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Screening and Interventions for Social Risk Factors

Technical Brief to Support the US Preventive Services Task Force

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IMPORTANCE Evidence-based guidance is limited on how clinicians should screen for social risk factors and which interventions related to these risk factors improve health outcomes.

OBJECTIVE To describe research on screening and interventions for social risk factors to inform US Preventive Services Task Force considerations of the implications for its portfolio of recommendations.

DATA SOURCES Cochrane Database of Systematic Reviews, Cochrane Central Register of Controlled Trials, Ovid MEDLINE, Sociological Abstracts, and Social Services Abstracts (through 2018); Social Interventions Research and Evaluation Network evidence library (January 2019 through May 2021); surveillance through May 21, 2021; interviews with 17 key informants.

STUDY SELECTION Individual-level and health care system-level interventions with a link to the health care system that addressed at least 1 of 7 social risk domains: housing instability, food insecurity, transportation difficulties, utility needs, interpersonal safety, education, and financial strain.

DATA EXTRACTION AND SYNTHESIS One investigator abstracted data from studies and a second investigator evaluated data abstractions for completeness and accuracy; key informant interviews were recorded, transcribed, summarized, and integrated with evidence from the literature; narrative synthesis with supporting tables and figures.

MAIN OUTCOMES AND MEASURES Validity of multidomain social risk screening tools; all outcomes reported for social risk-related interventions; challenges or unintended consequences of screening and interventions.

RESULTS Many multidomain social risk screening tools have been developed, but they vary widely in their assessment of social risk and few have been validated. This technical brief identified 106 social risk intervention studies (N = 5 978 596). Of the interventions studied, 73 (69%; n = 127 598) addressed multiple social risk domains. The most frequently addressed domains were food insecurity (67/106 studies [63%], n = 141 797), financial strain (52/106 studies [49%], n = 111 962), and housing instability (63/106 studies [59%], n = 5 881 222). Food insecurity, housing instability, and transportation difficulties were identified by key informants as the most important social risk factors to identify in health care. Thirty-eight studies (36%, n = 5 850 669) used an observational design with no comparator, and 19 studies (18%, n = 15 205) were randomized clinical trials. Health care utilization measures were the most commonly reported outcomes in the 68 studies with a comparator (38 studies [56%], n = 111 102). The literature and key informants described many perceived or potential challenges to implementation of social risk screening and interventions in health care.

CONCLUSIONS AND RELEVANCE Many interventions to address food insecurity, financial strain, and housing instability have been studied, but more randomized clinical trials that report health outcomes from social risk screening and intervention are needed to guide widespread implementation in health care.

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Social conditions and the structural forces that shape them underlie preventable disparities in many health outcomes. In 2018, there were an estimated 38.1 million people living in poverty in the US,¹ and an estimated 1.42 million people experienced sheltered homelessness in 2016.² Identifying and addressing patients' experiences of socioeconomic adversity is increasingly the focus of many national health system efforts.³ However, evidence-based guidance is limited on how clinicians should screen for social risk factors and whether health care-initiated interventions related to these risk factors improve health outcomes.

Social determinants of health are neither inherently positive nor negative but instead encompass the wide range of social and economic conditions that shape health outcomes for individuals and communities.⁴⁻⁶ The downstream manifestations of those forces are experienced by individuals as either social assets or social risk factors. To be consistent with prior work that has helped shape this emerging area of health services research, the term *social risk factors* is used in this article to refer to measurable and intervenable individual-level social and economic conditions that are shaped by broader determinants of health.⁶ Furthermore, since social risk factors captured by screening tools are not always reflective of patient priorities or perceived needs, the term *social needs* is used to more narrowly refer to instances when patients have indicated interest in assistance related to social risks.⁶

The US Preventive Services Task Force (USPSTF) makes evidence-based recommendations for primary care preventive services. This technical brief aimed to describe the evidence base for social risk screening and interventions and present an overview of implementation challenges in health care to inform USPSTF considerations of the implications for its portfolio of recommendations. It was not intended to systematically review the effectiveness of social risk screening and interventions or to serve as the basis for a USPSTF clinical practice recommendation.

Methods

Scope of Technical Brief

This technical brief addressed 5 guiding questions (GQs) as shown in Figure 1. Detailed methods, including search strategies, detailed inclusion criteria, and excluded studies, are publicly available in the full technical brief.⁸

Data Sources and Searches

For GQ1, a search for available screening tools was not conducted because a 2019 review was identified that addressed this question.⁹ The review included randomized and nonrandomized study designs describing development or empirical use of screening tools assessing 2 or more social risk domains in US populations published since 2000.

For GQs 2 through 5, the Cochrane Database of Systematic Reviews, Cochrane Central Register of Controlled Trials, Ovid MEDLINE, Sociological Abstracts, and Social Services Abstracts were searched from database inception to December 2018. Searches were supplemented by reviewing reference lists of recent reviews and primary studies and the evidence library on the Social Interventions Research and Evaluation Network (SIREN) website (<https://sirennetwork.ucsf.edu/>) through May 10, 2021. Active surveillance was conducted

via targeted journal searches through May 21, 2021. Literature search results were managed using DistillerSR systematic literature review software (Evidence Partners). A search for conference abstracts and proceedings and other preliminary, unpublished study findings was also conducted.

Semistructured telephone interviews were conducted with 17 key informants to better understand current clinical context and implementation challenges. Key informants were identified from the SIREN Research Advisory Committee; the National Academies of Sciences, Engineering, and Medicine Committee on Integrating Social Needs Care into the Delivery of Healthcare; and researchers currently conducting studies and actively publishing in the field. These experts represent primary care, policy, research, patient advocacy, social services, public health, federal agency, and payer perspectives, and their work addresses many social risk domains, disadvantaged populations, and health care and community settings. Many clinicians who directly provide patient care and health system representatives were recruited to obtain multiple perspectives on practice variations, issues with implementation, and current clinical context. Two sets of interview questions were used—one for researchers that focused on the evidence base and one for implementation experts that focused on implementation of social risk screening and interventions (eMethods in the Supplement).

Study Selection

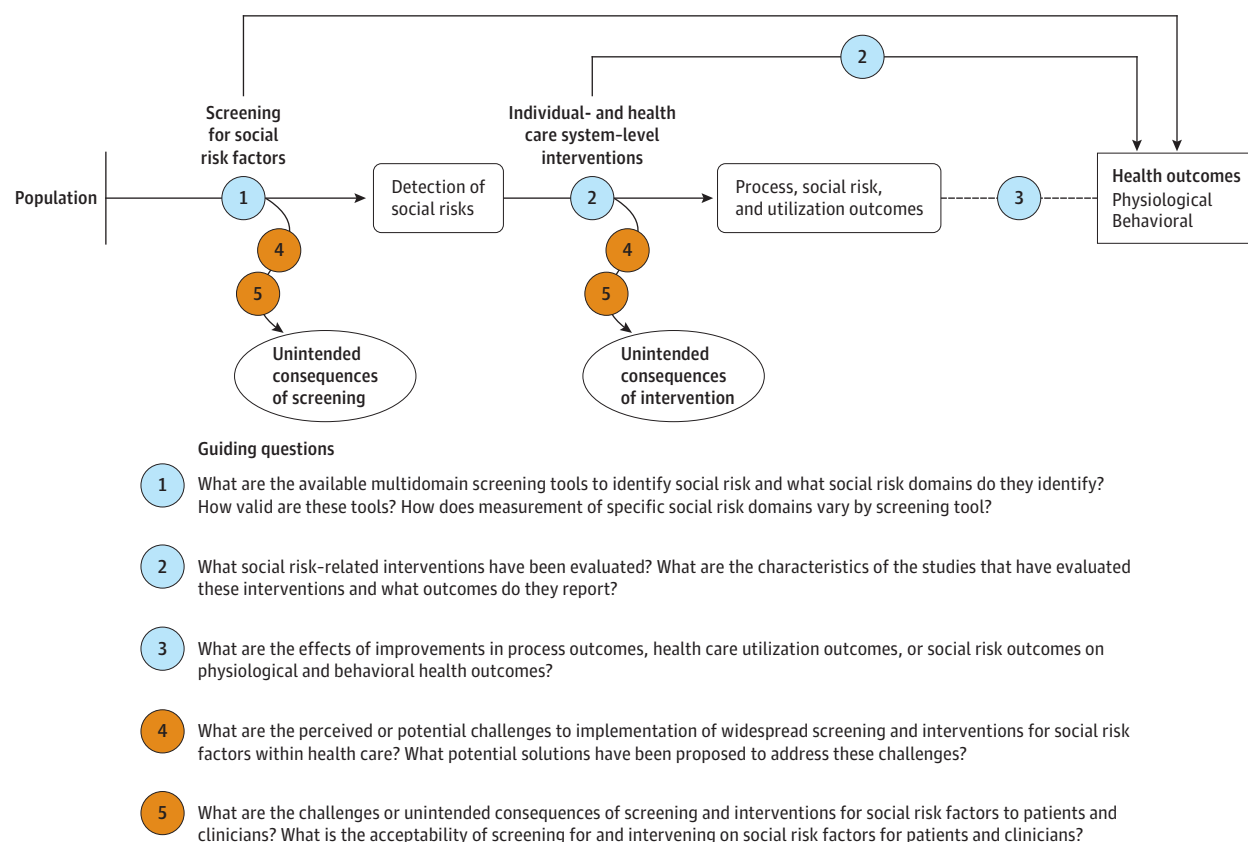
The abstracts of 17 283 identified articles were reviewed against a priori eligibility criteria (Figure 2). Two investigators then independently evaluated the full text of 545 potentially relevant articles. Studies of patients of all ages conducted in the general population were included. Studies targeting persons with a specific disease were excluded because these studies are typically focused on management of the particular condition and are not applicable to other patients. However, studies that recruited patients with 1 or more unspecified chronic illnesses were included. Interventions were included if they addressed at least 1 of the target social risk domains: housing instability, food insecurity, transportation difficulties, utility needs, aspects of interpersonal safety that are not already addressed by USPSTF recommendations, education, and financial strain. The target social risk domains were aligned to those in the Centers for Medicare & Medicaid Services Accountable Health Communities Model because these are modifiable social risk domains for which there are primary care-referable interventions available to most patients.¹⁰ Interventions at the individual and health care system levels targeting single or multiple social risk domains were included. Included studies had to have a link to the health care system.

Randomized clinical trials (RCTs) and nonrandomized controlled intervention studies; cohort, case-control, observational, and pre-post studies; and case series were included for GQ2 and GQ3. For GQ4, all study designs were included except case reports. For GQ5, all study designs except case reports, editorials, and reviews were included. No studies were excluded based on outcomes reported.

Data Extraction and Synthesis

For GQ1, the results of the 2019 systematic review on social risk screening tools⁹ were summarized, including the social risk domains addressed. Variation in the tools' assessment of the social risk

Figure 1. Analytic Framework: Screening and Interventions for Social Risk Factors



Evidence reviews for the US Preventive Services Task Force (USPSTF) use an analytic framework to visually display the questions that the review will address. The questions are depicted by linkages that relate interventions and

outcomes. A dashed line indicates a health outcome that immediately follows an intermediate outcome. Additional information available in the USPSTF Procedure Manual.⁷

domains was summarized by examining the phrasing of questions across tools. The screening tools used in studies included for GQ2 with a screening component were recorded and summarized.

For GQs 2 through 5, data abstraction forms were designed to gather pertinent information from each article that met inclusion criteria, including participant, intervention, and study characteristics. One investigator abstracted information into the forms, and a second investigator evaluated data abstractions for completeness and accuracy. Disagreements were resolved by consensus. As stated above, the purpose of the technical brief was to describe the characteristics of the evidence base rather than to critically appraise and synthesize the effectiveness of available studies. As such, following technical brief methodology, the risk of study bias was not rated and the strength of the evidence was not graded. The evidence for each GQ was narratively synthesized, with supporting summary tables and figures to characterize the identified evidence. The types of outcomes reported in studies were abstracted. The results (eg, effect sizes) were not abstracted because the effectiveness of screening and interventions was outside the scope of the project. All interviews with key informants were recorded and transcribed, and responses were summarized and integrated with evidence from the literature for each GQ.

Results

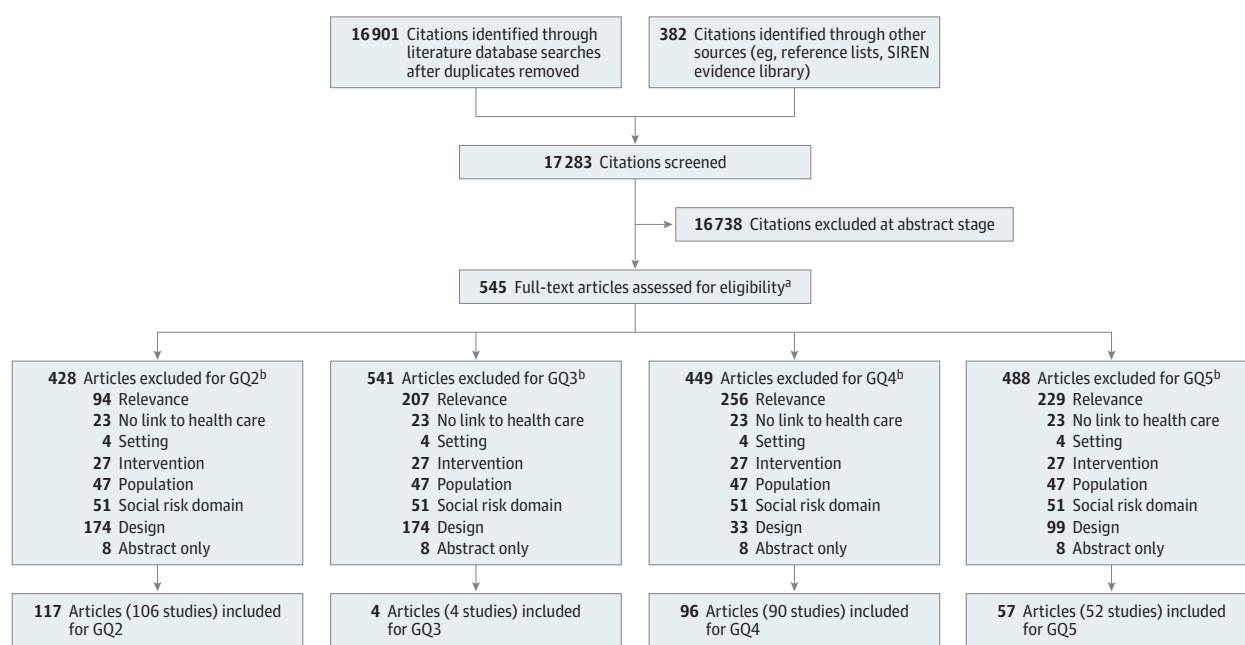
Social Risk Screening Tools

Guiding Question 1. What are the available multidomain screening tools to identify social risk and what social risk domains do they identify? How valid are these tools? How does measurement of specific social risk domains vary by screening tool?

The 2019 systematic review⁹ identified available multidomain social risk screening tools, evaluated the degree to which gold standard methods were used in their development, and summarized the available psychometric and pragmatic evidence for the tools. Eighteen tools included in the review are intended for use in primary care settings and address at least 1 of the target social risk domains. The number of questions in these tools ranged from 7 to 118, and administration time ranged from 5 to 25 minutes. The most frequently included social risk domains in the tools were food insecurity, intimate partner violence, housing instability, financial strain, education, and social isolation.

Only 7 tools had reliability and validity testing data, and in subsequent empirical use, 71% of the tools had been modified from their original form, making it difficult to draw conclusions about

Figure 2. Literature Search Flow Diagram: Screening and Interventions for Social Risk Factors



GQ indicates general question; SIREN, Social Interventions Research and Evaluation Network.

^a Articles reviewed for all GQs.

^b Reasons for exclusion: *Relevance*: Study aim not relevant. *No link to health care*: Study did not have a link to health care system. *Setting*: Study not conducted in a country rated "very high" on the Human Development Index.

Intervention: Study did not contain an included intervention type. *Population*: Study only included patients with specific medical conditions. *Social risk domain*: Study did not include at least 1 target social risk domain. *Study design*: Study did not use an included design. *Abstract only*: Full-text publication not available.

their validity. The authors of the review concluded that there were currently no multidomain social risk screening tools with evidence that they can accurately identify social risk, detect changes in social risk, and measure intervention effects.

For the technical brief, the way in which the 18 tools assess target social risk domains was examined. Twelve tools frame 1 or more questions in terms of "concerns," "worries," "problems," and/or "troubles" to detect patient-identified social needs; only 5 tools ask whether patients would like help with needs they have identified. Tools that address food insecurity generally inquire whether patients or families have enough food; 3 tools also ask about intake of fruits and vegetables or healthy food. Legal tools ask whether respondents are eligible for or have previously been denied Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) or Supplemental Nutrition Assistance Program (SNAP) benefits. Questions regarding housing address current housing status, housing quality, and concerns about future homelessness. Five of the 9 tools that assess transportation needs do so by asking whether respondents are able to attend medical appointments. Three tools ask about continuing education needs, and 3 focus on education in the context of health care (eg, reading pharmacy instructions or medical pamphlets). Seven tools addressing financial strain ask about ability to cover basic necessities (food, housing, medical care, heat) or "make ends meet," and 2 tools include items on income and work status.

Key informants reported using a variety of social risk screening tools, many of which were developed by their organization. They reported selecting screening tools because they were clinically vali-

dated, had a limited time burden, would result in nationally comparative data, met organizational needs, or incorporated the most important patient needs. Thirteen key informants named specific social needs they consider the most important to identify in health care. The most frequently cited social needs were food security (cited by 8 key informants) and housing and transportation (both cited by 6 key informants). Many noted that these social needs are important because they are the most actionable within the health care setting or the most critical to well-being. Key informants also recognized that patients should define the social needs that are most important to them and that the most important issues differ by community.

Information about what screening tools have been used in studies comes from the evidence included for GQ2. Forty-eight of the 106 studies included for GQ2 had a screening component, with 1 or more screening tools used.¹¹⁻⁵⁸ The most frequently used screening tool was the 2-item Hunger Vital Sign tool^{59,60} (n = 15), followed by the US Department of Agriculture Household Food Security measure⁶¹ (n = 4), Health Leads⁶² (n = 4), and WE CARE^{12,39} (n = 2). The Homeless Screening Clinical Reminder,³⁶ the Children's HealthWatch survey,⁶³ iScreen,⁶⁴ the Cutt 3-item Housing Insecurity tool,⁶⁵ PRAPARE,⁶⁶ and the Legal Health Check-up survey⁶⁷ were each used in 1 study. Some of these tools address only a single domain and so were not included in the 2019 review. Twenty-one studies used a study-developed screening tool; of these tools, some were developed de novo while others were modifications of existing tools, supporting the finding in the 2019 review that the majority of tools were modified when used after development.

Table 1. Social Risk Domains Addressed by Study Design

Study design	Studies, No. (%) by social risk domain						
	Food insecurity	Housing instability	Transportation needs	Utility needs	Interpersonal violence	Education	Financial strain
RCT (19 studies)	10 (52.6)	15 (78.9)	8 (42.1)	7 (36.8)	1 (5.3)	5 (26.3)	12 (63.2)
No. of participants	10 317	12 893	10 888	8540	611	2781	7677
Cohort study (15 studies)	9 (60.0)	8 (53.3)	6 (40.0)	1 (6.7)	2 (13.3)	5 (33.3)	6 (40.0)
No. of participants	49 321	55 671	41 795	34 225	571	49 627	55 334
Pre-post (34 studies)	20 (58.8)	19 (55.9)	10 (29.4)	4 (11.8)	1 (2.9)	8 (23.5)	13 (38.2)
No. of participants	11 244	12 051	23 165	8188	466	3761	22 244
Observational without comparator (38 studies)	28 (73.7)	21 (55.3)	11 (28.9)	10 (26.3)	4 (10.5)	9 (23.7)	20 (52.6)
No. of participants	70 915	5 800 607	25 561	24 898	8002	18 791	26 519

Abbreviation: RCT, randomized clinical trial.

Social Risk Interventions

Guiding Question 2. What social risk-related interventions have been evaluated? What are the characteristics of the studies that have evaluated these interventions and what outcomes do they report?

One-hundred six studies (n = 5 978 596)^{11-58,68-125} met inclusion criteria (Figure 2), including 19 RCTs, 15 cohort studies, 34 pre-post studies, and 38 observational studies without a comparator. Participant, intervention, and study characteristics for included studies, categorized by social risk domain targeted, are presented in eTables 1 through 3 in the [Supplement](#).

Participant Characteristics

Thirty studies^{11,12,14-16,18-20,23,25,29,31,33,34,39,42,44,47,49-51,54,57,81,99,101,107,114,123,125} (n = 65 142) enrolled only children and adolescents (and their caregivers), and 67 studies^{13,21,22,24,26-28,30,32,35-37,41,43,45,48,52,53,55,56,58,68-76,78,79,82-88,90-92,94-98,100,102-105,108-113,115-122,124} (n = 5 909 541) enrolled only adults, including older adults (ie, 18 years and older). Five studies^{17,38,40,89,106} enrolled children and adults (n = 2633), 3 studies^{77,80,93} enrolled participants of all ages (n = 1280), and 1 study⁴⁶ enrolled children/adolescents and older adults (n not reported). Fifty-four studies^{11,14-18,20,22,23,25-29,31-35,38,39,43,44,46-51,54-58,68,71-73,76,78,85,96,98,109,112,113,116,117,121-123,126-128} (n = 120 245) recruited a general, nontargeted patient population; all other studies (n = 5 858 351) targeted patients with particular demographic, medical, or social risk characteristics. Participants were most frequently selected based on specific social risk(s) (eg, homeless, low income) (22 studies, n = 25837).^{13,19,30,41,70,75,77,80,89,93-95,97,101-103,105,108,110,111,114,118}

Intervention Characteristics

The majority of studies targeted patients, caregivers, or both (94 studies, n = 5 970 733).^{11-20,23-26,28-32,34-38,40,42-58,70,72,74-90,92-118,120-125} and 12 studies^{21,22,27,33,39,41,68,69,71,73,91,119} (n = 7963) targeted physicians or other clinicians. Sixty-nine percent of interventions (73 interventions, n = 127 598) addressed multiple social risk domains (range, 2-14; mode, 8).^{11-13,17,19,20,22-27,30,31,35,38-45,47-49,51-53,55,68,70,71,73-75,77-82,84,85,88-90,92,93,95-98,100-109,111,114-120,124,125} Many of the social risk domains addressed in multidomain interventions were nontarget domains, such as health care and medication access/affordability, substance use, and employment. Looking at single-domain interventions and the individual target domains included in multidomain

interventions, 67 (63%, n = 141 797) address food insecurity,^{11,12,14,15,17,18,20-29,31-35,37-39,41-58,68,69,71,73,74,79,88,90,91,93,94,96,97,101,105,109-111,115-117,119,123-125} 63 (59%, n = 5 881 222) address housing instability,^{11-13,17,19,20,22-27,30,31,36,38-43,45,47-49,51-53,55,68,71,73-75,77,80,84,88-90,92,93,95,97,100-106,108,109,111,114-120,124,125} 52 (49%, n = 111 962) address financial strain,^{11,13,17,20,22,23,25-27,30,38,45,47-49,53,55,68,70,72-75,77-85,88,89,92,93,95,97-99,101,103,104,107,111,112,114,115,117,121,124,125} 35 (33%, n = 101 409) address transportation needs,^{11,13,20,24,35,41,43,45,47-49,51,53,71,74,81,82,86-88,90,93,97,98,100,104,109,113,115,117,119,120,122,124,125} 27 (25%, n = 74 960) address education,^{12,13,20,22,23,25,26,30,38-43,45,47,48,76,80,81,88,92,101,106,115,116,125} 22 (21%, n = 75 851) address utility needs,^{11,12,16,17,20,23,25,27,41,43,45,47-49,51-53,78,88,90,116,119} and 8 (8%, n = 9650) address interpersonal violence.^{13,26,38,40,48,49,51,106}

Twenty-four studies^{24,30,52,79-82,84,85,88,89,92,93,97,98,100,103-105,109,111,118,120,124} (n = 43 522) evaluated interventions that addressed 1 or more social risks but also included 1 or more other components related to medical management. In these studies, it is not clear whether outcomes are due to the effects of the social risk component(s) or these other elements. The three most frequently included nonsocial components were case management or care coordination, in-home health care, and health education.

Study Characteristics

The majority of studies were conducted in primary care (58 studies, n = 107 360).^{12,14-26,28-31,33-35,37-39,41-44,47,48,51,55,56,68-73,75,77,78,82,83,85-87,89,93,96,97,99,101,110,112,117,121,124} followed by multiple settings (15 studies, n = 27 650).^{11,54,57,58,80,88,95,100,107-109,114,116,120,125} emergency departments (10 studies, n = 4004),^{13,40,50,53,76,84,91,92,103,123} inpatient hospitals (7 studies, n = 5199),^{32,74,98,102,105,106,111,120} homes (6 studies, n = 6344),^{79,81,90,94,104,115} outpatient clinics (6 studies, n = 5 792 469),^{27,36,46,113,119,122} telephone or web-based care (2 studies, n = 34948),^{45,52} urgent care (1 study, n = 611),⁴⁹ and transitional housing (1 study, n = 11).¹¹⁸

Thirty-six percent of studies (38 studies, n = 5 850 669)^{14,15,19,20,23,24,26,28,31-34,36,38,41,43,47,48,50-53,55,57,58,70,73,77,79,82,83,88,93,95,99,107,112,123} used an observational design with no comparator. Many of these were descriptions of feasibility testing with small cohorts. The most common study design with a comparator was pre-post (34 studies, n = 46 707).^{16,21,22,25,27,35,40,42,46,54,56,68,69,71,72,75,76,84,85,90,91,96,97,100,101,108,111,113,115,118,120-122,125} followed by RCTs (19 studies, n = 15 205)^{11,12,17,29,39,49,74,78,81,89,92,98,102-104,109,114,116,119} and cohort

Table 2. Social Risk Domains in Pediatric and Adult Studies

Population	Studies, No. (%) by social risk domain						
	Food insecurity	Housing instability	Transportation needs	Utility needs	Interpersonal violence	Education	Financial strain
Pediatric (30 studies)	24 (80.0)	15 (50.0)	7 (23.3)	9 (30.0)	2 (6.7)	10 (33.3)	12 (40.0)
No. of participants	54 487	25 335	23 256	27 087	7021	17 817	26 103
Adult (67 studies)	39 (58.2)	40 (59.7)	27 (40.3)	12 (17.9)	3 (4.5)	13 (19.4)	34 (50.7)
No. of participants	85 844	5 851 974	77 418	48 434	1650	56 047	82 524

Table 3. Outcomes in Pediatric and Adult Studies

Population	Studies, No. (%) by outcome					
	Process	Social risk	Physiological and behavioral health	Health care utilization	Cost	Clinician
Pediatric (30 studies)	21 (70.0)	14 (46.7)	10 (33.3)	4 (13.3)	3 (10.0)	2 (6.7)
No. of participants	58 975	17 124	10 578	6790	1703	7996
Adult (67 studies)	25 (37.3)	22 (32.8)	21 (31.3)	30 (44.8)	14 (20.9)	7 (10.4)
No. of participants	5 803 598	5 792 661	22 106	102 400	21 781	7700

studies (15 studies, $n = 66\ 015$).^{13,18,30,37,44,45,80,86,87,94,105,106,110,117,124} Table 1 shows the number of studies addressing the social risk domains by study design. Fifteen ($n = 12\ 893$) of the 19 RCTs addressed housing instability,^{11,12,17,39,49,74,89,92,102-104,109,114,116,119} 12 ($n = 7677$) addressed financial strain,^{11,17,49,74,78,81,89,92,98,103,104,114} 10 ($n = 10\ 317$) addressed food insecurity,^{11,12,17,29,39,49,74,109,116,119} 8 ($n = 10\ 888$) addressed transportation needs,^{11,49,74,81,98,104,109,119} 7 ($n = 8540$) addressed utility needs,^{11,12,17,49,78,116,119} 5 ($n = 2781$) addressed education,^{12,39,81,92,116} and 1 ($n = 611$) addressed interpersonal violence.⁴⁹

The outcomes reported in studies were grouped into 6 categories adapted from a recent review of social risk interventions¹²⁹: process, social risk, physiological and behavioral health, health care utilization, cost, and clinician outcomes. Some of the outcomes in the physiological and behavioral health outcomes category (eg, changes in substance use or dietary intake) do not fit the standard USPSTF definition of a health outcome—ie, outcomes that are experienced or felt by patients and affect patients' length or quality of life. This is an important consideration for the USPSTF, since evidence for an intervention's effect on health outcomes is the basis for USPSTF preventive service recommendations.¹³⁰

Of the 68 studies with a comparator, 38 studies ($n = 111\ 102$)^{13,17,18,30,40,45,72,74,76,80,81,84-87,89,94,97,98,100-106,108-111,113,114,117-120,122,124} reported health care utilization outcomes (eg, emergency department visits and inpatient admissions), followed by physiological and behavioral health outcomes (eg, mental health status and changes in substance use), reported in 32 studies ($n = 34\ 058$).^{11,13,17,18,30,35,37,42,44,49,54,72,74,75,78,80,81,84,89,92,96,101-103,105,106,108,109,114-116,125} Twenty-seven studies ($n = 27\ 255$)^{11-13,16,17,29,30,40,42,49,54,56,72,78,80,81,84,91,96,101,103,106,108,111,114,115,121} reported social risk outcomes (eg, resolution of food insecurity), 21 studies ($n = 14\ 120$)^{12,13,18,21,22,25,27,29,35,37,39,40,42,46,68,69,72,91,101,104,116} reported process outcomes (eg, referrals or resources provided), 15 ($n = 22\ 985$) studies^{72,80,81,84,85,90,94,100,101,103,108,110,111,118,120} reported cost outcomes (eg, return on investment), and 6 studies ($n = 5731$)^{22,40,68,69,71,119} reported clinician outcomes (eg, confidence in social risk knowledge and screening). Six RCTs ($n = 4182$)^{11,12,29,39,104,116} reported process outcomes, 9 RCTs ($n = 5639$)^{11,12,17,29,49,78,81,103,114} reported social risk outcomes,

13 RCTs ($n = 8237$)^{11,17,49,74,78,81,89,92,102,103,109,114,116} reported physiological and behavioral health outcomes, 11 RCTs ($n = 10\ 859$)^{17,74,81,89,98,102-104,109,114,119} reported health care use outcomes, 2 RCTs ($n = 1791$)^{81,103} reported cost outcomes, and 1 RCT ($n = 4917$)¹¹⁹ reported clinician outcomes.

To investigate whether social risk interventions that focus on children and their families differ from those targeting adults, a comparison of the social risk domains addressed (Table 2) and outcomes reported (Table 3) for pediatric and adult studies was conducted. Food insecurity and housing instability were the most frequently addressed domains in both pediatric and adult studies. Health care utilization outcomes were reported in 30 of 67 adult studies (45%) but in only 4 of 30 pediatric studies (13%), while physiological and behavioral health outcomes were reported in a similar percentage of adult and pediatric studies (21/67 adult studies [31%] and 10/30 pediatric studies [33%]).

Figure 3 shows the number of studies that addressed each target social risk domain and the type of outcomes reported in the 68 studies with a comparator. The largest number of studies addressed housing instability and financial strain with health care utilization and physiological and behavioral health outcomes reported, followed by food insecurity with process and physiological and behavioral health outcomes reported and transportation needs with health care utilization outcomes reported.

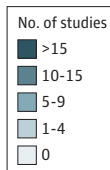
Effects of Improvements in Intermediate Outcomes on Health Outcomes

Guiding Question 3. What are the effects of improvements in process outcomes, health care utilization outcomes, or social risk outcomes on physiological and behavioral health outcomes?

Since evidence for intervention effects on health outcomes is often lacking, the USPSTF considers the relationship between changes in intermediate outcomes and changes in health outcomes when evaluating the effectiveness of an intervention.¹³⁰ Although most studies that reported physiological and behavioral health outcomes also reported other outcomes, only 4 studies reported on the effects of changes in intermediate outcomes (eg, process, social risk, or health care utilization outcomes) on physiological and behavioral health outcomes. Two studies^{72,83} ($n = 981$) found

Figure 3. Number of Studies by Social Risk Domain and Outcome Category (n = 68)

		Outcome type					
		Process	Social risk	Physiological and behavioral health	Health care utilization	Cost	Clinician
Social risk domain	Food insecurity	18	13	17	14	5	5
	Housing instability	13	17	23	26	10	5
	Transportation needs	4	5	9	17	4	2
	Utility needs	5	6	5	3	1	1
	Interpersonal violence	2	4	3	3	0	1
	Education	9	10	11	9	3	2
	Financial strain	9	16	19	20	8	2



improvements in health outcomes (ie, psychosocial aspects of quality of life and well-being scores) in patients whose intermediate outcomes improved after receiving welfare benefits advice in primary care but not in patients without improvement in intermediate outcomes. The other 2 studies^{11,131} (n = 1957)—one examining provision of targeted information related to community, hospital, or government resources addressing social risks and one examining supportive housing—found no associations between intermediate and health outcomes.

Challenges of Social Risk Screening and Interventions

Guiding Question 4. What are the perceived or potential challenges to implementation of widespread screening and interventions for social risk factors within health care? What potential solutions have been proposed to address these challenges?

Information on perceived or potential challenges to social risk screening and interventions, and proposed solutions to these challenges, was gathered from key informants and a scan of reviews, case studies, other descriptive research, and opinion articles identified in the literature searches. **Table 4** shows the most commonly cited patient-, clinician-, health system-, and community-level factors that may present challenges to implementation of social risk screening and interventions in health care settings, and proposed strategies to overcome these challenges.

Acceptability and Unintended Consequences of Social Risk Screening and Interventions

Guiding Question 5. What are the challenges or unintended consequences of screening and interventions for social risk factors to patients and clinicians? What is the acceptability of screening for and intervening on social risk factors for patients and clinicians?

Fifty-two studies^{13,15,22,25,26,32-34,38,39,44,48,56,68,71,74,76,78,84,98,99,101,107,112,115,116,119,121,123,124,126-128,132,136,150-166} provided data on patient- or clinician-reported satisfaction or challenges after imple-

mentation of social risk screening or interventions (eTable 4 in the [Supplement](#)).

Patients

Thirty-one articles^{13,25,38,44,56,68,71,74,76,78,98,101,112,116,121,123,124,126-128,136,150,152-154,156,157,159,160,163} included positive patient reports of satisfaction with and acceptability of screening and interventions, often referring to improvements in the patient-clinician relationship and high comfort levels. Eleven articles^{32,34,48,99,101,115,119,153,155,159,164} reported on challenges or unintended consequences of screening or intervention for patients, including discomfort (eg, shame about social risks) and confidentiality issues (eg, fear of legal repercussions such as being reported for child maltreatment due to food insecurity). One study found paradoxical effects of improvement in social risks; families who participated in SNAP and increased their earned income had their SNAP benefits reduced or cut off and subsequently faced economic strain that diminished their ability to pay for housing, utilities, health care, or food.¹⁵⁵ Two articles reported that there were no adverse effects from the intervention.^{115,119}

Clinicians

Seventeen of the 18 articles^{15,33,39,56,68,71,99,107,112,128,132,157-159,161,162,165,166} that reported on clinician satisfaction with screening and interventions were positive, with clinicians stating that screening was not overly time-consuming and led to improvements in the patient-clinician relationship, patient care, and clinician knowledge and competence. The 1 negative report was related to difficulty in incorporating the intervention into clinician schedules.⁹⁹ Fifteen articles^{15,22,26,33,34,68,84,119,132,151,159,161,162,165,166} reported on challenges or unintended consequences of social risk screening or interventions for clinicians, including lack of time to conduct screening or follow-up on positive results and inability to track the success of referrals.

Table 4. Most Commonly Cited Potential Implementation Challenges and Solutions^a

Level	Screening		Intervention	
	Perceived challenge	Proposed solutions	Perceived challenge	Proposed solutions
Patient	Stigma and privacy concerns ^{132,133}	Use of patient-centered care models ¹³⁴ Developing trusting relationship with patients ³⁴ Identification of patient strengths and assets when screening for social risk factors ¹³⁵	Logistical barriers to referral follow-through (eg, transportation issues) ^{136,137}	Explore alternative delivery models, such as co-located services (eg, food pantries or WIC services offered in health care setting) ¹³⁸
Clinician	Concern about lack of referral resources ¹³⁹⁻¹⁴²	Increasing clinician incentives to screen ¹³⁴ Facilitating clinician access to referral and support services ¹³⁸ Partnering with organizations that maintain referral lists ^{143,144} Use of SSRL vendors (key informant suggestion) Frequent updating of resource lists or databases ¹⁴³	Lack of clinician enthusiasm to sustain intervention after conclusion of research-funded interventions ¹⁴⁰	Sharing outcomes data with clinicians ¹³⁴ Identification of clinical champions ¹³⁴
Health system	Concerns about social risk data collection and management by health care organization and partnering organizations ^{143,145,146}	Developing digital infrastructure that is interoperable between health care and social care organizations ^{134,146,147} Integrating social risk data into EMR systems ^{134,146,147} Partnering with data analytic vendors (key informant suggestion)	Sustainability of funding ^{145,148,149}	Financing integration of health care and social care ¹³⁴ Payment reform (eg, expanding Medicare coverage for social needs services) ¹⁴⁶ Exploring novel funding opportunities (eg, public-private partnerships) (key informant suggestion)
Community	None cited	NA	Limited capacity of social resources ¹³⁵	Supporting community partners with financial and infrastructure needs ^{134,147} Warm (in-person) handoffs to community partners to ensure resources are available for referrals (key informant suggestion) ^b

Abbreviations: EMR, electronic medical record; NA, not applicable; SSRL, Social Service Resource Locator; WIC, Special Supplemental Nutrition Program for Women, Infants, and Children.

^a Cited in the literature and/or by key informants.

^b In-person with patient.

Discussion

This technical brief identified and described the evidence on social risk screening and interventions. Many multidomain social risk screening tools are available, but few have undergone reliability and validity testing. Food insecurity, housing instability, and transportation difficulties were identified by key informants as the most important social risk factors to identify in health care, and these are 3 of the most frequently addressed social risk domains in the 106 intervention studies identified, along with financial security. Thirty-six percent of studies used an observational design with no comparator, and only 18% of studies were RCTs. Health care utilization measures were the most commonly reported outcomes in studies with a comparator. The literature and key informants described many challenges to implementation of social risk screening and interventions in health care.

In keeping with the USPSTF focus on recommendations for primary care clinicians about preventive services for asymptomatic people, this technical brief focused on population-based screening in primary care to detect unrecognized social risk factors and interventions to address them. Some experts have argued that screening should only be done when there is the capacity to address identified social risks. Although there is ongoing debate about the merits of screening without social risk-targeted interventions,¹³⁴ it is nonetheless relevant to note that few existing screening tools assess patients' interest in assistance for identified social needs.¹⁶⁷

This technical brief was prepared to inform USPSTF efforts to incorporate social risks into its recommendation process. The

USPSTF considers services that are provided in or referable from primary care. While screening for social risk factors can be done in primary care clinical settings, many subsequent activities to intervene on social risks involve a referral from the health care team to a non-health care setting, such as public health, social service, and community-based organizations. This requires effective partnerships with these resources, adding a layer of complexity to implementation of social care in clinical settings. This technical brief identified many perceived or potential challenges to the implementation of social risk screening and intervention programs in health care. However, actual unintended consequences from social risk screening and interventions were rare in the studies that reported these outcomes. More data on the challenges encountered during implementation of social risk screening and interventions in health care settings and on ways that these challenges have been addressed successfully would clarify what barriers and solutions need to be considered before scaling implementation efforts.

Limitations

This technical brief has several limitations. First, searches and inclusion criteria were limited to studies with the most relevance to the USPSTF scope and purpose. As such, studies in the general population were focused on and studies conducted in patients with a specific disease were excluded. Social risk screening and interventions may have different effects in patients with specific chronic conditions requiring complex management, such as diabetes. Second, studies conducted in countries that are not rated "very high" on the Human Development Index were also excluded, which may have left out a considerable amount of research. Third, other limitations stem

from the methods used, given the focus of the technical brief on identifying and describing existing research rather than systematically reviewing the effectiveness of screening and interventions for social risk factors. Critical appraisal was not conducted, and some of the included studies may be of poor quality and would not meet criteria for a USPSTF review and recommendation. Outcomes data were not abstracted and results were not evaluated to determine the effect of interventions on outcomes.

Conclusions

Many interventions to address food insecurity, financial strain, and housing instability have been studied, but more randomized clinical trials that report health outcomes from social risk screening and intervention are needed to guide widespread implementation in health care.

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