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Addressing Social Needs in Health Care Settings: Evidence, Challenges, and Opportunities for Public Health

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Keywords

social needs, social determinants of health, SDOH, health care, health disparities, screening, intervention

Abstract

There has been an explosion of interest in addressing social needs in health care settings. Some efforts, such as screening patients for social needs and connecting them to needed social services, are already in widespread practice. These and other major investments from the health care sector hint at the potential for new multisector collaborations to address social determinants of health and individual social needs. This article discusses the rapidly growing body of research describing the links between social needs and health and the impact of social needs interventions on health improvement, utilization, and costs. We also identify gaps in the knowledge base and implementation challenges to be overcome. We conclude that complementary partnerships among the health care, public health, and social services sectors can build on current momentum to strengthen social safety net policies, modernize social services, and reshape resource allocation to address social determinants of health.

INTRODUCTION

Efforts to address social determinants of health (SDOH), long a priority for public health professionals (55), have been reenergized by recent attention and investment from the health care sector, spurred by a range of opportunities, initiatives, and incentives, including the Affordable Care Act (102). This article reviews the rich and rapidly growing body of research driving the efforts to address SDOH in clinical and community settings and identifies key gaps and promising future directions for new scientific approaches to addressing social needs in health care.

The World Health Organization's (WHO) oft-cited definition of SDOH includes political, social, and economic forces that affect health by shaping the conditions in which people live (112). These determinants are usually viewed as system- and policy-level influences that affect everyone in a society and can either drive or reduce inequities in housing, education, jobs, pay, and other social institutions and opportunities. At a person level, the downstream consequences of SDOH for people who have been systematically disadvantaged include unmet social needs, such as unstable, unaffordable, and/or low-quality housing; food insecurity; unemployment; lack of quality, affordable child care; or needing utility payment assistance.

The WHO's 2008 landmark "Closing the Gap" report (112) outlined three broad actions to address SDOH and achieve health equity: (a) improve daily living conditions; (b) tackle inequitable distribution of power, money, and resources; and (c) measure and understand SDOH and assess the impact of action. The report's conceptual framework (97) casts health care systems as an intermediary determinant and suggests that through intersectoral actions such as food and transportation assistance health care can help address inequities in "material circumstances" such as housing, financial means to buy food and clothing, and neighborhood conditions and safety.

The health care sector's recent involvement in SDOH has mirrored, in many ways, the WHO conceptual model and recommendations: assuming responsibility for measuring the problem (e.g., screening patients for social needs), assessing the impact of action (e.g., intervening on social needs and tracking outcomes), and focusing on deprivation in areas of material circumstances (as opposed to more upstream determinants such as laws and policies). In 2019, Castrucci & Auerbach (25) correctly argued that these person-level experiences such as food and housing insecurity are really individual social needs, not SDOH. Although sometimes still referred to as SDOH by health care systems and in research (4), the term social needs is increasingly being used as shorthand for unmet material needs experienced by individuals.

The momentum to address social needs in health care settings is now visible in several routine practices. Recent national surveys of Medicaid managed care plans, hospitals, and health systems show that, in particular, two individual-level approaches—screening for social needs and making referrals to social services—are already in widespread practice (6, 67). However, not all health care organizations have a formal process for screening and referral (67), and rates of uptake appear to be lower among health care providers in low-resource settings (82). The growing interest and investment in screening and referral for social needs have already spawned dozens of new technology platforms designed to facilitate the process of addressing social needs (23).

Many larger health systems have also invested in community-level and structural solutions. According to one study of 57 health systems, \$1.6 billion was spent from 2017 to 2019 on housing interventions alone, including the construction of affordable housing for homeless patients and those with high use of health care, assistance for employees to purchase homes in neighborhoods targeted for revitalization, and eviction prevention programs (51). Although these tended to be pilot projects undertaken by larger health systems in partnership with other community organizations (and generally are not represented in the scientific research literature), they are nonetheless major investments that hint at the potential for multisector collaborations to address these needs.

At present, however, such partnerships may be the exception: Only 30% of hospitals and health systems in a national survey reported having fully functional formal partnerships with community-based social needs providers, and 70% did not have dedicated funds to address social needs for all their target populations (67). Moreover, many health systems likely lack community-level social needs data to inform investments of this scope. Studies show that SDOH information is the least developed component of the community health needs assessments that are required of all 501(c)(3) organizations that operate hospitals (45, 83, 101).

The scientific literature on health care efforts to address SDOH is overwhelmingly skewed toward research on individual social needs, which is the focus of this article. With 12 new studies of social needs interventions published every month (32), special supplements of leading journals dedicated to social needs research (40, 111), and a growing number of evidence reviews on the subject (9, 42, 70, 96, 104), public health professionals must seek to understand this research and practice, its complementarity with public health efforts to address SDOH, and the opportunities it provides for partnership to improve population health and reduce disparities.

Drawing on this growing body of research, we describe the social needs experiences of diverse populations, the effects of social needs on health, and the impact of interventions on social needs and health improvement, utilization, and costs. We conclude by identifying gaps in the knowledge base and implementation challenges to be overcome, and we suggest future directions for a science of social needs.

ASSESSING SOCIAL NEEDS

Although there is widespread interest among researchers and health care organizations in community-level indicators, social needs are most commonly measured among individuals using self-report. Health care organizations have a long history of screening for specific concerns (e.g., interpersonal safety) in specific clinical populations (e.g., pregnant women, seniors, pediatric patients) or settings (e.g., emergency departments) (5). Today's social needs screeners are more multidimensional and include a range of screening tools (39, 49, 77, 78) that vary in the total number of questions asked (e.g., 2–23), the time interval assessed (e.g., needs experienced in the past 12 months, current needs, anticipated need in the next month), whether needs are assessed for the respondent only or for all members of the household, and the different sets of needs assessed.

In 2015, the Institute of Medicine recommended 11 key measures, including race/ethnicity, education, financial strain, stress, depression, interpersonal safety, tobacco use, physical activity, and social connections (2, 54). A Centers for Medicare and Medicaid Services (CMS) measure covers five domains—housing, food, transportation, utilities, and safety/abuse—using 10 items (15). The American Academy of Family Physicians (AAFP) added to the CMS measure questions assessing education, employment status, financial insecurity, and child care needs (78). The Health Leads screening tool also assesses whether any of the patients' social needs were urgent and whether they needed help reading hospital materials (49). The PRAPARE tool adds items assessing incarceration history in the past year, stress level, and frequency of feeling socially connected (77).

Across these and other social needs screening tools, the most commonly included items assess needs related to food, utilities, housing, transportation, and personal safety. Within these multidimensional domains, screening tends to focus on aspects of the need that align with the priorities of the health care organization or its perceived locus of influence. For example, screening items are more likely to assess housing stability than housing quality, even though both can have a significant impact on people's lives and health. Most screening tools do not include an open-ended question about other social needs that patients may want to report that were not already addressed; such a question could improve the patient-centeredness of screening tools and elicit additional needs.

In addition to assessing social needs, the AAFP and Health Leads screeners also assess whether a respondent wants assistance with addressing a social need. Some research suggests that many may not want assistance (28). For example, a multisite survey of 969 adult patients and caregivers of pediatric patients across 9 states found that screening for social needs in health care settings was widely viewed as appropriate (29), but qualitative interviews with a subset of respondents revealed that not all individuals wanted help from health care teams to address their social needs (22). Interviews showed that patients wanted their health care providers to be aware of their social needs but did not expect providers to resolve the needs; some even felt that it was outside the scope of medicine to do so. In related findings, only 40–60% of people who report an unmet need agree to participate in navigation or other social needs programs (12, 39, 82, 92).

Some social needs screeners include items that identify nonmodifiable factors that could influence the types of social needs assistance available to a person. For example, incarceration history and veteran status are not social needs but could affect a person's eligibility for services to address social needs (3, 77). Use of such items and treatment of the resulting data should be carefully considered to avoid unintended consequences. For example, a history of incarceration might bias the treatment a patient receives, and such information may remain in their electronic medical record long term.

Although most social needs screening tools in widespread use were designed for adult patients, many screeners have also been developed for and/or administered to parents of pediatric patients (74, 81). A recent review identified 11 different social needs measures for pediatric patients, most of which addressed social needs in the broader family context (96).

The wording, response format, and time frame assessed vary considerably in different social needs screening items, as do the procedures for administering them. These differences across studies make it difficult to directly compare results (50). In some screening tools, a single item assesses multiple needs (e.g., “How likely is it that you will have enough money for food, rent, and clothing in the next six months?”), making it difficult to determine exactly which needs are unmet. Other questions require respondents to connect in causal fashion a social need to a health outcome (e.g., “Within the past 12 months, I couldn't afford to eat balanced or healthy meals”) (94). These examples also illustrate the variability in time frame considered for each social need exposure; some are prospective while others are retrospective, and the relevant time period can range from a day or week to a year (15).

There is no consensus on how or how often patients should be screened for social needs, or which patients should be screened, in which settings, and by whom. Social needs screening is currently administered in diverse health care contexts (e.g., community health centers, emergency departments, inpatient services), with different populations (e.g., pediatric patients, patients with chronic disease, low-income patients), and using different modalities (e.g., verbal, paper, tablet computer), and it is implemented by a range of interviewers (e.g., doctors, nurses, social workers, community health workers, volunteers) and during different points in a clinical encounter (e.g., waiting room, exam room, postvisit). Some have cautioned that selective screening—assessing social needs only in certain patient populations, based on perceptions or data on place of residence, race or ethnicity, or perceived education—could erode patient trust and exacerbate stigma, discrimination, and health disparities (36). Screening all patients for social needs would reduce this risk (71).

PREVALENCE OF SOCIAL NEEDS

Unmet social needs are widespread in marginalized populations. Studies assessing the prevalence of social needs have relied mostly on self-report from screening questions, though some have

constructed social needs indicators on the basis of administrative data (58) or have tracked requests to community helplines (30, 110). Studies frequently report the prevalence of individual social needs as well as the total and/or mean number of social needs experienced, including the percentage with 0, 1, or 2+ social needs. **Table 1** reports findings from 15 studies to illustrate the prevalence of selected social needs in different populations and health care settings.

Studies find that participants frequently have two or more social needs, even though most screeners assess a relatively small number of needs (38, 41, 62, 64, 86). Studies that screen a broader patient population tend to find fewer social needs per person (50). In **Table 1**, findings are grouped into two types of social needs studies. Studies in clinical settings assess social needs during health care visits. This screening occurs usually in person but sometimes through other modalities such as online surveys (48). Studies in a community or nonclinical setting assess social needs independently from health care, among individuals who are seeking assistance through social service helplines, or through phone outreach to members of a health care plan or system.

Social needs related to housing, food, child care, and general financial strain are among the most common social needs experienced. In **Table 1**, 5–43% of participants screened in clinical settings had needs related to housing stability. Other housing-related needs, including low-quality housing or limited space in the home, are often more prevalent than housing instability in studies that assess both (50, 64, 92, 105). However, many studies report housing stability alone and do not assess quality separately (12, 16, 27, 37, 38, 79, 80, 88, 95, 99).

Food insecurity, operationally defined in various studies as eating less, skipping meals, not having enough food for one's family, or running out of food before having money or food stamps to buy more, is one of the most highly prevalent needs (12, 27, 41, 48, 79, 88, 95). In **Table 1**, 6–41% of participants screened in clinical settings had food-related needs.

Among adults with young children, the need to find quality and/or affordable child care is highly prevalent (37, 38, 62, 86), although it often appears less so in general population screening when the denominator includes those without young children (27, 50, 80, 92). In **Table 1**, 29–50% of adults with young children reported child care needs, while only 2–3% reported child care needs in general population studies that also included those without young children.

General financial strain is one of the most commonly identified social needs across studies in many different settings, although screening questions for financial strain vary widely, making comparisons of prevalence across groups difficult. For example, Kreuter et al. (62) found that not having enough money for unexpected expenses was the most prevalent social need (47–89%) in four independent studies. Other studies also found that financial strain was the most common social need, in the context of either paying for health care (12, 16, 99) or having general employment and income concerns (27, 37, 38, 58).

These rates of housing, food, child care, and financial needs among low-income samples are generally higher than population-wide estimates from public health surveillance efforts. In the United States, slightly more than 10% of households experience food insecurity at some time each year (106). Around 7% of US households are cost burdened, and around 0.2% of Americans are homeless (108).

The most prevalent needs can vary widely by study setting. For example, social needs related to utility bill payment and transportation are more common among helpline callers than they are among populations screened in health care settings (30, 62, 64). This discrepancy may be because screening in health care settings often assesses transportation needs in the specific context of health care access and because those who arrive for a health care visit have overcome, at least temporarily, whatever transportation need they may have.

Studies in clinical and community settings have identified several common correlates of having more unmet social needs, including lower income, less education, and unemployment (12, 47, 62,

Table 1 Sample of studies that report prevalence of social needs

Study information			Social needs prevalence			Individual social needs						
	N	Study population	Social needs as-sessed	Total needs (mean)	% with 0/1/2+ needs	Housing	Utilities	Food	Jobs	Transportation	Health care access	Child care
Clinical setting												
Berkowitz et al. 2016 (12)	416 ^a	Urban primary care	8	2.6	NA	21	36	40	20	15	47	ND
Bisgaier & Rhones 2011 (16)	1,506	Urban emergency department	5	NA	52/17/31	18	ND	23	19	ND	26	ND
de la Vega et al. 2019 (27)	1,696	Urban adult primary care	8	NA	74/NA/NA	8	6	11	12	7	11	3
Garg et al. 2015 (38)	336	Mothers at urban CHCs	6	NA	10/22/68	43	9	20	57	ND	ND	29
Gordlieb et al. 2016 (41)	1,809	Parents at safety net hospitals	14	2.7	17/NA/NA	29	41	41	31	ND	21	ND
Hassan et al. 2015 (48)	401	Urban young adult clinic	9	NA	24/28/47	34	ND	29	10	ND	37	ND
Heller et al. 2020 (50)	24,633	Primary care patients	10	NA	80/10/10	5	3	6	ND	5	4	3
Page-Reeves et al. 2016 (80)	3,048	Primary care patients	11	NA	54/17/29	11	22	12	15	9	ND	3
Polk et al. 2020 (86)	10,916	Patients at pediatric practices	11	3.2	NA	22	25	30	22	3	15	37
Community or nonclinical setting												
Enechebe et al. 2019 (30)	13,708 ^a	MCO helpline callers	NA	NA	NA	6	20	15	ND	17	7	ND
Kreuter et al. 2020 (Study 1) (62)	1,898	2-1-1 callers	7	2.4	5/16/79	17	ND	15	ND	ND	ND	ND
Kreuter et al. 2020 (Study 3) (62)	10,267	Medicaid enrollees	10	1.1	45/28/27	3	12	6	ND	9	ND	43
Kreuter et al. 2020 (Study 4) (62)	1,370	2-1-1 callers	10	2.5	12/20/68	10	48	15	ND	21	ND	50
Schickedanz et al. 2019 (92)	3,721	Potential high-use patients	15	NA	47/NA/NA	6	19	29	5	17	17	2
Thompson et al. 2019 (105)	1,214	Medicaid enrollees	7	1.3	32/32/36	6	ND	10	ND	ND	ND	ND

Abbreviations: CHC, community health center; MCO, managed care organization; NA, data not available (i.e., not reported); ND, no data collected.

^aIncludes only participants who reported at least one social need to reflect how prevalence data were reported in the study.

64, 95, 105). For other demographic characteristics, however, findings are mixed. Some studies have found that older participants report more social needs (62), while other studies have found that younger participants have more social needs (87). Findings about the association between gender and social needs have also been conflicting (12, 50, 62).

Although national surveillance data suggest that members of racial and ethnic minority groups are at an increased risk for food insecurity and housing instability (107–109), studies of social needs have not found a consistent association. One study among helpline callers found that White participants were more likely to have social needs (62), while other studies have found no association between race and social needs (47, 62, 95) or found that Black or Hispanic participants are more likely to have social needs (12, 50, 62, 87). The conflicting findings may be explained, at least in part, by differences in study samples and/or measures.

THE LINK BETWEEN SOCIAL NEEDS AND HEALTH

Both in the United States and globally, broad social determinants such as income and education are associated with health outcomes, including chronic disease and mortality (1, 20, 21, 68, 69, 98). A growing body of research has also linked individual social needs to a range of health outcomes, from behaviors to mortality to health care utilization and costs (76). For example, material need has been associated with lesser access to and use of treatment and prevention services; later diagnosis and resolution; and greater hospitalization, length of stay, readmission, complications, and mortality (60). These associations may be mediated by a lack of health insurance (113). Because much of this research is based on cross-sectional data, causality often cannot be established and could be bidirectional or reversed (72). For example, longitudinal studies have shown that basic needs predict depressive symptoms (18) and vice versa (52).

Many studies have examined the relationship between a single social need and a particular set of health outcomes. Most commonly, this research has focused on social needs related to food and housing. Food insecurity is associated with negative health consequences, including obesity, stunting, wasting, and cardiometabolic disease, across the life span (24). It has been associated with sleep problems (44), inflammation (43), poor diabetes control among diabetic patients (13), and poor health among children (7, 89). Among the general US population, adults reporting food insecurity have higher subsequent health care expenditures (11), whereas low-income adults who participate in the Supplemental Nutrition Assistance Program have lower health care expenditures compared with those who do not participate (14).

Housing insecurity and homelessness are also associated with negative health outcomes among adults (66, 100) and children (26). Low-income adults that receive rent assistance have threefold lower odds of rating their health as “fair” or “poor” compared with peers on a waitlist for rent assistance (59). Among Canadian adults with HIV, having at least one unmet need (for food, clothing, or housing) was associated with lower physical and mental health quality of life (95).

Strong evidence supports a dose–response relationship between social needs and health. Studies show that increased social needs are associated with worse physical, mental, and self-rated health, more chronic conditions, depressive symptoms, and higher perceived stress (12, 16, 62, 64, 95, 105). Among children, higher levels of unmet needs are associated with lower levels of child wellness (34).

Social needs are also associated with a range of health-related behaviors, including smoking, illicit drug use, eating fewer fruits and vegetables, getting less exercise, getting less sleep, and not seeking preventive health care (16, 58, 62, 64, 84, 105). For many of these behaviors, the association with social needs also follows a dose–response gradient.

Although most research linking social needs with health behaviors and health outcomes has been cross-sectional, longitudinal studies have also established that social needs predict negative health outcomes. In community-dwelling adults, higher levels of unmet social needs were associated with increases in depressive symptoms (18), increases in problems with physical functioning (90), and higher mortality (17).

This accumulation of evidence has led the National Academies (76) to conclude, “The consistent and compelling evidence on how social determinants shape health has led to a growing recognition throughout the health care sector that improving health and reducing health disparities is likely to depend—at least in part—on improving social conditions and decreasing social vulnerability” (p. 27).

More evidence is needed about the mechanisms through which unmet needs affect health. Several conceptual models and frameworks have been proposed to explain the indirect effects of addressing social needs on health outcomes: through reduced stress and competing demands for resources and improved adherence to medication and physician visits (46, 75), and through improved health behaviors, physiologic functioning, and psychosocial factors (8, 9, 21, 72, 98).

SOCIAL NEEDS INTERVENTIONS

Some social needs interventions focus on addressing a particular need, whereas others are increasingly addressing a range of needs (9, 35, 42). Among interventions addressing multiple social needs identified through screening, the simplest approaches compile and distribute social needs resource guides, often with little follow-up or evaluation. More comprehensive linkage interventions involve systematic approaches to screening for social needs followed by social prescriptions or referrals for specific resources available from independent or partner community organizations (e.g., food bank, YMCA) or a colocated service provider (e.g., medical–legal partnerships).

Given eligibility requirements and limited resources at many social service provider agencies, however, there is no guarantee that linking patients with community programs will resolve the patients’ social needs. Although some patients may be able to resolve their unmet need independently using a resource information booklet or following a verbal or written referral for an assistance program, others will be more successful with personal help from someone such as a case manager or social needs navigator (72) who can advise them on the documentation needed to meet eligibility criteria, help them connect with the agency, and assist them with applications.

Social needs navigators are often affiliated with a health care organization or community agency (e.g., social workers, nurses, community health workers, volunteers) and provide ongoing support and follow-up in person and/or by phone. In many health care organizations, patients with high acuity or utilization are offered case management or navigation services to address health and social needs [i.e., hotspotting (33)], but it is less common for navigation programs to be made available universally to a patient or member population, without regard for individual differences in health risk profiles.

Several reviews of the literature have identified and summarized interventions designed to address social needs. Most studies report the prevalence of needs and what percent of needs were resolved through referrals over a particular time period (19, 38); fewer studies report health outcomes or cost savings. Results have varied on the basis of which needs were addressed. In one review, intervention studies addressing housing needs found effects on health outcomes, costs, or both, whereas studies of nutrition, income, or care coordination supports were more sparse and had mixed effects (104). Several interventions have focused on housing and childhood asthma triggers; some reported reductions in the use of urgent health care services and increases in symptom-free days and quality of life (9). Incorporating social work interventions within primary care has

shown promising effects on subjective health measures, self-management of chronic conditions, and reduced psychosocial morbidity and barriers to care (70).

Evidence has also demonstrated the benefits of social needs navigator programs that address multiple needs. For example, one study determined that having a university-affiliated navigator for three months led to greater improvement in parents' evaluation of overall child health than a printed community resource guide (41). Another found that having a community health worker provide navigation for six months was more effective and cost-effective in reducing hospitalization and costs compared with standard care (56, 57). A comparative effectiveness study showed that delivering navigation via a clinic setting versus a community setting did not differentially affect psychosocial outcomes (85). An evaluation of Health Leads programs across three sites found that patients who screened positive for unmet social needs and agreed to participate in navigation showed improvements in blood pressure and cholesterol (but not HbA1c) over time compared with those who declined participation (12). Providing a medical-legal intervention to parents with newborns increased access to supports (e.g., food, utility assistance, public assistance), increased rates of immunization and preventive care, and decreased emergency department visits (93).

Although individual studies provide promising results for navigation interventions, reviews of the literature identify multiple areas for methodological improvement to strengthen our knowledge of what works (9, 42, 104). Most trials to date have used social needs screening tools with unknown reliability and validity and focused on process outcomes. Few involved large samples or included cost-effectiveness analysis, some lacked appropriate comparison groups to provide rigorous results that are generalizable to broad patient populations, and long-term follow-up varied. Additionally, many trials involve pretest designs among high-risk or high-utilization patients; thus results may be confounded by regression to the mean, as seems to be the case in hotspotting interventions (33). It is also important to evaluate whether interventions to reduce health care utilization (less emergency department use) are beneficial and not potentially harmful (e.g., having unintended consequences such as reducing preventive care) (10, 92).

In addition to the need for more rigorous studies evaluating whether social needs interventions are effective, research seeking to explain how these interventions influence health and social needs outcomes is equally important. Fichtenberg and colleagues suggest four potential pathways: increasing patient access to resources, reducing patient stress, helping health care providers give better care, and reducing provider burnout (32). The latter two of these are provider related and have received less attention in research conducted to date. Knowing a patient's social needs may alter, in a quality-enhancing way, a provider's approach to medication management, behavior change recommendations, or other patient interactions; in addition, providers knowing that their health care system has an infrastructure and resources to assist with social needs reduces their stress and worry when treating patients with unmet social needs. Studies exploring these and other mechanisms of effect will advance the science and practice of addressing social needs.

CHALLENGES AND NEXT STEPS

A key assumption underlying the strategy to address social needs through screening and referral interventions is that social service agencies have sufficient capacity to address the demand in their communities. A few longitudinal studies have tracked the outcomes of social needs referrals and found that, overall, only about one-third of those receiving a referral end up getting assistance from the referral agency (19, 91). But the capacity of social service agencies can vary widely by community and type of social need (86): Community capacity is higher in urban versus rural areas, for example, or higher for responding to food-related needs compared with housing needs (63).

Screening and referral interventions may not be suitable for social needs that cannot be reliably addressed owing to limited capacity of the local social service system.

Our current knowledge of how a person's social needs change over time is limited. In both research and practice to date, screening or assessment of social needs is at best sporadic, and when it is assessed at multiple time points, there are often long gaps between assessments. If social needs are relatively stable over time, longer intervals between assessments would be justified. However, studies examining the financial needs of low-income individuals suggest that such needs fluctuate frequently and often dramatically (73, 103). Thus, changing needs over time cannot be resolved by a one-time intervention and may be addressed more effectively by longer-term interventions such as ongoing navigation. Understanding the patterns, timing, and sequences in which some social needs rise and others fall could also help social needs interventions shift from being reactive to proactive and could even help identify issues that require addressing underlying causes at a population level. Longitudinal research measuring dynamic needs and their effects on each other and on health is needed.

Current screening and referral interventions tend to treat each social need reported by a person as independent: If a person has food and transportation needs, they would likely receive one referral for food assistance and another for transportation services. While having the advantage of being simple and straightforward, this approach ignores possible links among different social needs and may use limited community resources inefficiently. As an example, needing utility payment assistance and money for daily necessities such as food, clothing, and shelter are highly correlated across multiple social needs studies ($r_s = 0.49$ to 0.71) (62). When planning social needs interventions, it is possible that addressing one need, say, transportation by providing a needed car repair or bus pass, would leave enough money in the person's budget to help meet food needs or increase their ability to get to food stores. Future work should identify and test promising alternative strategies that solve individual needs while preserving limited community resources.

Certain social needs may cluster in certain population subgroups (61). For example, a proof-of-concept analysis in a low-income sample showed that women with children were more likely to report not having enough space in their home and needing help with utility bills, men under 50 were more likely to report being physically threatened and needing a place to stay, and adults 50 and older in fair or poor health were more likely to need food and transportation (62). Hudson and colleagues (53) argue that Black men may experience distinct stressors over the life course and may benefit from social needs interventions that address their particular social, legal, or economic needs (e.g., getting disability benefits or clearing criminal and credit histories). If certain combinations of social needs occur more commonly in distinct population subgroups, health care and other organizations could develop integrated packages of interventions supported by coalitions of community partners to increase effectiveness. We found no published studies comparing the effects of one-size-fits-all social needs interventions with interventions that are highly targeted for specific population subgroups with similar social needs experiences.

Understanding the complex and dynamic relationships among social needs could also make screening for social needs more efficient. For example, compared with those who do not express transportation needs when calling a community helpline, individuals who do express transportation needs have three times greater odds of also having food needs and twice the odds of needing health insurance or a regular doctor, even though they had not sought help for food or health care needs from the helpline (110). Identifying such interdependencies could lead to adaptive social needs assessment tools that are at once shorter and more informative.

All these considerations—community capacity, temporal patterns and clusters of social needs, common social needs experiences of different population subgroups, and smart social needs screening tools that are adaptive and conditional—have practical implications for delivering

social needs interventions. They help answer key questions for advancing the field, including which social needs to target and when, which individuals might benefit most from which interventions, and which strategies can identify and address social needs most efficiently, cost-effectively, and sustainably (32).

At the same time, even if social needs interventions in health care evolve and are increasingly guided by a robust science of social needs, they should be understood in a broader context and optimized through complementary partnerships and policies. Not all people have health insurance or access to health care. Integration of health care and social services provides a useful example of the range of collaborative possibilities. On a continuum of degrees of integration, screening and referral interventions that send patients from a health plan to certain social service agencies would rank low compared with community-wide collaborations that reach and benefit all people, not just health plan members (31). In fact, different health plans that implement similar social needs referral programs may ultimately compete with each other for the same social services for their own members.

Addressing people's social needs in a way that works and lasts will be difficult and likely expensive. Results may be modest, and the time horizon for seeing health benefits will be long or perhaps nonexistent if underlying causes are not addressed upstream. There is a real risk that the health care sector could lose interest along the way, decide that the investment is not worth it, or conclude that other parties are better suited to address social needs. Disinvestment would be a tremendous missed opportunity. Sustaining the attention, interest, and investment of the health care sector must be a high priority. Public health professionals and organizations are needed to help build, lead, or participate with health care organizations in cross-sector and multilevel community efforts to improve population health and reduce disparities by addressing SDOH and social needs.

Efforts at all levels of the continuum will work more effectively if there are investments in and modernization of the social service sector, including social safety net policies and resource allocation to sustain them (40). As health care interventions to address social needs continue to be developed, refined, and tested, it is crucial for public health professionals to also strive to shape the upstream SDOH that drive both health disparities and the inequitable distribution of unmet social needs (65).

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LITERATURE CITED

1. Adler NE, Rehkopf DH. 2008. US disparities in health: descriptions, causes, and mechanisms. *Annu. Rev. Public Health* 29:235–52
2. Adler NE, Stead WW. 2015. Patients in context—EHR capture of social and behavioral determinants of health. *N. Engl. J. Med.* 372(8):698–701
3. Aldermann A. 2015. *CLEAR toolkit: helping health workers address the social causes of poor health*. Resour., McGill Univ., Montreal. <https://www.mcgill.ca/clear/download>

4. Alderwick H, Gottlieb LM. 2019. Meanings and misunderstandings: a social determinants of health lexicon for health care systems. *Milbank Q.* 97(2):407–19
5. Andermann A. 2018. Screening for social determinants of health in clinical care: moving from the margins to the mainstream. *Public Health Rev.* 39(1):19
6. Artiga S, Hinton E. 2018. *Beyond health care: the role of social determinants in promoting health and health equity.* Issue Brief, Kaiser Family Found. (KFF), San Francisco. <https://www.kff.org/disparities-policy/issue-brief/beyond-health-care-the-role-of-social-determinants-in-promoting-health-and-health-equity/>
7. Ashiabi GS, O'Neal KK. 2007. Children's health status: examining the associations among income poverty, material hardship, and parental factors. *PLOS ONE* 2(9):e940
8. Aust. Inst. Health Welf. 2014. *Australia's health 2014.* Rep., Aust. Inst. Health Welf., Canberra. <https://www.aihw.gov.au/getmedia/d2946c3e-9b94-413c-898c-aa5219903b8c/16507.pdf.aspx>
9. Beck AF, Cohen AJ, Colvin JD, Fichtenberg CM, Fleegeer EW, et al. 2018. Perspectives from the Society for Pediatric Research: interventions targeting social needs in pediatric clinical care. *Pediatr. Res.* 84:10–21
10. Berkowitz SA. 2019. Capsule commentary on Schickedanz et al., Impact of Social Needs Navigation on Utilization Among High-Utilizers in a Large Integrated Health System: A Quasi-Experimental Study. *J. Gen. Intern. Med.* 34(10):2582
11. Berkowitz SA, Basu S, Meigs JB, Seligman HK. 2018. Food insecurity and health care expenditures in the United States, 2011–2013. *Health Serv. Res.* 53(3):1600–20
12. Berkowitz SA, Hulberg AC, Hong C, Stowell BJ, Tirozzi KJ, et al. 2016. Addressing basic resource needs to improve primary care quality: a community collaboration programme. *BMJ Qual. Saf.* 25:164–72
13. Berkowitz SA, Meigs JB, DeWalt D, Seligman HK, Barnard LS, et al. 2015. Material need insecurities, control of diabetes mellitus, and use of health care resources: results of the Measuring Economic Insecurity in Diabetes study. *JAMA Intern. Med.* 175(2):257–65
14. Berkowitz SA, Seligman HK, Rigdon J, Meigs JB, Basu S. 2017. Supplemental Nutrition Assistance Program (SNAP) participation and health care expenditures among low-income adults. *JAMA Intern. Med.* 177:1642–49
15. Billioux A, Verlander K, Anthony S, Alley D. 2017. *Standardized screening for health-related social needs in clinical settings: the Accountable Health Communities screening tool.* Discuss. Pap., Natl. Acad. Med., Washington, DC. <https://www.nclhd.org/wp-content/uploads/2017/09/Standardized-Screening-for-Health-Related-Social-Needs-in-Clinical-Settings.pdf>
16. Bisgaier J, Rhodes KV. 2011. Cumulative adverse financial circumstances: associations with patient health status and behaviors. *Health Soc. Work* 36(2):129–37
17. Blazer DG, Sachs-Ericsson N, Hybels CF. 2005. Perception of unmet basic needs as a predictor of mortality among community-dwelling older adults. *Am. J. Public Health* 95:299–304
18. Blazer DG, Sachs-Ericsson N, Hybels CF. 2007. Perception of unmet basic needs as a predictor of depressive symptoms among community-dwelling older adults. *J. Gerontol. A Biol. Sci. Med. Sci.* 62:191–95
19. Boyum S, Kreuter MW, McQueen A, Thompson T, Greer R. 2016. Getting help from 2-1-1: a statewide study of referral outcomes. *J. Soc. Serv. Res.* 42:402–11
20. Braveman P, Gottlieb L. 2014. The social determinants of health: It's time to consider the causes of the causes. *Public Health Rep.* 129(Suppl. 2):19–31
21. Brown AF, Ettner SL, Piette J, Weinberger M, Gregg E, et al. 2004. Socioeconomic position and health among persons with diabetes mellitus: a conceptual framework and review of the literature. *Epidemiol. Rev.* 26(1):63–77
22. Byhoff E, De Marchis EH, Hessler D, Fichtenberg C, Adler N, et al. 2019. Part II: a qualitative study of social risk screening acceptability in patients and caregivers. *Am. J. Prev. Med.* 57(6):S38–46
23. Cartier Y, Fichtenberg C, Gottlieb LM. 2020. Implementing community resource referral technology: facilitators and barriers described by early adopters. *Health Aff.* 39(4):662–69
24. Castillo DC, Ramsey NL, Yu SSK, Ricks M, Courville AB, Sumner AE. 2012. Inconsistent access to food and cardiometabolic disease: the effect of food insecurity. *Curr. Cardiovasc. Risk Rep.* 6(3):245–50

25. Castrucci BC, Auerbach J. 2019. Meeting individual social needs falls short of addressing social determinants of health. *Health Aff. Blog*, Jan. 16. <https://doi.org/10.1377/hblog20190115.234942>
26. Cutts DB, Meyers AF, Black MM, Casey PH, Chilton M, et al. 2011. US housing insecurity and the health of very young children. *Am. J. Public Health* 101(8):1508–14
27. de la Vega PB, Losi S, Martinez LS, Bovell-Ammon A, Garg A, et al. 2019. Implementing an EHR-based screening and referral system to address social determinants of health in primary care. *Med. Care* 57:S133–39
28. De Marchis EH, Alderwick H, Gottlieb LM. 2020. Do patients want help addressing social risks? *J. Am. Board Fam. Med.* 33(2):170–75
29. De Marchis EH, Hessler D, Fichtenberg C, Adler N, Byhoff E, et al. 2019. Part I: A quantitative study of social risk screening acceptability in patients and caregivers. *Am. J. Prev. Med.* 57(6):S25–37
30. Emechebe N, Lyons PT, Amoda O, Pruitt Z. 2019. Passive social health surveillance and inpatient readmissions. *Am. J. Manag. Care* 25(8):388–95
31. Fichtenberg C, Delva J, Minyard K, Gottlieb LM. 2020. Health and human services integration: generating sustained health and equity improvements. *Health Aff.* 39(4):567–73
32. Fichtenberg CM, Alley DE, Mistry KB. 2019. Improving social needs intervention research: key questions for advancing the field. *Am. J. Prev. Med.* 57(6):S47–54
33. Finkelstein A, Zhou A, Taubman S, Doyle J. 2020. Health care hotspotting—a randomized, controlled trial. *N. Engl. J. Med.* 382(2):152–62
34. Frank DA, Casey PH, Black MM, Rose-Jacobs R, Chilton M, et al. 2010. Cumulative hardship and wellness of low-income, young children: multisite surveillance study. *Pediatrics* 125(5):e1115–23
35. Frazee TK, Brewster AL, Lewis VA, Beidler LB, Murray GF, Colla CH. 2019. Prevalence of screening for food insecurity, housing instability, utility needs, transportation needs, and interpersonal violence by US physician practices and hospitals. *JAMA Netw. Open* 2(9):e1911514
36. Garg A, Boynton-Jarrett R, Dworkin P. 2016. Avoiding the unintended consequences of screening for social determinants of health. *JAMA* 316(8):813–14
37. Garg A, Butz AM, Dworkin PH, Lewis RA, Serwint JR. 2009. Screening for basic social needs at a medical home for low-income children. *Clin. Pediatr.* 48(1):32–36
38. Garg A, Toy S, Tripodis Y, Silverstein M, Freeman E. 2015. Addressing social determinants of health at well child care visits: a cluster RCT. *Pediatrics* 135(2):e296–304
39. Gottlieb L, Hessler D, Long D, Amaya A, Adler N. 2014. A randomized trial on screening for social determinants of health: the iScreen study. *Pediatrics* 134(6):e1611–18
40. Gottlieb LM, DeSalvo K, Adler NE. 2019. Healthcare sector activities to identify and intervene on social risk: an introduction to the American Journal of Preventive Medicine supplement. *Am. J. Prev. Med.* 57(6):S1–5
41. Gottlieb LM, Hessler D, Long D, Laves E, Burns AR, et al. 2016. Effects of social needs screening and in-person service navigation on child health: a randomized clinical trial. *JAMA Pediatr.* 170(11):e162521
42. Gottlieb LM, Wing H, Adler NE. 2017. A systematic review of interventions on patients' social and economic needs. *Am. J. Prev. Med.* 53(5):719–29
43. Gowda C, Hadley C, Aiello AE. 2012. The association between food insecurity and inflammation in the US adult population. *Am. J. Public Health* 102:1579–86
44. Grandner MA, Petrov MER, Rattanaumpawan P, Jackson N, Platt A, Patel NP. 2013. Sleep symptoms, race/ethnicity, and socioeconomic position. *J. Clin. Sleep Med.* 9:897–905
45. Gruber JB, Wang W, Quittner A, Salyakina D, McCafferty-Fernandez J. 2019. Utilizing Community Health Needs Assessments (CHNAs) in nonprofit hospitals to guide population-centered outcomes research for pediatric patients: new recommendations for CHNA reporting. *Popul. Health Manag.* 22(1):25–31
46. Gurewich D, Garg A, Kressin NR. 2020. Addressing social determinants of health within healthcare delivery systems: a framework to ground and inform health outcomes. *J. Gen. Intern. Med.* 35:1571–75
47. Hassan A, Blood EA, Pikilingis A, Krull EG, McNickles L, et al. 2013. Youths' health-related social problems: concerns often overlooked during the medical visit. *J. Adolesc. Health* 53(2):265–71
48. Hassan A, Scherer EA, Pikilingis A, Krull E, McNickles L, et al. 2015. Improving social determinants of health: effectiveness of a web-based intervention. *Am. J. Prev. Med.* 49(6):822–31

49. Health Leads. 2018. *Social needs screening toolkit*. Resour., Health Leads, Boston. <https://healthleadsusa.org/resources/the-health-leads-screening-toolkit/>
50. Heller CG, Parsons AS, Chambers EC, Fiori KP, Rehm CD. 2020. Social risks among primary care patients in a large urban health system. *Am. J. Prev. Med.* 58(4):514–25
51. Horwitz LI, Chang C, Arcilla HN, Knickman JR. 2020. Quantifying health systems' investment in social determinants of health, by sector, 2017–19. *Health Aff.* 39(2):192–98
52. Huddleston-Casas C, Charnigo R, Simmons LA. 2009. Food insecurity and maternal depression in rural, low-income families: a longitudinal investigation. *Public Health Nutr.* 12(8):1133–40
53. Hudson D, Banks A, Holland D, Sewell W. 2019. Understanding health inequalities experienced by Black men: fundamental links between racism, socioeconomic position, and social mobility. In *Men's Health Equity: A Handbook*, ed. DM Griffith, MA Bruce, RJ Thorpe Jr., pp. 408–432. New York: Routledge
54. Inst. Med. 2014. *Capturing Social and Behavioral Domains and Measures in Electronic Health Records: Phase 2*. Washington DC: Natl. Acad. Press
55. Irwin A, Scali E. 2007. Action on the social determinants of health: a historical perspective. *Glob. Public Health* 2(3):235–56
56. Kangovi S, Mitra N, Grande D, Long JA, Asch DA. 2020. Evidence-based community health worker program addresses unmet social needs and generates positive return on investment. *Health Aff.* 39(2):207–13
57. Kangovi S, Mitra N, Norton L, Harte R, Zhao X, et al. 2018. Effect of community health worker support on clinical outcomes of low-income patients across primary care facilities: a randomized clinical trial. *JAMA Intern. Med.* 178(12):1635–43
58. Katz A, Chateau D, Enns JE, Valdivia J, Taylor C, et al. 2018. Association of the social determinants of health with quality of primary care. *Ann. Fam. Med.* 16(3):217–24
59. Keene DE, Niccolai L, Rosenberg A, Schlesinger P, Blankenship KM. 2020. Rental assistance and adult self-rated health. *J. Health Care Poor Underserved* 31(1):325–39
60. Knighton AJ, Stephenson B, Savitz LA. 2018. Measuring the effect of social determinants on patient outcomes: a systematic literature review. *J. Health Care Poor Underserved* 29(1):81–106
61. Kreuter MW, Garg R, Javed I, Golla B, Wolff J, Charles C. 2020. 3.5 million social needs requests during COVID-19: What can we learn from 2-1-1? *Health Aff. Blog*, August 4. <https://doi.org/10.1377/hblog20200729.432088>
62. Kreuter MW, Garg R, Li L, McNulty L, Thompson T, et al. 2020. How do social needs cluster among low-income individuals? *Popul. Health Manag.* <https://doi.org/10.1089/pop.2020.0107>. In press
63. Kreuter M, Garg R, Thompson T, McQueen A, Javed I, et al. 2020. Assessing the capacity of local social services agencies to respond to referrals from health care providers. *Health Aff.* 39(4):679–88
64. Kreuter MW, McQueen A, Boyum S, Fu Q. 2016. Unmet basic needs and health intervention effectiveness in low-income populations. *Prev. Med.* 91:70–75
65. Lantz PM. 2019. The medicalization of population health: Who will stay upstream? *Milbank Q.* 97(1):36–39
66. Lebrun-Harris LA, Baggett TP, Jenkins DM, Sripipatana A, Sharma R, et al. 2013. Health status and health care experiences among homeless patients in federally supported health centers: findings from the 2009 patient survey. *Health Serv. Res.* 48(3):992–1017
67. Lee J, Korba C. 2017. *Social determinants of health: How are hospitals and health systems investing in and addressing social needs?* Rep., Deloitte Cent. Health Solut., Washington, DC. <https://www2.deloitte.com/us/en/pages/life-sciences-and-health-care/articles/addressing-social-determinants-of-health-hospitals-survey.html>
68. Link BG, Phelan J. 1995. Social conditions as fundamental causes of disease. *J. Health Soc. Behav.* 1995:80–94
69. Marmot M, Allen J, Bell R, Bloomer E, Goldblatt P. 2012. WHO European review of social determinants of health and the health divide. *Lancet* 380:1011–29
70. McGregor J, Mercer SW, Harris FM. 2018. Health benefits of primary care social work for adults with complex health and social needs: a systematic review. *Health Soc. Care Community* 26(1):1–13
71. McMullen AM, Katz MH. 2017. Targeting unmet social needs—next steps toward improving chronic disease management. *JAMA Intern. Med.* 177(2):252–53

72. McQueen A, Roberts C, Garg R, Caburnay C, Fu Q, et al. 2019. Specialized tobacco quitline and basic needs navigation interventions to increase cessation among low income smokers: study protocol for a randomized controlled trial. *Contemp. Clin. Trials* 80:40–47
73. Morduch J, Schneider R. 2017. *The Financial Diaries: How American Families Cope in a World of Uncertainty*. Princeton, NJ: Princeton Univ. Press
74. Morone J. 2017. An integrative review of social determinants of health assessment and screening tools used in pediatrics. *J. Pediatr. Nurs.* 37:22–28
75. Natl. Acad. Sci. Eng. Med. 2016. *Accounting for Social Risk Factors in Medicare Payment: Identifying Social Risk Factors*. Washington, DC: Natl. Acad. Press
76. Natl. Acad. Sci. Eng. Med. 2019. *Integrating Social Care into the Delivery of Health Care: Moving Upstream to Improve the Nation's Health*. Washington, DC: Natl. Acad. Press
77. Natl. Assoc. Community Health Cent. 2016. *Protocol for Responding to and Assessing Patients' Assets, Risks, and Experiences (PRAPARE) assessment tool*. Resour., Natl. Assoc. Community Health Cent., Bethesda, MD. <http://nachc.org/research-and-data/prapare/>
78. O'Gurek DT, Henke C. 2018. A practical approach to screening for social determinants of health. *Fam. Pract. Manag.* 25(3):7–12
79. Onyekere C, Ross S, Namba A, Ross JC, Mann BD. 2016. Medical student volunteerism addresses patients' social needs: a novel approach to patient-centered care. *Ochsner J.* 16(1):45–49
80. Page-Reeves J, Kaufman W, Bleecker M, Norris J, McCalmont K, et al. 2016. Addressing social determinants of health in a clinic setting: the WellRx pilot in Albuquerque, New Mexico. *J. Am. Board Fam. Med.* 29(3):414–18
81. Pai N, Kandasamy S, Uleryk E, Maguire JL. 2016. Social risk screening for pediatric inpatients. *Clin. Pediatr.* 55(14):1289–94
82. Palakshappa D, Scheerer M, Smelka CTA, Foley KL. 2020. Screening for social determinants of health in free and charitable clinics in North Carolina. *J. Health Care Poor Underserved* 31(1):382–97
83. Pennel C, McLeroy K, Burdine J, Matarrita-Cascante D. 2015. Nonprofit hospitals' approach to community health needs assessment. *Am. J. Public Health* 105:e103–13
84. Plant EA, Sachs-Ericsson N. 2004. Racial and ethnic differences in depression: the roles of social support and meeting basic needs. *J. Consult. Clin. Psychol.* 72(1):41–52
85. Poleshuck E, Wittink M, Crean HF, Juskiewicz I, Bell E, et al. 2020. A comparative effectiveness trial of two patient-centered interventions for women with unmet social needs: personalized support for progress and enhanced screening and referral. *J. Womens Health* 29(2):242–52
86. Polk S, Leifheit KM, Thornton R, Solomon BS, DeCamp LR. 2020. Addressing the social needs of Spanish- and English-speaking families in pediatric primary care. *Acad. Pediatr.* 20(8):1170–76
87. Primeau SW, Freund KM, Ramachandran A, Bak SM, Heeren T, et al. 2014. Social service barriers delay care among women with abnormal cancer screening. *J. Gen. Intern. Med.* 29(1):169–75
88. Reeder C, Neilands TB, Palar K, Saberi P. 2019. Food insecurity and unmet needs among youth and young adults living with HIV in the San Francisco Bay Area. *J. Adolesc. Health* 65(2):262–66
89. Ryu J-H, Bartfield JS. 2012. Household food insecurity during childhood and subsequent health status: the early childhood longitudinal study kindergarten cohort. *Am. J. Public Health* 102(11):e50–55
90. Sachs-Ericsson N, Schatschneider C, Blazer DG. 2006. Perception of unmet basic needs as a predictor of physical functioning among community-dwelling older adults. *J. Aging Health* 18:852–68
91. Saxton ML, Naumer CM, Fisher KE. 2007. 2-1-1 information services: outcomes assessment, benefit-cost analysis, and policy issues. *Gov. Inf. Q.* 24:186–215
92. Schickedanz A, Sharp A, Hu YR, Shah NR, Adams JL, et al. 2019. Impact of social needs navigation on utilization among high-utilizers in a large integrated health system: a quasi-experimental study. *J. Gen. Intern. Med.* 34(11):2382–89
93. Sege R, Preer G, Morton SJ, Cabral H, Morakinyo O, et al. 2015. Medical-legal strategies to improve infant health care: a randomized trial. *Pediatrics* 136(1):97–106
94. Shah NR, Rogers AJ, Kanter MH. 2016. Health care that targets unmet social needs. *NEJM Catalyst* 2(2). <https://catalyst.nejm.org/health-care-that-targets-unmet-social-needs/>

95. Sok P, Gardner S, Bekele T, Globberman J, Seeman MV, et al. 2018. Unmet basic needs negatively affect health-related quality of life in people aging with HIV: results from the Positive Spaces, Healthy Places study. *BMC Public Health* 18(1):644
96. Sokol R, Austin A, Chandler C, Byrum E, Bousquette J, et al. 2019. Screening children for social determinants of health: a systematic review. *Pediatrics* 144(4):e20191622
97. Solar O, Irwin A. 2007. *A conceptual framework for action on the social determinants of health*. Discuss. Pap., Comm. Soc. Determ. Health, World Health Organ., Geneva. https://www.who.int/sdhconference/resources/ConceptualframeworkforactiononSDH_eng.pdf
98. Solar O, Irwin A. 2010. *A conceptual framework for action on the social determinants of health*. Soc. De-term. Health Discuss. Pap. 2, World Health Organ., Geneva. https://www.who.int/sdhconference/resources/ConceptualframeworkforactiononSDH_eng.pdf
99. Soto Mas F, Iriart C, Pedroncelli R, Binder DS, Qualls CR, Price B. 2019. Impact of health care and socioeconomic needs on health care utilization and disease management: the University of New Mexico Hospital Care One program. *Popul. Health Manag.* 22(2):113–19
100. Stahre M, VanEenwyk J, Siegel P, Njai R. 2015. Housing insecurity and the association with health outcomes and unhealthy behaviors, Washington State, 2011. *Prev. Chronic Dis.* 12:E109
101. Stephens B. 2015. *Nonprofit hospital Community Health Need Assessments in Georgia*. Rep., Ga. Watch Health Access Progr., Atlanta. <https://www.georgiawatch.org/wp-content/uploads/2015/06/Formatted-CHNA-Report-06022015-FINAL.pdf>
102. Sullivan HR. 2019. Hospitals' obligations to address social determinants of health. *AMA J. Ethics* 21(3):248–58
103. Tach LM, Greene SS. 2014. "Robbing Peter to pay Paul": economic and cultural explanations for how lower-income families manage debt. *Soc. Probl.* 61(1):1–21
104. Taylor LA, Tan AX, Coyle CE, Ndumele C, Rogan E, et al. 2016. Leveraging the social determinants of health: What works? *PLOS ONE* 11(8):e0160217
105. Thompson T, McQueen A, Croston M, Luke A, Caito N, et al. 2019. Social needs and health-related outcomes among Medicaid beneficiaries. *Health Educ. Behav.* 46(3):436–44
106. US Dep. Agric., Econ. Res. Serv. 2020. Food security and nutrition assistance. *Economic Research Service*. <https://www.ers.usda.gov/data-products/ag-and-food-statistics-charting-the-essentials/food-security-and-nutrition-assistance/>
107. US Dep. Health Hum. Serv., Off. Dis. Prev. Health Promot. 2020. Food insecurity. *Healthy People 2020*. <https://www.healthypeople.gov/2020/topics-objectives/topic/social-determinants-health/interventions-resources/food-insecurity>
108. US Dep. Health Hum. Serv., Off. Dis. Prev. Health Promot. 2020. Housing instability. *Healthy People 2020*. <https://www.healthypeople.gov/2020/topics-objectives/topic/social-determinants-health/interventions-resources/housing-instability>
109. US Interagency Counc. Homelessness. 2019. *The importance of housing affordability and stability for preventing and ending homelessness*. Brief, US Interagency Counc. Homelessness, Washington, DC. https://www.usich.gov/resources/uploads/asset_library/Housing-Affordability-and-Stability-Brief.pdf
110. Verdecias N, Garg R, Steensma J, McQueen A, Greer R, Kreuter MW. 2021. Expressed and hidden social needs in low-income adults in the U.S. *Health Soc. Care Community*. In press
111. Weil AR. 2020. Integrating social services and health: this month's issue of Health Affairs examines the integration of social services and health. *Health Aff.* 39(4):551
112. WHO (World Health Organ.), Comm. Soc. Determ. Health. 2008. *Closing the gap in a generation: health equity through action on the social determinants of health*. Final Rep., WHO, Geneva. https://www.who.int/social_determinants/final_report/csdh_finalreport_2008.pdf
113. Wood PR, Smith LA, Romero D, Bradshaw P, Wise PH, Chavkin W. 2002. Relationships between welfare status, health insurance status, and health and medical care among children with asthma. *Am. J. Public Health* 92(9):1446–52