

educational definitions and calculators improved decision making.<sup>4</sup>

As the federal government and states continue to refine their exchange websites, they may want to take fuller advantage of insights from behavioral sciences regarding the influence of design architecture on people's choices. For starters, we believe that the websites should downplay powerful connotative labels such as bronze, silver, and gold. In addition, they should deemphasize complicated tables of financial information that lay out cognitively overwhelming details about premiums, copayments, deductibles, out-of-pocket maximums, and the like. Instead, they should make it easier for shoppers to estimate total annual costs under a series of plausible scenarios, such

as expected utilization based on previous spending history, as well as under best-case and worst-case scenarios. Finally, when the influence of design architecture on choices is unknown, designers should partner with researchers who can run experiments to inform the process.

Health insurance exchanges have the potential to revolutionize U.S. health care markets. To maximize this potential, we think it's incumbent on states and the federal government to minimize the potential for the public face of these exchanges to bias people's choices. Supreme Court Justice Louis Brandeis once observed that a "State may . . . serve as a laboratory; and try novel social and economic experiments."<sup>5</sup> The current health exchanges represent one very complicated experiment; we hope that state and

federal decision makers are observing the outcomes.


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 An audio interview with Dr. Ubel is available at NEJM.org

## Patients in Context — EHR Capture of Social and Behavioral Determinants of Health

Nancy E. Adler, Ph.D., and William W. Stead, M.D.

Although social and behavioral factors influence health and mortality, such determinants are often ignored in clinical practice. A few, such as smoking and alcohol use, are commonly assessed by primary care physicians, but many others may be viewed as outside the scope of medical practice. Calls for clinicians to attend to these factors are increasing,<sup>1</sup> and several developments are accelerating the medical community's interest in addressing them. We hope that a new set of standard measures for social and behavioral deter-

minants of health, delineated by an Institute of Medicine (IOM) committee that we cochaired, will catalyze action on this front.<sup>2</sup>

Reimbursement policies that reward population health management and value-based purchasing are encouraging attention to modifiable determinants of health. Penalties for hospital readmissions and the move toward accountable care organizations are fostering attempts to address elements of patients' lives and behavior that influence the risk of disease and the effectiveness of medical treatment.

A growing body of research links social and behavioral factors including low income, low levels of education, lack of exercise, and stress to the onset and progression of diseases ranging from arthritis and asthma to diabetes and cardiovascular disease, as well as to overall mortality. Various studies have shown that the effects of social and behavioral risk factors such as smoking and social isolation rival and sometimes exceed those of genetic factors and clinical indicators such as blood pressure.<sup>3</sup>

Meanwhile, incentives for adop-

tion and “meaningful use” of electronic health records (EHRs) have expanded their use, and more than 70% of office-based U.S. physicians report using an EHR system. Such systems could allow users to obtain and store digitized information on standard measures of social and behavioral determinants and make it accessible to clinicians, patients, health systems, and researchers. However, potential unintended negative consequences (e.g., use of the information by insurers to increase a patient’s premium or by health systems to avoid high-risk patients) necessitate special attention to privacy, security, and access.

Although conditions favor greater integration of such information into clinical practice, the absence of an efficient, systematic method for capturing this information has hindered progress. Clinicians have been on their own in identifying key determinants and developing ways of assessing them — for instance, by prompting patients to deepen the narrative of their social history to provide context and offer insight into their life circumstances.<sup>4</sup> The use of standard measures offers the opportunity to efficiently identify conditions that may modify diagnoses and treatment plans and renders the information usable by various systems for various purposes.

In recognizing the opportunities for improving patients’ care by addressing the social and behavioral determinants of their health, nine federal and foundation sponsors asked the IOM to convene a committee of social scientists, clinicians, and informatics experts to recommend ways of incorporating measures

of these determinants into EHRs and ways of overcoming barriers to doing so. The committee reviewed the literature on social and behavioral determinants of health to identify the factors most strongly associated with health and assessed the availability and use of brief, standardized measures of those determinants.

Placing priority on standard measures with the greatest clinical usefulness and feasibility for capture in the clinical workflow, the committee developed a concise panel of measures (see table). Each measure consists of one or more questions drawn from scientifically validated instruments.<sup>2</sup> For example, two questions from the Patient Health Questionnaire provide a validated screen for major depression. The proposed measure set contains standardized questions for four domains that are already widely assessed in clinical practice and for eight additional domains.

The questions can be asked by clinical staff or directly answered by patients on an electronic or paper questionnaire, and the information can be incorporated into the EHR. Incorporating it into the EHR can improve patient care, outcomes, and population health in several ways. First, it can permit greater precision in diagnoses and improve treatment. For example, reliance on the Framingham risk score leads to underdiagnosis of cardiovascular disease in populations of low socioeconomic status (SES); incorporating information on patients’ SES reduces this bias and can lead to better preventive treatment for people at risk.<sup>5</sup>

Second, this approach can facilitate more effective shared decision making. With more accu-

rate information on a patient’s situation, such as his or her financial strain, clinicians can better partner with the patient to make informed and realistic medication choices.

Third, the measures can help clinicians to identify risk factors such as depression and tobacco use (which are included in the Adult Recommended Clinical Quality Core Measures of the Centers for Medicare and Medicaid Services). They can be addressed directly in order to reduce patients’ risk of disease and improve care and the likelihood and speed of recovery. Better identification and treatment of patients with depression, for example, can enhance management of chronic conditions such as diabetes and accelerate recovery from treatments such as coronary bypass surgery.

Fourth, the information can prompt the clinical team to refer a patient to a public health department or a community agency that helps to address problems such as financial strain or intimate-partner violence. With the patient’s consent, the EHR can also support communication between clinicians and service providers so that follow-up from the referral can inform the patient’s treatment plan going forward.

Fifth, information on social and behavioral factors can expand health systems’ capacity to tailor services to their population’s needs. For example, using information on these determinants along with clinical data, they can better match high-risk patients with various types of care-management programs, or they can initiate new services such as group visits or support groups if they identify social iso-

Social and Behavioral Domains and Measures.		
Domain	Measure*	Frequency
Race or ethnic group†	1. What is your race? 2. Are you of Hispanic, Latino, or Spanish origin?	At entry
Education	1. What is the highest level of school you have completed? 2. What is the highest degree you earned?	At entry
Financial-resource strain	How hard is it for you to pay for the very basics like food, housing, medical care, and heat?	Screen and follow up
Stress	Stress means a situation in which a person feels tense, restless, nervous, or anxious, or is unable to sleep at night because his or her mind is troubled all the time. Do you feel this kind of stress these days?	Screen and follow up
Depression	Over the past 2 weeks, how often have you been bothered by 1. Little interest or pleasure in doing things? 2. Feeling down, depressed, or hopeless?	Screen and follow up
Physical activity	1. On average, how many days per week do you engage in moderate to strenuous exercise (like walking fast, running, jogging, dancing, swimming, biking, or other activities that cause a light or heavy sweat)? 2. On average, how many minutes do you engage in exercise at this level?	Screen and follow up
Tobacco use†	1. Have you smoked at least 100 cigarettes in your entire life? If yes: 2. Do you now smoke cigarettes every day, some days, or not at all?	Screen and follow up
Alcohol use†	1. How often do you have a drink containing alcohol? 2. How many standard drinks containing alcohol do you have on a typical day? 3. How often do you have six or more drinks on one occasion?	Screen and follow up
Social connection or isolation	1. In a typical week, how many times do you talk on the telephone with family, friends, or neighbors? 2. How often do you get together with friends or relatives? 3. How often do you attend church or religious services? 4. How often do you attend meetings of the clubs or organizations you belong to?	Screen and follow up
Intimate-partner violence	1. Within the last year, have you been humiliated or emotionally abused in other ways by your partner or ex-partner? 2. Within the last year, have you been afraid of your partner or ex-partner? 3. Within the last year, have you been raped or forced to have any kind of sexual activity by your partner or ex-partner? 4. Within the last year, have you been kicked, hit, slapped, or otherwise physically hurt by your partner or ex-partner?	Screen and follow up
Residential address†	What is your current address?	Verify at every visit
Census-tract median income	Geocoded	Update on address change

\* Wording is taken from existing measures; standard response categories are available. Psychometric testing of the full panel, including ordering and wording, has not yet been conducted.

† This domain is already widely included in clinical practice.

lation as a common problem in their patient population.

Sixth, use of these measures can broaden the patient context available to researchers from EHRs, which would store standard

measures of social conditions and behavioral risk alongside conventional clinical, laboratory, and imaging data. EHRs are increasingly being used for research, including efforts to link genetic

data with phenotypes extracted from EHRs to pragmatic clinical trials, patient-centered outcomes research, and more efficient post-marketing surveillance of drugs' side effects. Such efforts will be

improved by access to standardized information about patients' social conditions and behavioral risk.

Obtaining information on social and behavioral determinants requires additional time and attention. However, since these factors can be self-reported and some of them need only be assessed at initial intake, collecting this information should have minimal effect on clinicians' workflow. Greater challenges arise in using the resulting information.

Addressing social and behavioral determinants may require reconsideration of clinical roles and workflows. Who should discuss sensitive issues with the patient? What interventions are feasible? As such decisions are made, clinical team members will need additional education and training in relevant processes and interventions.

Any new diagnostic technology or mode of therapy creates added demands and necessitates changes in practice. We believe that the benefits of adopting and using the measurement panel

will outweigh these costs. Limiting the panel to 12 brief, standard screening measures reduces barriers to implementation, and widespread adoption of the panel will increase interoperability, ease barriers to information exchange, and reduce the need for redundant capture. Health gains and lower service utilization resulting from assessment and addressing of these determinants should at least partially offset the costs of intervention.

Including a concise panel of standard measures of social and behavioral determinants in every patient's EHR will increase clinical awareness of the patient's health status and enable clinical, public health, and community resources to work in concert. We hope that the existence of newly aligned incentives and a readily adopted standard set of measures will motivate EHR vendors to incorporate the IOM-recommended measure panel into their products, health systems to adopt its use, and clinicians to incorporate the newly available information into their care of patients.

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