the implementation process we encountered diverse opinions regarding such issues as accountability for the data, patients' expectations, physicians' concerns about liability and privacy, and desire to use the data for research purposes, among others. Although we created processes that addressed most of the expected concerns, others arose. Our recommendation is to listen to many voices during the planning phase to proactively address the relevant concerns.

The most significant paradigm shift for a health system is to take responsibility for factors that are not health system related and to invest resources to address them and improve the health and outcomes of those it serves. This requires a significant amount of commitment at all levels of the organization and an effective team-based approach.

## Author Disclosure Statement

Drs. Palacio, Suarez, Tamariz, and Seo declared no conflicts of interest with respect to the research, authorship, and/or publication of this article. The authors received no financial support for this article.

## References

1. National Academies of Sciences, Engineering, and Medicine. Accounting for social risk factors in Medicare payment: identifying social risk factors. Washington, DC: National Academies Press, 2016.
2. Secretary's Advisory Committee on National Health Promotion and Disease Prevention Objectives for 2020. Healthy people 2020: An opportunity to address social determinants of health in the United States. 2010. www.healthypeople.gov/2010/hp2020/advisory/SocietalDeterminantsHealth.htm Accessed January 5, 2017.
3. Kochanek KD, Anderson RN, Arias E. Leading causes of death contributing to decrease in life expectancy gap between black and white populations: United States, 1999–2013. NCHS Data Brief 2015;(218):1–8.
4. National Academies of Sciences, Engineering, and Medicine. The growing gap in life expectancy by income: implications for federal programs and policy responses. Washington, DC: The National Academies Press, 2015.
5. Singh GK, Siahpush M. Widening socioeconomic inequalities in US life expectancy, 1980–2000. Int J Epidemiol 2006;35:969–979.
6. Singh GK, Siahpush M. Widening rural-urban disparities in life expectancy, U.S., 1969–2009. Am J Prev Med 2014;46:e19–e29.
7. Joynt KE, De Lew N, Sheingold SH, Conway PH, Goodrich K, Epstein AM. Should Medicare value-based purchasing take social risk into account? N Engl J Med 2017;376:510–513.
8. Adler NE, Glymour MM, Fielding J. Addressing social determinants of health and health inequalities. JAMA 2016;316:1641–1642.

Address correspondence to:
*Ana Palacio, MD, MPH*
*Department of Medicine*
*University of Miami Miller School of Medicine*
*1120 NW 14th Street, Suite 967*
*Miami, FL 33136*

*E-mail:* apalacio2@med.miami.edu