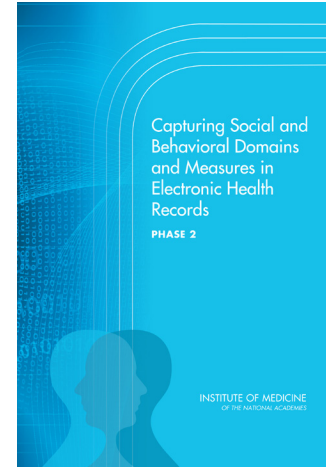# Capturing Social and Behavioral Domains and Measures in Electronic Health Records
Phase 2

Determinants of health—like physical activity levels and living conditions—have traditionally been the concern of public health and have not been linked closely to clinical practice. However, if standardized social and behavioral data can be incorporated into patient electronic health records (EHRs), those data can provide crucial information about factors that influence health and the effectiveness of treatment. Such information is useful for diagnosis, treatment choices, policy, health care system design, and innovations to improve health outcomes and reduce health care costs.

With this goal in mind, the National Institutes of Health, together with the Blue Shield of California Foundation, the California Healthcare Foundation, the Centers for Disease Control and Prevention, the Centers for Medicare & Medicaid Services (CMS), the Lisa and John Pritzker Family Fund, the Robert Wood Johnson Foundation, the Substance Abuse and Mental Health Services Administration, and the Department of Veterans Affairs requested that the Institute of Medicine (IOM) convene a committee to conduct a two-phase study, first to identify social and behavioral domains that most strongly determine health, and then to evaluate the measures of those domains that can be used in EHRs.

In *Capturing Social and Behavioral Domains in Electronic Health Records: Phase 1*, the committee identified 17 domains that they considered to be good candidates for inclusion in EHRs. The second report, *Capturing Social and Behavioral Domains and Measures in Electronic Health Records: Phase 2*, pinpoints 12 measures related to 11 of the initial domains and considers the implications of incorporating them into all EHRs.

If standardized social and behavioral data can be incorporated into patient electronic health records (EHRs), those data can provide crucial information about factors that influence health and the effectiveness of treatment.

Identifying Candidate Domains

The committee developed six criteria to identify which domains and measures are recommended for inclusion in all EHRs. They are

1. strength of the evidence of the association of the domain with health;

2. usefulness of the domain, as measured for the individual, population, and research;

3. availability and standard representation of a reliable and valid measure(s) of the domain;

4. feasibility in terms of burdens placed on the patient and clinical care team, including time and costs;

5. sensitivity, such as the comfort of revealing personal information; and

6. accessibility of data from another source.

In Phase 1, the committee used the first two criteria to identify the candidate domains, and in Phase 2 it used the remaining criteria to assess the readiness and usefulness of available measures of these domains. *Readiness* indicates the availability of a standard, freely available measure; feasibility; and lack of sensitive information. *Usefulness* was defined in Phase 2 as the potential to leverage the information yielded by measure for improved patient care and population health management. The committee placed a priority on measures that could be interoperable—meaning they would be consistently collected and shared—and also kept in mind potential concerns about violations of privacy in collecting, storing, or using the data.

TABLE: Core Domains and Measures with Suggested Frequency of Assessement

DOMAIN/MEASURE	MEASURE	FREQUENCY
Alcohol use	3 questions	Screen and follow up
Race and ethnicity	2 questions	At entry
Residential address	1 question (geocoded)	Verify every visit
Tobacco use & exposure	2 questions	Screen and follow up
Census tract-median income	1 question (geocoded)	Update on address change
Depression	2 questions	Screen and follow up
Education	2 questions	At entry
Financial resource strain	1 question	Screen and follow up
Intimate partner violence	4 questions	Screen and follow up
Physical activity	2 questions	Screen and follow up
Social connections & social isolation	4 questions	Screen and follow up
Stress	1 question	Screen and follow up

NOTE: Domains and measures are listed in alphabetical order; domains/measures in the shaded area are currently frequently collected in clinical settings; domains/measures not in the shaded area are additional items not routinely collected in clinical settings.

Developing a Parsimonious Panel of Measures

The committee gave its strongest endorsement to measures that scored highest on both readiness and usefulness. Measures that were evaluated as being less ready for use were targeted for further research and development. Based on these deliberations, the committee identified a parsimonious, or brief, panel of measures that are complete, interoperable, and efficient (see table on page 2). These "psychosocial vital signs" include four measures that are already widely collected: alcohol use; race/ethnicity; residential address, which can be used to obtain a neighborhood's median household income; and tobacco use.

The second report says that these domains remain a priority, and the committee encouraged employment of standardized ways to measure them. Eight additional measures were also included—education, depression, financial resource strain, intimate partner violence, physical activity, social connection/isolation, physical activity, and stress.

The report recommends that all these domains, along with their measures, be included by the Office of the National Coordinator for Health Information Technology (ONC) and CMS in certification of EHRs and meaningful use objectives. Achieving meaningful use, which refers to the use of EHRs and related technology within a health care organization to realize specified objectives, helps determine whether a hospital or eligible physician can receive payments from Medicare and/or Medicaid EHR incentive programs.

Overcoming Barriers to Implementation

The report acknowledges that implementing changes to EHRs involves not just modifications to technologies, but also an expansion of how we think about the determinants of health, adaptation in the ways clinical teams work, and changes to how patients engage in their own care. The report finds that EHR vendors and product developers currently lack harmonized standards to capture domains and measures and recommends that ONC's EHR certification process be expanded to include appraisal of a vendor or product's ability to acquire, store, transmit, and download self-reported data relevant to the social and behavioral determinants of health.

Starting with added time and costs of collecting the information, expanding the data included in EHRs places additional demands on health systems, clinicians, patients, and vendors. Aware of these potential burdens, the committee aimed for the most efficient and useful set of measures. Since most of the recommended measures are self-reported and can be collected directly from the patient on paper or via a computer, gathering such data does not need to add to clinicians' time. Some may be found in sources related to the patient, such as EHRs from other institutions, and personal health records. Once the data are in the patient's EHR, providers and health systems should act upon the available information. While recognizing the additional time and resources needed to collect and act upon such data, the committee concluded that the health benefits of addressing these determinants outweigh the

Committee on the Recommended Social and Behavioral Domains and Measures for Electronic Health Records

Nancy Adler (Co-chair)
Professor, Departments of Psychiatry and Pediatrics, and Director of the Center for Health and Community, University of California, San Francisco

William Stead (Co-chair)
McKesson Foundation Professor, Departments of Biomedical Informatics and Medicine, Chief Strategy Officer and Associate Vice Chancellor for Health Affairs, Vanderbilt University, Nashville, Tennessee

Kirsten Bibbins-Domingo
Professor of Medicine, Epidemiology, and Biostatistics and Director, Center for Vulnerable Populations, San Francisco General Hospital, California

Patricia Flatley Brennan
Professor, Department of Industrial and Systems Engineering, and Professor of Nursing, University of Wisconsin, Madison

Ana Diez-Roux
Dean, Drexel University School of Public Health, Philadelphia, Pennsylvania

Christopher Forrest
Professor, Departments of Pediatrics and Health Care Management, University of Pennsylvania and Children's Hospital of Philadelphia, Pennsylvania

James House
Professor, Survey Research, Public Policy, and Sociology, University of Michigan, Ann Arbor

George Hripcsak
Chair, Department of Biomedical Informatics, Columbia University, and Director, Medical Informatics Services for New York-Presbyterian Hospital/ Columbia Campus, New York

Mitchell Katz
Director, Los Angeles Department of Health, California

Eric Larson
Executive Director and Vice President for Research, Group Health Research Institute, Seattle, Washington

Karen Matthews
Professor, Departments of Epidemiology, Psychology, and Psychiatry, University of Pittsburgh, Pennsylvania

David Ross
Director, Public Health Informatics Institute, Atlanta, Georgia

David Williams
Professor, Departments of Public Health, African and African American Studies, and Sociology, Harvard University, Boston, Massachusetts

Study Fellow

Deidra Crews
IOM Gilbert S. Omenn Anniversary Fellow and Assistant Professor of Medicine, Division of Nephrology, Johns Hopkins

Study Staff

Karen Helsing
Study Director

Alejandra Martín
Research Associate

Emily Vollbrecht
Senior Program Assistant

Doris Romero
Financial Associate

Rose Marie Martinez
Senior Board Director, Board on Population Health and Public Health Practice

Study Sponsors

Blue Shield of California Foundation
California HealthCare Foundation
Centers for Disease Control and Prevention
Centers for Medicare & Medicaid Services
Department of Veterans Affairs
The Lisa and John Pritzker Family Fund
National Institutes of Health
Robert Wood Johnson Foundation
Substance Abuse and Mental Health Services Administration

added burden to providers, patients, and health care systems.

In addition to informing clinical care, linking data from EHRs on factors such as food insecurity, lack of housing, and social isolation to local public health departments and community agencies can allow these organizations to better address the needs of their community. Data can be de-identified to allow anonymity. When individual-level data are necessary, such as when public health personnel need to track exposures, transmitted data can be encrypted to protect patient privacy. The report states that institutions should inform patients about how their data will be shared as well as the benefits that may accrue from sharing their information. Routine collection of potentially sensitive data in a clinical setting may have the added benefit of reducing stigma around behavioral risk and social needs.

Conclusion

The U.S. health system has achieved technological advances but lags behind other countries in population health outcomes. Standardized use of EHRs that include social and behavioral domains could provide better patient care, improve population health, and enable more informative research. The IOM committee's selected social and behavioral domains constitute a parsimonious panel of measures that will provide valuable information on which to base problem identification, clinical diagnoses, patient treatment, outcomes assessment, and population health measurement.

INSTITUTE OF MEDICINE
OF THE NATIONAL ACADEMIES

Advising the nation • Improving health

500 Fifth Street, NW
Washington, DC 20001
TEL 202.334.2352
FAX 202.334.1412

www.iom.edu