Research Square

Preprints are preliminary reports that have not undergone peer review.
They should not be considered conclusive, used to inform clinical practice,
or referenced by the media as validated information.

Operationalizing social health integration in primary care: A mixed-methods implementation evaluation

Meagan C. Brown

meagan.c.brown@kp.org

Kaiser Permanente Washington Health Research Institute

Ammarah Mahmud

University of Washington School of Public Health

Sophia Mun

Kaiser Permanente Washington Health Research Institute

Ariel Singer

Kaiser Permanente Washington Health Research Institute

Emily Westbook

Kaiser Permanente Washington Health Research Institute

Heidi Den Haan

Kaiser Permanente Washington

Robert Wellman

Kaiser Permanente Washington Health Research Institute

Roy Pardee

Kaiser Permanente Washington Health Research Institute

Cara C. Lewis

Kaiser Permanente Washington Health Research Institute

Research Article

Keywords: Social health integration, Social determinants of health, Implementation science, Primary care, Health equity, RE-AIM, Social needs screening, Quality Improvement

Posted Date: May 12th, 2026

DOI: https://doi.org/10.21203/rs.3.rs-9227497/v1

License: This work is licensed under a Creative Commons Attribution 4.0 International License.
Read Full License

Additional Declarations: No competing interests reported.

Abstract

Background: US health care systems are rapidly expanding care for health-related social needs. As a result, implementation of interventions continues to outpace evidence on how to operationalize social health integration (SHI) effectively. The National Academies of Sciences, Engineering, and Medicine (NASEM) describes three SHI domains within health care delivery: awareness, adjustment, and assistance. This paper reports the implementation evaluation of a SHI program developed and tested in two primary care clinics within an integrated health system.

Methods: We used a concurrent triangulation mixed-methods design, guided by the RE-AIM framework, to evaluate SHI implementation from July 2021 through January 2023. Quantitative data included EHR-derived screening rates and patient engagement rates with two social health assistance programs: a local clinic-based community resource specialist (CRS) program and a centralized Connections Call Center (CCC). Qualitative data were collected through semi-structured interviews with 50 patients and 27 clinic staff and primary care providers.

Results Active implementation support was essential for achieving an 80% screening rate, and rates declined to 60-65% once support ended. Despite EHR integration and provider education, adjustment of care by providers based on social needs screening data remained rare. CRS achieved significantly higher engagement than CCC (42.0% vs. 27.4%; χ^2=12.41, p=0.0004), including among older adults (49.4% vs. 27.9%; p=0.004), younger adults aged 18-40 (38.3% vs. 20.0%; p=0.006), and non-white patients (49.2% vs. 24.5%; p=0.006). In qualitative interviews, few patients successfully connected with a referred resource, largely due to eligibility barriers and outdated referral information.

Conclusions: Effective SHI implementation requires sustained, specific strategies across all three NASEM domains[EW1] . Screening gains were transient without ongoing facilitation, and care adjustment remained largely absent despite EHR and educational supports. Clinic-based assistance reached older adults and non-white patients at significantly higher rates than a centralized model, suggesting that local, care team-embedded support may be better positioned to reach populations at highest risk for social needs. Sustained facilitation and equity-centered intervention design are essential foundations for moving beyond screening alone toward a fully integrated social health model.

Contributions to the literature

- Social health integration is expanding rapidly, but evidence on operationalizing combined awareness, adjustment, and assistance activities within primary care settings remains limited.
- Sustained, multi-strategy implementation support was essential for achieving high screening rates, but gains were not maintained once support was withdrawn.
- Provider education and EHR integration alone were insufficient to drive meaningful changes in clinician use of social needs screening data in clinical encounters.

- Clinic-based community resource specialists outperformed a centralized call center in overall engagement and reaching older adults and non-white patients, suggesting that care team-embedded programs may be better designed to reach populations at highest risk for social needs.

Introduction

Health-related social needs such as food insecurity, housing instability, financial strain, and transportation-related barriers are major drivers of health inequities and increasingly a focus of healthcare systems in the United States.(1, 2) Social health integration (SHI), a systematic approach to identifying and addressing of social needs in healthcare delivery, has emerged as a critical strategy for reducing health disparities.(3) The National Academies of Sciences, Engineering, and Medicine (NASEM) defines three operational SHI components within health care systems: awareness (screening for social risks and needs), adjustment (adapting patient care based on social risks), and assistance (connecting patients to resources to address social needs).(3)

New quality metrics from the National Committee for Quality Assurance and Joint Commission have accelerated adoption of SHI across healthcare organizations.(4–6) These incentives have led intervention implementation to outpace the evidence base.(7–9) While there is growing literature on SHI outcomes, evidence on how to operationalize SHI effectively across all three NASEM domains of awareness, adjustment, and assistance remains limited.(10) Co-design and implementation science approaches offer a path toward more replicable, equity-centered SHI programs, but detailed descriptions of their application in primary care settings are rare.(10)

To address this gap, Kaiser Permanente Washington (KPWA) developed and implemented a SHI program across two primary care clinics, supported by a concurrent mixed-methods evaluation. Outcome data from this evaluation have been reported in a series of companion papers, including analyses of social needs resolution, healthcare utilization, costs, and patient experience.(11–14) Taken together, findings suggest that a clinic-based and care team-embedded community resource specialist (CRS) support model was associated with greater primary care utilization than a centralized call center (CCC) approach, though material social needs resolution remained limited across both programs. Patient qualitative interviews indicated that emotional support was a more consistent driver of perceived benefit than successful resource connection.(14)

This paper extends these findings by reporting on the implementation evaluation. Our aim is to describe what it took to operationalize SHI across all three individual-focused NASEM domains in a primary care learning health system: what strategies were used, what sustained implementation, and where implementation fell short. These findings illustrate how the NASEM framework can guide implementation in primary care, offering lessons for researchers and healthcare systems working toward fully integrated social health care workflows.

Methods

Settings and participants

Kaiser Permanente Washington (KPWA) is a regional market of Kaiser Permanente, a nationally integrated not-for-profit healthcare system. KPWA serves approximately 650,000 members in Washington State and operates The Center for Accelerating Care Transformation (ACT Center), a Learning Health System program designed to bring together researchers and health system teams to rapidly evaluate new programs and translate findings into practice.(15) For this quality improvement project, two KPWA primary care clinics received implementation support between July 2021 and January 2023 to develop and implement a SHI program (Appendix Table 1). Clinics were selected based on their relatively high Medicaid populations (11%), differences in size and patient population, and geographic variation that could inform future scale and spread. Clinic A serves approximately 45,000 patients across four counties in western Washington; Clinic B serves approximately 11,000 patients in a single county in eastern Washington. This study was reviewed by the Kaiser Permanente Washington Institutional Review Board and designated as a quality improvement project and not human subjects research.

Table 1
Patient qualitative interview demographics

Characteristic	N (%)
Age	
Caregiver of patient < 18	3 (6.0)
18–40	17 (34.0)
41–60	14 (28.0)
60+	16 (32.0)
Gender	
Male	19 (38.0)
Female	27 (54.0)
Transgender/Nonbinary	4 (8.0)
Race and Ethnicity	
Black/African American	4 (8.0)
Hispanic	6 (12.0)
Multiracial	2 (4.0)
Non-Hispanic White	28 (56.0)
Other	8 (16.0)
Unknown	2 (4.0)
Insurance Status	
Commercial	24 (48.0)
Individual	3 (6.0)
Medicaid	7 (14.0)
Medicare	14 (28.0)
No coverage	2 (4.0)
Program arm	
Community Resource Specialist	26 (52.0)
Connections Call Center	24 (48.0)
Engaged with program, N (%)	
Yes	19 (38.0)

Characteristic	N (%)
No	31 (62.0)
Change in needs from baseline	
Decreased	24 (48.0)
Increased	14 (28.0)
No change	12 (24.0)
Clinic	
Clinic A	33 (66.0)
Clinic B	17 (34.0)

Workflow Co-Design

From June through November 2021, we held seven remote, iterative design sessions with three patients who had previously received social needs assistance from KPWA. The purpose of these sessions was to integrate the patient voice into our SHI program plan. We asked these patients to provide feedback on: (1) their expectations around social health-related interactions with their care team; (2) language, format, and readability of a nine-item Social Health Questionnaire (SHQ-9); and (3) awareness and assistance workflows. Our team also met regularly with the KPWA Clinical Documentation Improvement Team and shared patient feedback to collaborate on Epic (i.e., electronic health record, (EHR)) changes.

In June 2021, we held two hybrid design sessions with care team representatives including clinic leaders and managers, primary care providers (PCP), medical assistants, nurses, social workers, community resource specialists (CRS), and front desk staff (N = 19) from the two clinics. We presented our screening and referral workflows for targeted feedback. For example, we elicited feedback on SHQ-9 distribution and documentation from the front desk staff and MAs. We also asked about SHQ-9 language, at-a-glance readability (particularly for PCPs reviewing responses during the patient encounter), and documentation ease.

We iteratively revised our SHQ-9 and workflows based on this feedback. The final SHQ-9 asks patients about their finance, food, housing, and transportation risks. A final item asks if they would like assistance with up to 10 social needs (Appendix Fig. 1).

SHI program implementation

The SHI program operationalized all three NASEM domains.

Awareness – Universal social health screening via SHQ-9

The SHQ-9 was implemented for all patients who had a scheduled office visit with a PCP (Family Practice, Pediatrics, and General Internal Medicine) at the two clinics. Patients could complete the SHQ-9 online during an e-check-in prior to their visit, or by paper or iPad at the visit. During rooming, the MA would check form completion and, if necessary, document responses into the EHR.

From July 2021 through January 2023, the two clinics received robust implementation support to integrate screening workflows. Implementation support included practice facilitation with care team representatives, along with EHR enhancements to enable systematic screening documentation and including social health information on patients' after-visit summaries. In one clinic, based on suboptimal screening rates, we also offered a financial incentive (equivalent to $20/month for four months) for medical assistants who hit screening targets. Practice facilitation sessions largely focused on process improvement metrics and addressing facilitators and barriers to achieving high screening and referral rates.

Adjustment

Data from the SHQ-9 populated in the patients' EHR record and created a flag if the patient screened positive for social risk and/or needs. The patient's PCP then had the ability to review the patient's SHQ-9 responses during the visit and tailor their care plan accordingly. Implementation support for adjustment included a pre-recorded PCP-led webinar orienting PCPs to the SHQ-9 and opportunities to adjust care. Providers were also offered access to an online continuing medical education (CME) course on SHI with interactive real-world case studies.(16, 17)

Assistance – CRS and Connections Call Center

From October 2022 through January 2023, we initiated a comparative effectiveness evaluation of two social health assistance programs at KPWA using a stratified randomized design: (1) CRS, lay community health workers embedded in primary care teams, and (2) the Connections Call Center (CCC), a centralized social health referral call center run by KP National. Full details of the assistance evaluation design and randomization procedures have been reported in companion papers.(11–13)

Patients who disclosed having 1 + social need(s) on the SHQ-9 were randomized to receive social health support from either CRS or CCC. Patients were excluded from the evaluation if another individual from their household had already enrolled, or if the patient's PCP uncovered an urgent social need during their visit (e.g., need emergency housing) that needed to be addressed more promptly. Both programs use a centralized directory to provide patients with resource information, yet, by design, CRSs have local knowledge of community resources. CRSs are also trained in motivational interviewing techniques to support patient activation.

Under the original CCC workflow, patients were required to initiate contact with CCC after receiving the call center phone number listed on their after-visit summary. However, after approximately two months of randomization less than 1% (2/214) of patients assigned to CCC contacted the call center for social health support. Given the quality improvement nature of this evaluation, we modified this workflow to have the call center initiate outreach, like CRS, and then restarted the evaluation.

Evaluation design and data collection

We used a concurrent triangulation mixed-methods design to evaluate SHI implementation, guided by the RE-AIM framework.(18) RE-AIM examines implementation across five dimensions: Reach (the proportion and representativeness of patients engaged), Effectiveness (impact on outcomes), Adoption (uptake by staff and settings), Implementation (fidelity and consistency of delivery), and Maintenance (sustainability over time). Given that outcomes data have been reported in companion papers, this evaluation focuses primarily on Reach, Adoption, Implementation, and Maintenance across the three NASEM domains.(19, 20)

Quantitative data and analyses

We assessed two primary process measures for awareness using EHR data: (1) screening rates for social risks/needs based on the nine-item Social Health Questionnaire (SHQ-9) and (2) the modality of SHQ-9 completion (e.g., e-check-in, iPad, paper).

For our primary quantitative assistance outcome, we examined changes in the total number of self-reported social needs (ranging from 0 to 10) from baseline to 2- and 5-months post-baseline among patients who engaged with the intervention. We also examined engagement with the CRS and CCC intervention. We defined *full engagement* as having a documented phone or secure message encounter with a staff member from the assigned assistance program (CRS vs CCC) that resulted in the patient receiving at least one resource referral, and *partial engagement* as at least one interaction but no referral was provided either due to the patient declining resources or being ineligible for resources.

Additionally, we collected follow-up quantitative surveys administered at 2- and 5-months post-baseline that included the SHQ-9 (to capture changes in social needs) and additional items assessing patient experience and satisfaction with the assigned assistance program. We used descriptive statistics (e.g., means, proportions) and chi-squared tests of proportions to characterize changes in social needs over time and to compare engagement outcomes across demographic groups.

Qualitative data and analyses

We conducted semi-structured interviews with 50 patients (see Table 1 for qualitative participant characteristics) and 27 clinic staff and PCPs (Table 2) to contextualize the quantitative results and explore experiences with the SHI program. For the patient interviews, patients who completed a 5-month

follow-up survey and spoke English were eligible to complete an interview. Eligible patients received an invitation letter explaining the opportunity to participate in a 30- to 45-minute phone interview about their interactions with their primary care team, experiences discussing personal circumstances in a healthcare setting, and, if relevant, working with CRS or a CCC resource specialist. Those who expressed interest based on the letter were contacted by study staff to provide further details and arrange an interview. Patients who completed a phone interview received a $50 gift card as a thank you for participating. For staff and PCP interviews, the study team identified high-screening and low-screening PCP and staff dyads, and worked with leaders at each clinic to conduct outreach for interviews with these groups. All interviews were recorded and transcribed by a trained transcriptionist.

Table 2
Clinic staff and provider interview roles

Role	Number of participants (n = 27)
Clinic Leader	5
CRS	5
MA/LPN	9
PCP	8

Interview guides included questions on participants' perceptions of SHQ-9 screening, workflow, resource referral processes, and program satisfaction. For patients, we asked about their perceptions across the awareness, assistance, and adjustment domains. For workforce, we asked about their comfort or confidence, their best and worst communication experiences, facilitators, barriers, and implementation recommendations for screening, referral, and adjusting care.

We employed a Rapid Assessment Procedure approach to analyze the semi-structured interview transcripts.(21) Three study team members developed a standardized summary template to capture key points from each transcript (e.g., participants' perceptions of the screening process, referral experiences, barriers and facilitators to social health integration). To assess internal consistency and promote analytic rigor, a random subset of transcripts was independently summarized by two team members. Discrepancies were reviewed and reconciled through consensus discussions. Following the completion of the interview summaries, we created a matrix of summarized responses organized by major content domains. Summaries and matrices were then used to synthesize and identify the key findings.

Integration of Quantitative and Qualitative Findings

Following separate analyses, we integrated quantitative and qualitative results to generate a more comprehensive understanding of program implementation and impact. Specifically, we compared quantitative indicators (e.g., change in social needs, engagement rates) with thematic findings (e.g., barriers to screening, effectiveness of referrals) to identify how the results were congruent and where they diverged. This triangulation allowed us to assess not only the extent of changes in social needs but

also the contextual factors influencing patients’ and PCPs’ experiences, providing actionable insights for future refinement of SHI workflows.

Results

Awareness

Implementation

Both clinics received robust implementation support from July 2021 through January 2023 to integrate universal SHQ-9 screening workflows. Support included practice facilitation with care team representatives, EHR enhancements to enable systematic screening documentation, a Tableau dashboard to monitor screening rates, and inclusion of social health information on patients' after-visit summaries. Clinics differed in their screening delivery approach: Clinic A relied on medical assistants to distribute paper versions of the SHQ-9 during visits, while Clinic B used front desk staff to distribute the screener in the waiting room. In qualitative interviews, care teams identified time constraints and competing priorities as the primary challenges to consistent screening. PCPs specifically noted difficulty addressing social health concerns within standard visit lengths, while patients reported feeling overburdened by the volume of screeners completed during visits.

Reach

A total of 7,526 patients were screened during the evaluation period. Of these, 40% completed the SHQ-9 via electronic check-in prior to their visit, and 60% completed it in clinic, of whom 43% used iPads. Of those screened, 7% (n = 535) reported one or more social needs and were randomized to receive assistance. An additional 11% reported social risks but did not request assistance from the healthcare system and were not randomized for inclusion in the evaluation.

Maintenance

With active implementation support, both clinics reached the target screening rate of 80%. Clinic B achieved this target more rapidly, consistent with qualitative reports that front desk distribution supported more reliable uptake compared to medical assistant-administered paper screening. However, following the conclusion of active implementation support, screening rates declined at both clinics to 60% at Clinic A and 65% at Clinic B (Appendix Fig. 2). In qualitative interviews, care team members recognized the value of screening, but attributed this decline to competing priorities taking over once direct facilitation ended (Table 3).

Table 3
– Social Health Implementation Strategies, Key Findings, and Illustrative Quotes

NASEM Domain	Implementation Strategies	Key findings	Illustrative quotes
Awareness - screening for social risks and needs	Multi-modal screener delivery – e-check-in, iPad, paper Financial incentives for medical assistants (one clinic) Practice facilitation	Active, ongoing support required for successful implementation support	If there's not a bunch of facilitation it will be challenging for managers to roll this out and get it fully functioning…there are so many competing priorities and so many fires (Clinic Leader 003)
Adjustment – adapting patient care based on social risks	Results available in EHR record during visit Pre-recorded webinar orienting providers to adjusting care Online social health CME course with adjustment case studies	2) Lack of adjustment strategies and direct intervention on how social health information should be incorporated by provider into patient care planning minimized implementation	So specifically the questionnaire, have I reviewed the questionnaire? …No, I usually don't review the questionnaire…Just because there's a lot that I'm already looking at, usually that's why…It's not something I even notice until I'm closing the note because it didn't come up through our visit, so I'm surprised sometimes by how often that came up to where it triggered a need for a referral that I wouldn't have noticed. “ Provider 15
Assistance - connecting patients to resources to address social needs	Local, clinic-based Community Resource Specialist Centralized call center Resource Specialist KP-Specific instance of UniteUs social needs referral workflow integration	1) Care team preference and improved patient engagement with local, clinic-based social health support 2) Inaccurate or outdated information in social needs referral platforms undermines patients' ability to connect with resources and jeopardizes patient trust	1) “There's that direct face-to-face connection, and they can make that connection seeing a real person, versus - I tend to think of it as cold calling. They may have been told okay, you indicated you need resources, somebody's going to call you, this is who they are, this is what they can help with. And then when I do call, they're like, what? What do you want? It's like they've forgotten.” (CRS 001) "I think it might have been better if it was in person. We do a lot of communication with our bodies, rather than our voice and the words…and I think that would have maybe propelled me a little more substantially.” (Patient 002)

NASEM Domain	Implementation Strategies	Key findings	Illustrative quotes
			2) [UniteUs] is extremely frustrating for me to use. Trying to find resources on there, trying to get referrals to resources on there – there's always some kind of issue." (CRS 003)

Adjustment

Implementation

To support care adjustment, SHQ-9 responses were automatically populated in patients' EHR records and generated a flag when a patient screened positive for social risk or need. PCPs had access to this information during visits and were supported in implementing adjustment activities through a pre-recorded PCP-led webinar and an online CME course with interactive case studies on social risk-informed care.

Adoption

Adjustment represented the weakest domain of SHI implementation, likely due to the limited and passive implementation support. Care team members across all roles expressed strong support for SHI, noting that screening helped them learn new pertinent information about their patients. However, PCPs found it challenging to discuss social needs due to the perception that it would add significantly to visit time. Although the EHR provided a flag when a patient screened positive for social risk and/or needs to aid them in possibly making care plan adjustments, most PCPs reported not integrating this information into the visit beyond the connection to social health support. A few PCPs did describe adjusting care plans based on social circumstances, however these decisions stemmed from direct patient conversations rather than screening data in the EHR, reinforcing that formal integration of screening results into clinical decision-making remained rare.

Assistance

Implementation

From October 2022 through January 2023, patients reporting one or more social needs were randomized to receive assistance from either a local clinic-based CRS or the centralized CCC. Both programs use a shared resource directory to provide referrals, though CRSs additionally draw on local community knowledge and motivational interviewing training. In qualitative interviews, care teams expressed a clear preference for the CRS model, describing the ability to hand off patients directly to a trusted team member as reducing both the logistical and emotional burden of raising sensitive social health topics without being able to ensure follow-up. Three systemic implementation challenges were consistently

identified: a general lack of community resources, difficulty maintaining accurate and up-to-date referral information, and a healthcare system focus on awareness and assistance activities rather than structural solutions to social needs.

Reach

A total of 535 patients were randomized, with 269 in the CRS arm and 266 in the CCC arm (Table 4). Average number of days between randomization and first outreach was four days for the CRS arm and two days for the CCC arm. At eight weeks, 113 (42%) in CRS arm had fully engaged, meaning they had at least one interaction with the CRS that resulted in at least one resource referral for a social need. An additional 30 (11%) of patients in the CRS arm partially engaged, defined as the patient having at least one encounter but did not receive a resource, either due to the member declining or being ineligible for resources. When comparing full engagement to partial or no engagement, In the CCC arm, 73 (27%) fully engaged with the intervention, and an additional 86 (32%) patients partially engaged. Patients in the CRS arm were significantly more likely to fully engage than those in the CCC arm ($\chi^2=12.41$, $p = 0.0004$).

Table 4
Baseline characteristics by engagement category and arm

Characteristic	CRS (n = 269)			CCC (n = 266)		
	Full (n = 113)	Partial/Ineligible (n = 30)	None (n = 126)	Full (n = 73)	Partial/Ineligible (n = 86)	None (n = 107)
Gender, n (%)						
Female	80 (70.8%)	20 (66.7%)	76 (60.3%)	50 (68.5%)	54 (62.8%)	72 (67.3%)
Male	33 (29.2%)	10 (33.3%)	50 (39.7%)	23 (31.5%)	32 (37.2%)	35 (32.7%)
Age, n (%)						
< 18	6 (5.3%)	7 (23.3%)	11 (8.7%)	8 (11.0%)	5 (5.8%)	10 (9.3%)
18–40	36 (31.9%)	7 (23.3%)	51 (40.5%)	19 (26.0%)	31 (36.0%)	45 (42.1%)
41–60	27 (23.9%)	4 (13.3%)	31 (24.6%)	22 (30.1%)	23 (26.7%)	17 (15.9%)
60+	44 (38.9%)	12 (40.0%)	33 (26.2%)	24 (32.9%)	27 (31.4%)	35 (32.7%)
Race/Ethnicity, n (%)						
African American or Black	7 (6.2%)	1 (3.3%)	4 (3.2%)	3 (4.1%)	5 (5.8%)	4 (3.7%)
Native American or Alaska Native	1 (0.9%)	0 (0%)	1 (0.8%)	0 (0%)	0 (0%)	1 (0.9%)
Asian	4 (3.5%)	0 (0%)	4 (3.2%)	1 (1.4%)	2 (2.3%)	4 (3.7%)
Hispanic	10 (8.8%)	2 (6.7%)	9 (7.1%)	5 (6.8%)	3 (3.5%)	4 (3.7%)
Multiracial	7 (6.2%)	2 (6.7%)	4 (3.2%)	1 (1.4%)	5 (5.8%)	4 (3.7%)
Native Hawaiian or Pacific Islander	1 (0.9%)	1 (3.3%)	1 (0.8%)	1 (1.4%)	2 (2.3%)	3 (2.8%)

Full: at least one encounter and received a resource referral. Partial/Ineligible: patients who had at least one encounter but did not receive a resource referral, either due to declining or resource ineligibility. CRS = Community Resource Specialist; CCC = Connections Call Center

Characteristic	CRS (n = 269)			CCC (n = 266)		
	Full (n = 113)	Partial/Ineligible (n = 30)	None (n = 126)	Full (n = 73)	Partial/Ineligible (n = 86)	None (n = 107)
White	57 (50.4%)	20 (66.7%)	64 (50.8%)	48 (65.8%)	45 (52.3%)	60 (56.1%)
Other	2 (1.8%)	0 (0%)	4 (3.2%)	2 (2.7%)	1 (1.2%)	2 (1.9%)
Unknown	24 (21.2%)	4 (13.3%)	35 (27.8%)	12 (16.4%)	23 (26.7%)	25 (23.4%)
Insurance type, n (%)						
Commercial	41 (36.3%)	15 (50.0%)	60 (47.6%)	26 (35.6%)	40 (46.5%)	46 (43.0%)
Individual	2 (1.8%)	0 (0%)	4 (3.2%)	4 (5.5%)	3 (3.5%)	1 (0.9%)
Medicaid	20 (17.7%)	3 (10.0%)	18 (14.3%)	14 (19.2%)	11 (12.8%)	11 (10.3%)
Medicare	40 (35.4%)	8 (26.7%)	29 (23.0%)	22 (30.1%)	26 (30.2%)	33 (30.8%)
No coverage	10 (8.8%)	4 (13.3%)	15 (11.9%)	7 (9.6%)	6 (7.0%)	16 (15.0%)

Full: at least one encounter and received a resource referral. Partial/Ineligible: patients who had at least one encounter but did not receive a resource referral, either due to declining or resource ineligibility. CRS = Community Resource Specialist; CCC = Connections Call Center

We also examined whether certain populations were more or less likely to engage with either intervention. CRS demonstrated a significant advantage in reaching older adults (60+): 44 (49.4%) of older adults assigned to CRS fully engaged, compared to 24 (27.9%) in the CCC arm (χ^2=8.54, p = 0.004). Adults aged 18–40 also engaged at significantly higher rates in the CRS arm: 36 (38.3%) versus 19 (20.0%) in CCC (χ^2=7.62, p = 0.006). When looking at differences by race and ethnicity, we opted to compare white to non-white patients due to small cell sizes for individual racial and ethnic categories. In these analyses, non-white patients engaged at significantly higher rates with CRS than CCC: 32 (49.2%) versus 13 (24.5%) (χ^2=7.55, p = 0.006). No significant differences in engagement were observed by insurance type or gender.

Despite generally positive patient experience ratings with approximately half (53%, n = 113) of survey respondents across both arms rating their experience as excellent or above average at eight weeks, fewer than half reported that the resources they received were a good match for their needs (40%) or that they received sufficient information to act on referrals (42%). In qualitative interviews, only 10/50

(20%) patients reported successfully connecting with a referred resource, with the majority encountering eligibility barriers or receiving referrals that were outdated or poorly matched to their circumstances.

Adoption

Staff adoption of the assistance workflows was uneven across programs. CRS staff demonstrated stronger adoption of warm handoff procedures and continuity of follow-up, consistent with their integration into care teams. CCC adoption was constrained by the program's original design, which required patients to initiate contact – a workflow that resulted in fewer than 1% of assigned patients making contact during an initial two-month period. Following a protocol modification to have CCC staff initiate outreach, engagement rates improved but remained significantly lower than CRS. Staff interviews identified the resource referral database as a persistent implementation barrier, with CRS staff describing frequent difficulties locating accurate, current resource information and expressing frustration with the platform's reliability.

Discussion

This mixed-methods evaluation of SHI implementation across two primary care clinics demonstrates that operationalizing all three NASEM domains requires distinct, sustained implementation strategies tailored to each domain. In lieu of evidence supporting best practices for how to operationalize SHI at scale for general populations, leveraging implementation science approaches (e.g., co-design, EHR-enhancements) with embedded rigorous program evaluation provided critical insights for KPWA's approach and evidence for program components and strategies that might be important for sustainment, scale, and spread. Applying RE-AIM across awareness, adjustment, and assistance revealed a consistent pattern: active implementation support led to successful SHI implementation in primary care, but its withdrawal or absence allowed competing demands to take priority. Taken together, these findings contribute implementation-level evidence to a body of research that has grown rapidly in describing what SHI programs do, but is more limited in explaining what it takes to implement and sustain over time.(10)

Our finding that both clinics reached 80% screening rates with active implementation support, followed by meaningful decline once support ended, is consistent with literature on the conditions required for sustainability. Hailemariam et al's systematic review of evidence-based intervention sustainability strategies identified ongoing feedback, reinforcement, and organizational embedding as essential to sustaining new practices, conditions that characterized our active support phase but not the period that followed.(22) Our findings extend this evidence specifically to SHI screening in primary care, where competing clinical demands create a particularly challenging sustainability environment. Furthermore, they suggest that, in addition to robust measurement and feedback loops, health systems may need to reduce barriers or disincentives (e.g., competing priorities, insufficient visit time) that can make SHI difficult to sustain.

The adjustment domain represented the most significant implementation gap in our evaluation, and remains understudied relative to awareness and assistance implementation. This gap has meaningful consequences. Adjusted care can improve patient-PCP interactions, reduce PCP burnout, and improve patient health outcomes.(23–26) Health care organizations have no guidebook for working with clinical teams on using social needs screening data to tailor care plans while maintaining standards of care.(3, 27) Furthermore, meaningfully engaging PCPs in care adjustment means changing workflows and training strategies, which also requires evidence-based guidance.(3) Future implementation efforts targeting adjustment will need to move beyond passive strategies toward active workflow co-design with PCPs, integration of social health data into clinical decision support, and dedicated training on social risk-informed care as a clinical skill.(28)

The higher engagement of older adults and non-white patients in CRS compared to CCC may reflect structural differences between the two models. As members of patients' care teams, CRS staff were able to initiate contact by identifying themselves as part of a patient's care team and leverage secure messaging, advantages that likely supported trust and improved response rates, particularly among populations who may experience more medical mistrust or for whom personal relationships with care team members facilitate health care engagement.(29–32) These intervention differences also map onto multiple pathways in Gottlieb et al.'s revised logic model for social care: CRS's care team integration facilitates emotional support and developing trusting relationships, while their local community knowledge and ability to facilitate healthcare appointment scheduling (which CCC agents cannot do) may explain the greater reductions in social needs and higher primary care utilization observed among CRS-engaged patients in our outcome evaluation.(11, 12, 30, 33) However, our findings support the idea that even well-designed assistance programs cannot fully overcome the persistent gap between resource referral and resource connection, a challenge that ultimately reflects inadequate investment in social safety nets and community resource infrastructure itself.(34) Addressing this gap requires structural solutions beyond program design: health care systems must actively align with existing community social care assets to facilitate synergies and direct investment toward identified social needs, and advocate for policies that support the creation and sustained of those resources.(3) Without progress on these remaining NASEM domains, the impact of even the most well-designed assistance programs will remain constrained by resource scarcity and capacity.(35, 36)

The CCC protocol modification, in which near-zero patient-initiated contact necessitated shifting to staff-initiated outreach, is itself a finding worthy of attention. The original assumption that patients would call the CCC phone number listed on their after-visit summary reflects a design flaw in which the burden to call fell on patients who already experience the greatest social barriers to care. Shifting to staff-initiated outreach improved engagement, reinforcing that proactive outreach is necessary for assistance programs serving populations with social needs.

Several limitations warrant consideration. The two-clinic design and small sample sizes within a single integrated health system limits generalizability, particularly to safety net settings with substantially different implementation contexts. Formal measurement of staff-level adoption was limited, constraining

the depth of adoption findings within RE-AIM. Qualitative interviews were conducted only in English, excluding perspectives of non-English-speaking patients who may face distinct barriers to care and who are disproportionately represented among those with social needs.(37) Finally, the evaluation period may not capture longer-term maintenance, particularly given evidence that sustainment of evidence-based practices continues to decline post-implementation support.(38)

This evaluation demonstrates that effective SHI implementation in primary care requires sustained, domain-specific strategies and that sustainment across all three NASEM operational domains is unlikely without ongoing structural support. Active practice facilitation was essential for achieving high screening rates, but insufficient to sustain them once withdrawn. Adjustment remained the most underdeveloped domain, with EHR integration and provider education alone failing to produce meaningful changes in clinical behavior. For assistance, clinic-based CRS outperformed a centralized call center in reaching older adults and non-white patients, suggesting that local, clinic-based support may better reach populations at highest risk for social needs. As healthcare systems face growing pressure to implement SHI at scale, sustained facilitation and equity-centered intervention design are essential foundations for moving beyond screening alone to a fully integrated social health model that can produce meaningful and equitable improvements in patient care.

Abbreviations

CCC
Connections Call Center
CME
Continuing Medical Education
CRS
Community Resource Specialist
HER
Electronic Health Record
KPWA
Kaiser Permanente Washington
KPWHRI
Kaiser Permanente Washington Health Research Institute
NASEM
National Academies of Sciences, Engineering, and Medicine
PCP
Primary Care Provider
RE-AIM
Reach, Effectiveness, Adoption, Implementation, Maintenance
SHI
Social Health Integration
SHQ-9

Social Health Questionnaire-9

Declarations

Ethics approval and consent to participate:

All aspects of this project proposal were reviewed by the Kaiser Permanente Washington Health Research Institute Institutional Review Board and deemed quality improvement and not research. Implied consent was obtained from follow-up survey participants, who were informed in the advance letter and at the start of the survey that completing the survey indicated their consent to participate. For qualitative interviews, all participants provided verbal consent to be interviewed and recorded prior to the start of the interview.

Consent for publication:

Not Applicable

Competing interests:

The authors declare that they have no competing interests

Funding:

This project was funded by the Kaiser Permanente Washington Learning Health System Program and the Kaiser Permanente National Office of Community and Social Health

Author Contribution

Conceptualization: MCB, CCL, AM, EW, RW, AS. Analysis: MCB, AM, SM, AS, RW, RP, HDH. Funding acquisition: CCL, EW. Project administration: EW, MCB, SM, CCL. Writing – Original draft preparation: MCB, CCL, AM, SM, AS. Writing – Review & editing: MCB, AM, SM, AS, EW, HDH, RW, RP, CCL.

Acknowledgements:

Not Applicable

Data Availability

The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request

References

1. Ashe JJ, Baker MC, Alvarado CS, Alberti PM. Screening for Health-Related Social Needs and Collaboration With External Partners Among US Hospitals. JAMA Network Open. 2023;6(8):e2330228. doi:10.1001/jamanetworkopen.2023.30228
2. Marchis EHD, Brown E, Aceves B, Loomba V, Molina M, Cartier Y, et al. State of the Science of Screening in Healthcare Settings.
3. National Academies of Engineering, Sciences, and Medicine. Integrating Social Care into the Delivery of Health Care: Moving Upstream to Improve the Nation's Health [Internet]. The National Academies Press; 2019. 194 p. Available from: https://www.nationalacademies.org/our-work/integrating-social-needs-care-into-the-delivery-of-health-care-to-improve-the-nations-health
4. Reynolds A. Social Need: New HEDIS Measure Uses Electronic Data to Look at Screening, Intervention. NCQA [Internet]. 2022 Nov 2 [cited 2023 May 4]. Available from: https://www.ncqa.org/blog/social-need-new-hedis-measure-uses-electronic-data-to-look-at-screening-intervention/
5. Health Equity Accreditation. NCQA [Internet]. [cited 2023 Aug 4]. Available from: https://www.ncqa.org/programs/health-equity-accreditation/
6. Joint Commission. Assess Health-Related Social Needs | Joint Commission [Internet]. [cited 2026 Mar 8]. Available from: https://www.jointcommission.org/en-us/knowledge-library/excellent-health-outcomes-for-all/accreditation-resource-center/assess-health-related-social-needs
7. RTI International. Accountable Health Communities (AHC) Model Evaluation: First Evaluation Report [Internet]. RTI International. Report No. Available from: https://www.cms.gov/priorities/innovation/data-and-reports/2020/ahc-first-eval-rpt
8. Yan AF, Chen Z, Wang Y, Campbell JA, Xue QL, Williams MY, et al. Effectiveness of Social Needs Screening and Interventions in Clinical Settings on Utilization, Cost, and Clinical Outcomes: A Systematic Review. Health Equity. 2022;6(1):454–75. doi:10.1089/heq.2022.0010 PubMed PMID: 35801145; PubMed Central PMCID: PMC9257553.
9. Gottlieb LM, Hessler D, Long D, Laves E, Burns AR, Amaya A, et al. Effects of Social Needs Screening and In-Person Service Navigation on Child Health: A Randomized Clinical Trial. JAMA Pediatrics. 2016;170(11):e162521. doi:10.1001/jamapediatrics.2016.2521
10. Kepper M, Walsh-Bailey C, Owens-Jasey C, Gunn R, Gold R. Integrating Social Needs into Health Care: An Implementation Science Perspective. Annual Review of Public Health. 2025;46(1):151–70. doi:10.1146/annurev-publhealth-071823-111332
11. Mahmud A, Brown MC, Wong ES, Ornelas IJ, Wellman R, Pardee R, et al. Comparison of clinic-based assistance versus a centralized call center on patient-reported social needs: findings from a randomized pilot social health integration program. BMC Public Health. 2025;25(1):1171. doi:10.1186/s12889-025-22334-x

12. Mahmud A, Brown MC, Lewis CC, Ornelas IJ, Pardee R, Mun S, et al. Differences in health care costs between two social health support programs: findings from a randomized social health integration pilot program. BMC Health Serv Res. 2025;25(1):1244. doi:10.1186/s12913-025-13303-6
13. Mahmud A, Wong ES, Lewis CC, Ornelas IJ, Wellman R, Pardee R, et al. Differences in Healthcare Utilization Across 2 Social Health Support Modalities: Results From a Randomized Pilot Evaluation. AJPM Focus. 2025;4(3):100323. doi:10.1016/j.focus.2025.100323
14. Singer A, Mahmud A, Mun S, Westbrook E, Barnes K, Coleman K, et al. “It doesn’t feel as much like my downfall for needing help”: patient perspectives on pathways for improving health through social health integration. BMC Health Serv Res. 2025;25(1):1374. doi:10.1186/s12913-025-13558-z
15. ACT Center. Center for Accelerating Care Transformation (ACT Center) | ACT Center [Internet]. [cited 2026 Mar 8]. Available from: https://www.act-center.org/index.php
16. Brown MC, Paolino AR, Barnes KA, Papajorgji-Taylor D, Solomon LS, Lewis CC, et al. Codesigning Online Continuing Medical Education on Social Health Integration and Social Risk–Informed Care for Primary Care Providers. The Permanente Journal. 2024;28(2):26–35. doi:10.7812/TPP/23.113
17. Bojkov E, Papajorgji-Taylor D, Paolino AR, Dorsey CN, Barnes KA, Brown MC. Lessons learned on social health integration: evaluating a novel social health integration and social risk-informed care online continuing professional development course for primary care providers. BMC Med Educ. 2025;25(1):496. doi:10.1186/s12909-025-06971-9
18. Glasgow RE, Harden SM, Gaglio B, Rabin B, Smith ML, Porter GC, et al. RE-AIM planning and evaluation framework: adapting to new science and practice with a 20-year review. Frontiers in public health. 2019;7:64.
19. Bernard HR. Research methods in anthropology: Qualitative and quantitative approaches. 6th Edition. Rowman & Littlefield; 2018.
20. National Cancer Institute Division of Cancer Control & Population Sciences. Qualitative Methods in Implementation Science [Internet]. 2018. Report No. Available from: https://cancercontrol.cancer.gov/IS/docs/NCI-DCCPS-ImplementationScience-WhitePaper.pdf
21. Hamilton, Allison. Rapid Qualitative Analysis: Updates/Developments [Internet]. 2020 [cited 2023 Sep 29]. Available from: https://www.hsrd.research.va.gov/for_researchers/cyber_seminars/archives/video_archive.cfm?SessionID=3846
22. Hailemariam M, Bustos T, Montgomery B, Barajas R, Evans LB, Drahota A. Evidence-based intervention sustainability strategies: a systematic review. Implementation Science. 2019;14(1):57. doi:10.1186/s13012-019-0910-6
23. Weiner SJ. Contextualizing care: An essential and measurable clinical competency. Patient Education and Counseling. 2022;105(3):594–8. doi:10.1016/j.pec.2021.06.016
24. Weiner SJ, Schwartz A. Contextual Errors in Medical Decision Making: Overlooked and Understudied. Academic Medicine. 2016;91(5):657–62. doi:10.1097/ACM.0000000000001017

25. Weiner S, Schwartz A. Listening for what matters: avoiding contextual errors in health care. Oxford University Press; 2015.
26. Hessler D, Bowyer V, Gold R, Shields-Zeeman L, Cottrell E, Gottlieb LM. Bringing social context into diabetes care: intervening on social risks versus providing contextualized care. Current diabetes reports. 2019;19:1–7.
27. Fitzpatrick S, Papajorgji-Taylor D. Social Risk Informed Care: Scoping Review and Qualitative Research to Inform Implementation at Kaiser Permanente [Internet]. 2021 Dec. Report No. Available from: https://www.kpwashingtonresearch.org/application/files/3516/4131/7338/Social-Risk-Informed-Care-Evaluation_Final-Report.pdf
28. Gold R, Kaufmann J, Cottrell EK, Bunce A, Sheppler CR, Hoopes M, et al. Implementation Support for a Social Risk Screening and Referral Process in Community Health Centers. NEJM Catalyst. 2023;4(4). doi:10.1056/CAT.23.0034
29. Bazargan M, Cobb S, Assari S. Discrimination and Medical Mistrust in a Racially and Ethnically Diverse Sample of California Adults. Ann Fam Med. 2021;19(1):4–15. doi:10.1370/afm.2632
30. Lewis CC, Pullmann MD, Hsu C, Norris C, Mogk J, Pardee R, et al. Optimizing the community resource specialist to address social needs in primary care: results from a pragmatic quality improvement evaluation. BMC Prim Care. 2025;26(1):330. doi:10.1186/s12875-025-02922-x
31. Hirschman KB, Rivera E, Sefcik JS, McCauley K, Hanlon AL, Pauly MV, et al. Older Adult and Family Caregiver Perspectives on Engagement in Primary Care. J Gerontol Nurs. 2022;48(11):7–13. doi:10.3928/00989134-20221003-02
32. Gagnon KW, Quinn K, Walsh JL, Amirkhanian YA, Kelly JA. Characteristics of healthcare providers, healthcare systems, and patient strategies related to medical mistrust among black and African Americans. BMC Prim Care. 2025;26(1):203. doi:10.1186/s12875-025-02900-3
33. Gottlieb LM, Hessler D, Wing H, Gonzalez-Rocha A, Cartier Y, Fichtenberg C. Revising the Logic Model Behind Health Care's Social Care Investments. The Milbank Quarterly. 2024;102(2):325–35. doi:10.1111/1468-0009.12690
34. Garcia S, Mahmud A, Dumke K, Erkenbeck A, Chao C, Mun S, et al. Understanding, Assessing, and Improving Social Health Resource Referrals in Healthcare Organizations. Health Services Research. 2025;60(S3):e14466. doi:10.1111/1475-6773.14466
35. Garg A, LeBlanc A, Raphael JL. Inadequacy of Current Screening Measures for Health-Related Social Needs. JAMA. 2023;330(10):915–6. doi:10.1001/jama.2023.13948
36. Castrucci BC, Auerbach J. Meeting Individual Social Needs Falls Short Of Addressing Social Determinants Of Health [Internet]. 2019 [cited 2026 Mar 9]. Available from: http://www.healthaffairs.org/do/10.1377/forefront.20190115.234942/full/ doi:10.1377/forefront.20190115.234942
37. Fischer A, Conigliaro J, Allicock S, Kim EJ. Examination of social determinants of health among patients with limited English proficiency. BMC Res Notes. 2021;14(1):299. doi:10.1186/s13104-021-

05720-7

38. Birken SA, Haines ER, Hwang S, Chambers DA, Bunger AC, Nilsen P. Advancing understanding and identifying strategies for sustaining evidence-based practices: a review of reviews. Implementation Sci. 2020;15(1):88. doi:10.1186/s13012-020-01040-9

Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

- AppendixTable1.docx
- AppendixFigure1.pdf
- AppendixFigure2.docx