

# Initiating and Implementing Social Determinants of Health Data Collection in Community Health Centers

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## Abstract

Successfully incorporating social determinants of health (SDH) screening into clinic workflows can help care teams provide targeted care, appropriate referrals, and other interventions to address patients' social risk factors. However, integrating SDH screening into clinical routines is known to be challenging. To achieve widespread adoption of SDH screening, we need to better understand the factors that can facilitate or hinder implementation of effective, sustainable SDH processes. The authors interviewed 43 health care staff and professionals at 8 safety net community health center (CHC) organizations in 5 states across the United States; these CHCs had adopted electronic health record (EHR)-based SDH screening without any external implementation support. Interviewees included staff in administrative, quality improvement, informatics, front desk, and clinical roles (providers, nurses, behavioral health staff), and community health workers. Interviews focused on how each organization integrated EHR-based SDH screening into clinic workflows, and factors that affected adoption of this practice change. Factors that facilitated effective integration of EHR-based SDH screening were: (1) external incentives and motivators that prompted introduction of this screening (eg, grant requirements, encouragement from professional associations); (2) presence of an SDH screening advocate; and (3) maintaining flexibility with regard to workflow approaches to optimally align them with clinic needs, interests, and resources. Results suggest that it is possible to purposefully create an environment conducive to successfully implementing EHR-based SDH screening. Approaching the task of implementing SDH screening into clinic workflows as understanding the interplay of context-dependent factors, rather than following a step-by-step process, may be critical to success in primary care settings.

**Keywords:** implementation of social determinants of health screening, community health centers, electronic health record, facilitators

## Introduction

**S**Ocial Determinants of Health (SDH), the social and economic factors that influence the health and well-being of individuals and communities (eg, social isolation, interpersonal violence, access to housing, transportation, or food) account for many health inequalities.<sup>1,2</sup> Numerous professional and scientific organizations, including the American College of Physicians and National Academies of Medicine (formerly the Institute of Medicine), now recommend systematically collecting and documenting adverse SDH – also

called social risks – in electronic health records (EHRs).<sup>3–5</sup> Accordingly, many health care systems are seeking to implement EHR-based SDH screenings.

Despite the interest in collecting and documenting patient-specific social risks, establishing SDH screening as a vital, supported, routinized part of the clinic workflow can be difficult.<sup>6–8</sup> In primary care and other settings, adopting SDH screening may involve a multistep process with many potential challenges, including: (1) determining target populations for screening; (2) developing procedures to identify these patients; (3) finding and training staff to conduct screenings;

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(4) promptly entering data into the EHR; (5) developing screening workflows compatible with existing professional responsibilities; and (6) developing effective data tracking systems.<sup>9,10</sup> The complexity of these interrelated decisions may be underplayed in published success stories and how-to guides for SDH data screening integration, which tend to focus on a few concrete steps for planning and action.<sup>11</sup>

To achieve broad implementation of SDH screening, we need to better understand the interplay of factors that can facilitate or hinder implementation of effective, sustainable SDH processes, at each step of the integration process. The goal of this study was to understand factors that facilitated the introduction and integration of EHR-based SDH screening into workflows at community health centers (CHCs) across the United States, using interviews with CHC staff.

## Methods

### *Study design and setting*

Data for this formative, qualitative substudy were collected during year 1 of the 5-year ASCEND study (ApproacheS to Community Health Center ImplEmeNtation of Social Determinants of Health Data Collection and Action). ASCEND is a mixed-methods, pragmatic, stepped-wedge, cluster-randomized trial.<sup>12</sup> The trial will test whether providing implementation support helps CHCs adopt SDH screening documentation and action using EHR tools. Findings from this formative work informed implementation support provided to CHC organizations participating in the trial. ASCEND is being conducted at CHCs in the OCHIN network, a non-profit health center-controlled network that hosts and centrally manages an Epic (Epic Systems Corporation, Verona, WI) EHR for >500 primary care CHCs located in 18 states, as of July 2018.<sup>13–15</sup>

OCHIN developed an EHR-based SDH screening questionnaire and a suite of related tools that allow clinics to review patient-reported SDH information. These were deployed across their network in June 2016.<sup>16</sup> The screening questionnaire includes 7 domains, informed by the National Association of CHCs' Protocol for Responding to and Assessing Patients' Assets, Risks, and Experiences (PRAPARE),<sup>17</sup> input from OCHIN's Clinical Operations Review Committee, and recommendations from the National Academies of Medicine (formerly Institute of Medicine) and Kaiser Permanente. These domains are: financial resource strain, food insecurity, housing insecurity, relationship safety, inadequate physical activity, social connection/isolation, and stress. The questionnaire has since been updated to incorporate the Accountable Health Communities Health-Related Social Needs Screening Tool, but this change falls outside the scope of the study period. All participating CHC organizations were using the same version of Epic. The study was approved by the Kaiser Permanente Northwest Institutional Review Board.

### *Eligibility and recruitment*

This study focused on CHCs that had adopted EHR-based SDH screening with no implementation support other than a notice that the tools were available, and had screened  $\geq 100$  patients between June 2016 and October 2017; these CHCs were termed "early adopters." To determine eligibility, rates of SDH screening using the new EHR tools between June 2016

and October 2017 were reviewed. A screening was defined as  $\geq 1$  documented response to any of the 7 SDH domains. The study aim was to interview staff at 8 CHCs about their experience using these tools. The threshold of  $\geq 100$  screenings was pragmatic, intended to ensure a sufficient pool of eligible clinics at the same time as well as increasing the likelihood that staff would have enough experience to reflect on the implementation process of the screening tool. After approaching 14 of the 15 CHCs that fulfilled study criteria, the recruitment goal of enrolling 8 CHCs was met (6 did not respond or were not interested). Among the CHCs eligible for recruitment, 8 were in Oregon (this is where OCHIN, the EHR host, is located), 4 were in California, 1 was in Minnesota, 1 was in Indiana, and 1 was in North Carolina. All the clinics outside Oregon and California participated as well as 4 CHC organizations in Oregon and 1 in California. Among all eligible CHC organizations, 6 had Alternative Payment and Advanced Care Model (APCM) status and 11 did not. Four CHC organizations with APCM status participated in the study.

Each of the 8 CHC organizations was comprised of 3 to 5 individual clinics, except one, which had only 1 clinic. The research team asked one contact person at each CHC organization to identify 6 staff members involved in SDH documentation in different professional capacities, who were then contacted to request interviews. Individual recruitment was done either by the clinic contact or by the study team through telephone and email. Each CHC organization received a \$300 impact fee to offset the cost of participation; each individual participant was offered a \$25 gift card. Participation in the formative assessment described herein was unrelated to participation in the stepped-wedge trial; CHCs participating in the formative assessment were neither automatically enrolled nor precluded from participation in the trial.

### *Data collection and analysis*

The formative assessment consisted of semi-structured interviews with staff at recruited CHCs. Two qualitative study team members (AB, IG) conducted telephone interviews lasting approximately 30 minutes, with consenting CHC staff members (see Supplementary Data for interview guide). Interview questions were developed based on previously collected qualitative data.<sup>18</sup> The interviews were designed to explore facilitators to use of the screening tools and included questions about motivation to adopt EHR-based SDH documentation, as well as the implementation process. Interviews were recorded with participants' permission.

We followed the framework method of qualitative data analysis (Ritchie and Spencer 1994, 2002). All data were transcribed, coded, and analyzed according to the 5 stages of this method: (1) familiarization with the data, (2) identification of a thematic framework, (3) indexing using NVivo 12, (4) charting, and (5) mapping and interpreting the data. Three qualitative researchers (AB, IG, JD) met repeatedly to discuss the consecutive stages of the analysis process.

## Results

### *Participant characteristics*

A total of 52 health care staff and professionals from 8 CHCs in 5 states were contacted; 43 were enrolled and interviewed (4–6 at each CHC; 38 women and 5 men. At the

participating CHC organizations, on average, 69% of all employees for whom data were available were female). The remaining 9 staff members could not be reached or were not available. Interviewees included 12 administrators, 2 informatics staff, 12 clinical staff, 7 behavioral health staff, and 10 staff members working in community-facing positions, such as community health workers (CHWs).

### *Facilitators of EHR-based screening*

The qualitative analysis of interview data focused on factors that facilitated implementation of EHR-based SDH screening. This analysis identified 3 factors:

- 1) External incentives and motivators that prompted adoption, such as grant requirements or encouragement from professional associations;
- 2) Having an SDH screening advocate within the organization; and
- 3) Maintaining flexible attitudes about workflows to optimally align them with clinic needs, interests, and resources.

Table 1 summarizes the relevant facilitators for all participating CHC organizations. These facilitators are explored in detail in the following sections. The importance of each is illustrated through case studies.

**External incentives and motivators.** Seven of the 8 organizations introduced EHR-based SDH screening in response to external motivators. Some were encouraged to do so as part of external collaborations or health policy reforms; others were required to collect SDH data for grant or certification requirements and saw the EHR-based SDH tools as a way to facilitate collecting, tracking, and reporting of such data.

For example, CHC 1 participated in a long-standing grant-funded program that aimed to improve care for homeless patients. As part of the grant, the CHC was required to screen each patient for specified social risks. In the past their screening process involved paper forms, and screening results often remained overlooked in a binder. The organization determined that the social needs questions included in their EHR covered the grant-mandated data collection requirement. They took the grant-required SDH questions from their EHR, and created a paper-based questionnaire that patients could complete and give to the medical assistant (MA) at rooming. The MA then entered the data into the EHR, and made internal referrals to case managers as necessary.

CHC 5 was one of the organizations that were part of the Oregon Primary Care Association (OPCA) collaboration, which aims to reduce health disparities. Participating CHCs committed to introducing SDH screenings into their workflows, and OPCA encouraged the use of EHR-based SDH screening documentation. This CHC also participates in the APCM program,<sup>19</sup> which allows clinics to receive monthly payments for nonclinical staff engaging in activities such as care coordination, SDH screening, or addressing patients' social risk factors. Following OPCA's urging to document patients' social needs in the EHR, a mental health services manager at this CHC developed a training on best practices for assessing and documenting SDH clinic-wide that she shared with CHWs to support their screening efforts.

CHC 8 was becoming certified as a patient-centered medical home.<sup>20</sup> As part of this process, clinics are required to collect and document selected patient-reported outcomes. This CHC chose to use the SDH question on relationship safety to fulfill data reporting requirements for PCMH certification. Use of this question was facilitated by its compatibility with the electronic huddle sheet, an EHR functionality that integrates patient data for easy review, already in use at the clinic. This CHC then trained its MAs to ask and document the question in the EHR-based questionnaire with every patient at every visit. This CHC also documented additional SDH information from all behavioral health patients in the EHR. A state grant that supported integrated care enabled the CHC to hire more behavioral health staff, who used the SDH questionnaire to assess their patients' social risks.

**Internal SDH screening advocates.** At all but 1 CHC, a screening advocate emerged, typically a person who enjoyed the trust and goodwill of coworkers, and had time and resources to dedicate to the process. These individuals advocated for the adoption of EHR-based SDH screening, provided suggestions for workflow, and promoted uptake of such screening by clinic staff. In the one case where there was no strong screening advocate, screening efforts were less centralized and coordinated.

At CHC 4, in response to a grant requirement, a quality improvement (QI) coordinator and Accountable Care Organization (ACO) care manager worked together to create a plan to implement SDH screening. The QI coordinator made suggestions on workflows and how to act on collected SDH data. The ACO care manager introduced a method to track collected data, and provided feedback to staff about their data collection. MAs were tasked with SDH screening for all patients who attended annual Medicare wellness visits.

At CHC 7, a behavioral health lead was hired to introduce integrated care. This included improving communication between behavioral health and primary care, and promoting a more holistic appreciation of patient circumstances. She directed therapists to use the EHR-based SDH questionnaire when they met with patients who were scheduled to see their primary care providers, then summarize the information using a progress note template. Providers could see each patient's SDH summary in the EHR, and navigate to the full SDH screening results. The behavioral health lead's promotion of these EHR tools was crucial to enabling their wider use.

In contrast, the absence of a central screening advocate at CHC 5 led to redundant workflows and tracking mechanisms. Several parallel efforts to initiate SDH screening were undertaken. An administrator started planning SDH screening workflows, developing a list of best practices and suggested workflows. At the same time, CHWs who wanted to better serve patients introduced SDH screening without any formal prompting at different clinics. Some relied on questionnaires in the EHR; others compiled their own questions and documented these in Excel spreadsheets.

**Maintaining flexible attitudes about workflows.** Participating clinics demonstrated a great willingness to experiment with different workflows. Most started by implementing SDH workflows with a subgroup of patients or within a limited group of staff, enabling iteration of the screening process to address emerging challenges. Screening a subset of patients

TABLE 1. SCREENING FACILITATORS

	<i>CHC 1 (CA)</i>	<i>CHC 2 (OR)</i>	<i>CHC 3 (OR)</i>	<i>CHC 4 (NC)</i>	<i>CHC 5 (OR)</i>	<i>CHC 6 (OR)</i>	<i>CHC7 (MN)</i>	<i>CHC 8 (IN)</i>
<b>Facilitator 1: external incentives and motivators</b>	Grant requirement	OPCA and APCM clinic	OPCA and APCM clinic	Grant requirement	OPCA and APCM clinic	OPCA and APCM clinic	Not present	1) PCMH certification 2) State grant
<b>Facilitator 2: role of the advocate(s)</b>	Clinical informatics specialist	Medical intern and QI director	Community engagement supervisor	QI coordinator and ACO care manager	None	Behavior health lead	Behavior health lead	1) QI coordinator 2) Behavior health lead
<b>Facilitator 3: flexible approach</b>	Changed screening questionnaires and moved from paper to EHR-based screening	Changed target population and who conducts screening	Changed screening questionnaires	Prioritized data collection over action	Changed screening tools and let individual CHW's use screening questionnaire they preferred	Changed target population	Prioritized data collection and action through BH staff	Devised different workflows within CHC 1) assess 1 question for all patients only 2) assess entire questionnaire for BH patients only

ACO, Accountable Care Organization; APCM, Alternative Payment and Advanced Care Model; BH, behavioral health; CHC, community health center; CHW, community health worker; EHR, electronic health record; OPCA, Oregon Primary Care Association; PCMH, patient-centered medical home; QI, quality improvement.

enabled staff to identify and address challenges before broadening the target population. In some cases, target populations changed or workflows were adjusted as a result of the successes and challenges of early efforts. At other times, different SDH screening questionnaires were tested to find one that fit the needs of different staff. Implementing workflows on a limited scale enabled adjusting the workflows to better align with clinic needs, interests and resources.

At CHC 2, the clinic used the EHR's SDH tool to document SDH screening results for all patients with a Charlson comorbidity index score of  $>5$ , and administered it face-to-face during appointments. Once SDH screening started, clinic leadership found that their planned workflow was time-intensive, sometimes causing delays in appointments or the inability to screen all targeted patients. When the comorbidity score was unavailable in the EHR, it became impossible to identify the target population. A different workflow was then piloted by a MA–primary care provider (PCP) team. In this workflow, the SDH questionnaire was handed to all new patients as a paper survey before rooming, then collected by the MA. The MA alerted the PCP to positive screens via a “warm handoff.” The information was entered later into the EHR, which made it available to the clinic's CHWs for follow-up. Although this workflow worked well for the pilot team, other staff remarked that it was too dependent on pilot team dynamics. This CHC was still working to develop alternative workflows for other clinicians.

CHC 3 revised its workflows multiple times to suit different stakeholders. First, they conducted paper-based screening among patients with  $A1c \geq 9$ . A new membership services director developed a questionnaire that she asked CHWs to use, but CHWs felt that it overwhelmed the patients. The CHWs had noticed the new EHR-based SDH questionnaire and suggested that they could use this version for SDH screening. From that point on, CHWs conducted all screenings in person, using a paper version of the SDH screening questionnaire, as they considered this less disruptive to the conversation flow than entering information into the EHR right away. After the appointment, they entered the information into the EHR. This CHC continued to seek balance between collecting as much information as possible and addressing patients' most salient needs in a timely manner.

CHC 6 modified its target population after its initial strategy proved inefficient. It had first targeted patients with diabetes who had not been seen in more than a year. The care coordinator reached out to these patients via phone to schedule a primary care and behavioral health visit for the same day, during which a behavioral health staff member would screen patients for SDH. The CHC pursued this approach for about 6 months, then abandoned it as it yielded few results and was too time-intensive. One clinic then was asked to pilot the SDH screening tools in their clinic workflows. The CHC's revised approach was to target new patients and/or patients with diabetes referred to behavioral health. All new patients would go through an intake process with a behavioral health provider, who conducted all screenings and shared screening results with the provider and the registered nurse during a huddle. The goal was to ask patients to self-administer the screening annually. This approach worked well for this small clinic, but spreading this workflow to larger clinics remained challenging, as these clinics faced different challenges.

## Discussion

Through qualitative interviews with clinic staff and providers, this study identified 3 key facilitators to implementing systematic SDH screening: (1) external motivators to do so, (2) an internal advocate who promoted such screening, and (3) a flexible approach to developing SDH screening workflows, often facilitated by implementing data collection workflows for a limited patient population and/or with limited clinic staff. Most of these CHCs responded to similar motivating factors and leveraged comparable mechanisms to implement SDH screening. To the research team's knowledge, this is the first study to provide insights into the factors that may help clinics implement SDH screening. As such, it provides guidance for clinics that wish to implement such efforts.

### *External incentives and motivators*

To promote high-quality care among Medicaid-contracting CHCs, some states have created incentives whereby CHCs can be reimbursed for tasks such as care coordination, including SDH-related activities.<sup>21</sup> For example, organizations that are part of the APCM program – as was the case for all of the Oregon CHCs participating in this study – have shifted from a fee-for-service reimbursement model (ie, clinics are reimbursed based on the volume of clinic visits) to a per-member per-month rate.<sup>22,23</sup> In the absence of visit-based reimbursement, SDH screening is included as one of 18 care activities that APCM clinics are required to report to the state. Such payment models may support efforts to introduce SDH screening<sup>24,25</sup>; these are considered “Mandating change and altering incentives/allowance structures” in the ERIC (Expert Recommendations of Implementing Change) categorization of implementation strategies.<sup>26</sup>

This study demonstrates that these external motivators can effectively support the introduction of SDH screening into CHCs. Other incentives may ensure that CHCs continue to allocate resources to SDH screening even when competing with other QI activities. Enabling CHCs to be reimbursed for a wider variety of services may allow them to allocate more resources to SDH activities. Making grants available to hire additional staff for initiating and performing SDH screening also may help clinics adopt SDH screening without using existing resources. Reliance on grant funding, however, may pose challenges for long-term sustainability.

### *Advocates*

Identifying and preparing screening advocates is another recommended implementation strategy.<sup>26</sup> The present study provides empirical evidence that this strategy can be effective in the context of adoption of SDH screening. Past research also reported that SDH screening adoption may be fostered through champion-driven activities such as trainings, inter-professional interaction, formal and informal conversations about the value of SDH screenings, and communicating leadership support for SDH screening.<sup>27,28</sup> This aligns with findings from a systematic review of the role of champions in supporting practice change, in which typical champion responsibilities include advocating for the initiative, developing materials for the intervention, serving as a stakeholder contact, and troubleshooting problems.<sup>29</sup> As an SDH proponent can generate enthusiasm and motivation for conducting SDH

screenings, CHCs could consider supporting such advocates. CHCs could: formally endorse the advocate's project; ask influential staff members to publicly support SDH screening; and assign formal resources so that the advocate can dedicate time to introducing and supervising SDH screening. Engaging colleagues in conversations about the process may foster greater awareness and acceptability among other staff members, and help SDH screening to be regarded as integral to comprehensive care.

#### *Embracing flexibility when developing screening workflows*

Present study findings confirm those of others showing the importance of developing workflows appropriate to clinic environments, rather than following a one-size-fits-all approach.<sup>30,31</sup> Although adopting EHR-based SDH documentation has proven feasible,<sup>18,32</sup> stakeholders often hold different perspectives on best workflows for SDH data collection.<sup>33,34</sup> Thus, promoting an adaptive approach to workflow development may be an important implementation strategy. Potential strategies that can encourage a flexible approach to workflow design include identifying early adopters, conducting cyclical small tests of change, or assessing for readiness and identifying barriers and facilitators.<sup>26</sup>

The present study observed that the use of pilot teams, target populations, and testing several screening questionnaires or modes were effective implementation strategies in the study CHCs. Selecting a single team to pilot SDH data collection provided an opportunity to reflect and respond to challenging workflows, and identify barriers and facilitators to clinic-wide implementation. When planning SDH workflows it is often challenging to foresee all real-life obstacles that may occur; these piloted workflows enabled fine-tuning before scaling up.

Selecting a target population for screening also limited the scale of the implementation to a subgroup of patients, which made it more manageable to adjust workflows before scaling up. As seen here, selecting a target population may best facilitate screening success if the population is easy to identify during standard workflows (eg, screening new patients only, who already go through intake screenings).

This research identified several facilitators previously reported to support adoption of systematic, EHR-based SDH screening in CHCs<sup>28,31</sup>; these facilitators align with the implementation science literature on factors that can support clinics' adoption of new practices. This study also offers 3 unique contributions that build on this knowledge base. First, the findings demonstrate that incentives such as revised payment structures are helpful in prompting clinics to initiate SDH screening. Second, there is no one best workflow for SDH screening, but clinics should reflect on their needs, interests, and resources when designing workflows—and it can help to test workflows in selected populations or care teams. Third, unlike other studies based on single-site analysis, the present study provides insights into the workings of SDH data collection at 8 different CHCs across 5 US states, illustrating a diverse set of approaches and experiences.

The feasibility of activities clinics may undertake to support adoption of EHR-based SDH screening is affected by numerous factors, most importantly resources. Hiring an SDH champion or assigning dedicated time to an existing staff member is resource intensive. Future research to assess how

clinics that demonstrate long-term SDH screening success accomplished this is needed to develop recommendations that enable clinics to maintain SDH screening momentum.

#### *Limitations*

This study focuses only on early steps in the SDH screening process and does not offer insights into how to implement taking action on SDH data (eg, risk stratification, making social service referrals). The research team also does not know if the facilitators identified here will enable scaling up of screening processes. However, the study's narrow focus on the early stages of SDH screening enabled in-depth analysis of facilitators to adoption of SDH screening, a critical first step.

The facilitators identified are not necessarily the only factors that affected these clinics' success in adopting EHR-based SDH screening. The team recognizes that other factors are also likely necessary for successful screening, including technological infrastructure.<sup>7</sup> Interviewees may have taken certain essential infrastructure components for granted; exploring these in more detail would require a different evaluation approach. Finally, the team defined early adopters of the tool as those who had screened >100 patients in 1 year without receiving any implementation support. Although using 100 screenings was considered an indicator that a CHC had successfully adopted such screening, it is unknown if this will point to long-term screening success.

#### **Conclusion**

These analyses demonstrated that SDH screening was commonly initiated in response to external requirements and encouragement, and that CHCs may be able to achieve successful implementation by empowering advocates of such screening. SDH screening workflows were successful when designed to fit existing clinic processes, often achieved by starting with selected target populations or small pilot teams. Approaching implementation of SDH screening as an interplay of context-dependent factors, rather than a step-by-step process, may be critical to successfully integrating SDH screenings into primary care settings.

#### **Author Disclosure Statement**

The authors declare that there are no conflicts of interest.

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#### **Supplementary Material**

Supplementary Data

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