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Literature Review and Interviews: Interventions to Address Social Determinants of Health (SDOH)

A report by L&M Policy Research for the Medicare Payment Advisory Commission

The views expressed in this report are those of the authors. No endorsement by MedPAC is intended or should be inferred.

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L&M POLICY RESEARCH

Literature Review and Interviews: Interventions to Address Social Determinants of Health (SDOH)
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LIST OF ACRONYMS

AAA	Area Agency on Aging
ACO	Accountable care organization
ADL	Activities of daily living
AHC	Accountable Health Community
APM	Alternative payment model
CBO	Community-based organization
CHF	Congestive heart failure
CHW	Community health worker
CMMI	Center for Medicare & Medicaid Innovation
CMS	Centers for Medicare & Medicaid Services
COPD	Chronic obstructive pulmonary disease
ED	Emergency department
EHR	Electronic health record
ESRD	End-stage renal disease
HHA	Home health agency
HRSN	Health related social needs
IT	Information technology
MA	Medicare Advantage
MedPAC	Medicare Payment Advisory Commission
MeSH	Medical subject headings
MCO	Managed care organization
OUD	Opioid use disorder
RCT	Randomized control trial
SDOH	Social determinants of health
SSBCI	Special Supplemental Benefits for the Chronically Ill
URL	Uniform resource locator
VBC, VBP	Value-based care, value-based payment

EXECUTIVE SUMMARY

The Medicare Payment and Advisory Commission (MedPAC) plays an essential role in advising Congress on the Medicare program and the health care system more broadly, conducting analyses and making recommendations to improve access and quality and reduce health care costs. MedPAC has traditionally focused on modifying payment systems to incentivize health care providers and payers to deliver high-quality care in the most efficient manner. A growing body of research shows, however, that high-quality clinical care alone is insufficient to improve population health and that social determinants of health (SDOH)—the social structures and economic systems in which people are born and live—account for a substantial portion of health outcomes.[1]

SDOH are often defined along five domains, including: health care access and quality, education access and quality, social and community context, economic stability, and neighborhood and built environment.[2] Social determinants are wide ranging and include factors such as access to medical and behavioral health care, educational and job opportunities, safe and affordable housing, reliable and accessible transportation, nutritious food, and freedom from exposure to pollution, racism, and violence. These determinants shape the trajectory of individuals' health outcomes, their quality of life and ultimately the cost of care.[3]

MedPAC is exploring how Medicare can better address SDOH especially given the Commission's continued work to drive the uptake of value-based care arrangements. MedPAC engaged L&M Policy Research (L&M) to identify and examine interventions that address SDOH and social needs and ultimately improve health outcomes and reduce Medicare costs. As part of this contract, the team conducted:

1) A literature scan and review of peer-reviewed, government, and gray literature on interventions used to address SDOH and social needs. The team focused on interventions that improve clinical outcomes for Medicare beneficiaries and reduce health care costs, and
2) A set of stakeholder interviews with 10 health care organizations (e.g., health plans, health systems) to discuss their approaches and initiatives to address SDOH and social needs.

Summary Findings

Literature Review. The literature review included a total of 33 articles that covered a mix of social needs, types of interventions, and findings. Although most interventions discussed in the literature showed improvements in some measures, others showed mixed, or non-conclusive results. More specifically, 24 of the articles showed at least one measure with statistically

[1] Braveman P. and Gottlieb L., "The Social Determinants of Health: It's Time to Consider the Causes of the Causes" *Public Health Reports* 2014 Jan-Feb; 129(Suppl 2): 19–31 cites a range of studies estimating the contribution of socioeconomic factors to health outcomes.
[2] https://health.gov/healthypeople/objectives-and-data/social-determinants-health, accessed May 20, 2021.
[3] LaVeist TA, Gaskin D, and Richard P. "Estimating the Economic Burden of Racial Health Inequalities in the United States," *Int J Health Serv* 2011;41(2) 231-8.

significant improvement, nine described trends indicating improvements, and one article showed no impact (one article is counted twice since it covered two separate interventions).

Over half of the articles identified for the literature review discussed interventions to address multiple SDOH rather than a single need. Examples of initiatives include making referrals to social or medical services, simplifying hospital to home transitions with the aid of meal delivery, transportation and home modifications, and on-site care coordination services in housing units for older adults. Most of these interventions showed improvements in one or more measures, such as hospital admissions and readmissions, observation stays, ED visits, and nursing home utilization and/or reductions in health care expenditures.

Of the studies about a single SDOH, the majority focused on improving food security and nutrition. Meal delivery interventions, in particular, showed promise toward decreasing inpatient and ED episodes.

Other interventions that focused on a single social need included housing, health literacy and education, social isolation, and transportation. Interventions leveraging community networks to provide affordable housing in coordination with social services and case management services yielded significant improvements in cost or utilization (e.g., lower total cost of care, shorter length of stay). Health literacy and education interventions for older adults may encourage adherence to treatment regimens and assist with reducing avoidable nursing home use in some communities. While the literature suggests a growing recognition of the importance of addressing social isolation, there is a need for more research into the efficacy of targeted interventions. Similarly, transportation-based interventions would benefit from additional study.

Stakeholder Interviews. The organizations the team interviewed focused their efforts on patient-level health related social needs. These were most frequently described as challenges that health care organizations are positioned to identify and intervene upon (e.g., food and housing insecurity), rather than those that are more structural in nature (e.g., education or economic stability). More specifically, the core of most organizations' interventions is making referrals to needed services in response to patients' social needs. However, a subset of organizations also engages in direct interventions to address housing, food insecurity, and lack of transportation.

While some of the interventions that the health care organizations discussed are well established, most are midstream in their implementation. As such, these organizations generally have not conducted objective evaluations of the interventions' impacts; however, interviewees did offer perspectives on lessons learned which are summarized in the Stakeholder Interviews section.

Conclusions

Key themes emerged across interventions described in the literature and those implemented by stakeholder interviewee organizations. The programmatic components that appeared to be instrumental in the planning and execution of SDOH interventions that were aimed at improving health care outcomes and reducing costs included: (1) identifying patients with SDOH or social needs, (2) collaborating with community-based organizations (CBOs), (3) using non-medical staff, and (4) delivering on-site services. Although these components were commonly discussed,

there remains a need for conclusive evidence that confirms that interventions with these components are successful.

Identifying patients with SDOH or social needs. Some of the articles, and all the interviewees discussed that a key component of SDOH-focused interventions is the initial work to identify and screen patients for social needs. Different approaches to identifying patients in need were highlighted, including the use of screening tools and predictive analytics (models or algorithms). Often these screenings were paired with other data, such as clinical and/or administrative data, to further understand social needs.

Collaborating with CBOs. To address social needs, many of the interventions relied on partnerships and collaborations with CBOs to act as a bridge between health care and community services. Both the literature review and interviews offered numerous examples of collaborations to address housing needs, food insecurity, and linkages to social and community services. However, according to interviewees, a substantial gap exists, as financial incentives for health care and non-health care organizations to develop partnerships to address SDOH are lagging. Interviewees cautioned against 'medicalizing' the process of identifying SDOH—which would yield more screening activity—without a corresponding increase in funding for CBOs to provide services.

Utilizing Non-Medical Staff. The majority of interventions found in the literature that incorporated the use of non-medical professionals (e.g., social workers, care coordinators, community health workers) demonstrated reductions in utilization or cost. As discussed in both the literature and interviews, these individuals fulfilled a wide range of roles in the interventions including patient outreach, home visits, patient education, patient engagement activities, and case management. In practice, organizations that engaged non-medical staff asserted that staff who are trained to focus on social needs are more effective at linking patients to needed social and community services than clinicians.

Providing On-Site Services. Most of the programs discussed in the literature that provided SDOH-focused services to patients in their residence (e.g., case management, meal delivery, coordination to social service or CBOs, etc.) exhibited positive health care utilization outcomes (e.g., reduced hospital readmissions). These types of services support the goal of keeping individuals out of nursing homes (thereby avoiding costs) and may be particularly beneficial for high-need persons with limited access to services and transportation. Additionally, bringing services directly to patients is a model that several of the interviewee organizations used to address homelessness, housing quality, and food insecurity among their populations.

Finally, although the interviewees generally did not have substantive evaluation results for their interventions, they did offer their perspective on Medicare's role in addressing SDOH. They emphasized repeatedly that accountability drives outcomes. It is widely acknowledged that SDOH initiatives are difficult to implement in the traditional fee-for-service environment as reducing episodes of care decreases revenue. However, under alternative payment models (APMs), such as accountable care organizations (ACOs) and other value-based purchasing (VBP) arrangements that allow providers to earn shared savings, keeping total costs under a target amount may justify investments in staff, services, and partnerships in support of SDOH

interventions that would otherwise be considered extraneous costs that do not support revenue growth. Likewise, capitated payments provide similar incentives for health care providers and health plans to consider patients' health holistically, which often means attending to social needs and SDOH.

More detailed discussions of the literature review, stakeholder interviews, and the team's conclusions are presented below following a summary of the methods.

METHODOLOGY

Literature Review

The goal of the literature review was to identify and examine articles, both peer-reviewed and in the gray literature, and government studies that assessed the impact of interventions intended to address SDOH on health outcomes and costs.

Preliminary Search

Search Criteria

The team limited the search to include articles and reports from the past five years, to include 2016 to current. Only articles and studies written in English and interventions that occurred in the United States were included.

Figure 1 below presents the set of search terms and combinations used in the literature review. As all PubMed catalogued articles are indexed by the National Library of Medicine's Medical Subject Headings (MeSH), the team also reviewed the search terms against the MeSH list.

Figure 1. Literature Review Search Terms

Primary Search Terms	Secondary Set of Terms	Tertiary Set of Terms
• Social determinants of health (SDOH) • Social risk* • Housing • Food security/insecurity • Transportation • (Health) literacy, education • Social support/social network* • Environment (neighborhood*/community*) • Income (stability*/instability*)	• Intervention* • Quality improvement • Best practices • Investment • Initiatives* • Programs • Models* • Demonstrations* • Community networks	• Medicare • Older adults* • Elderly

**Note: These search terms are not MeSH terms. They were only used for the Google Scholar, gray literature, and government website searches.*

Table 1 below lists the different databases and websites used in the searches, presented by the type of literature (peer-review, gray, or government report).

Table 1. Websites and Databases Searched

Peer-Reviewed Literature	• Medline/PubMed • Google Scholar

Gray Literature	• Google • The National Alliance to impact the Social Determinants of Health • Commonwealth Fund • Kaiser Family Foundation • The Institute for Healthcare Improvement • Alliance of Community Health Plans • Health Affairs (blogs, etc.) • Center for Health Care Strategies • Brookings Institution • Robert Wood Johnson Foundation

Government Reports	• Administration on Aging
	• Centers for Medicare & Medicaid Services
	• CMS Innovation Center
	• Government Accountability Office
	• Healthy People 2030
	• Offices of Minority Health established within U.S. Health and Human Services Agencies
	• U.S. Department of Agriculture
	• U.S. Department of Health and Human Services websites:
	  ○ Administration for Community Living
	  ○ Agency for Healthcare Research and Quality
	  ○ Centers for Disease Control and Prevention
	  ○ Food and Drug Administration
	  ○ Health Resources and Services Administration
	  ○ Indian Health Service
	  ○ National Institutes of Health
	  ○ Substance Abuse and Mental Health Services Administration
	  ○ Assistant Secretary for Planning and Evaluation
	• U.S. Department of Housing and Urban Development
	• U.S. Department of Labor
	• U.S. Department of Transportation
	• U.S. Surgeon General
	• Veterans Administration

Tracking System

The team used an Excel workbook to manage and organize articles and reports identified using the search criteria. For the preliminary search, the team captured information including the search engine and search terms used, article title, authors, publication date, website URL, and rationale for inclusion in the database.

Article Prioritization

After the preliminary search, the team prioritized articles based on three criteria, including whether the article: (1) focused on the Medicare or older adult population; (2) focused on a structured, comprehensive intervention (rather than broader policy recommendations or theoretical activities, for example); and (3) included relevant health, utilization, and/or cost measures. Based on these criteria, articles were categorized as "high", "medium", or "low". For each article/report that was initially catalogued as "high" or "medium", another researcher reviewed the article/report to confirm or revise the categorization (the team did not conduct a secondary review for the "low" prioritization articles since their classification was generally more straightforward). If there was disagreement in the categorization, the two reviewers came to consensus after discussing their respective rationales.

Article Prioritization	Population	Intervention	Outcome
High	Medicare, older adult, elderly	Intervention, program, or initiative	Health, utilization, and/or cost outcomes
Medium	General population (i.e., any age, insurer, etc.)	Intervention, program, or initiative	Health, utilization, and/or cost outcomes
Low	General population (i.e., any age, insurer, etc.)	Theoretical activities or broader policy recommendations	Does not include health, utilization, and/or cost outcomes

In-depth Literature Review

Review of Articles

The team reviewed abstracts and full articles prioritized as "high" and summarized additional information about each article in the database, including a description of the intervention, the SDOH or social need(s) addressed, a summary of major findings and outcomes, the study design and timeframe, the population and sample size, and the study/care setting. The team also used a "snowball" approach and reviewed other articles referenced in the ones reviewed and included relevant articles in the database.

Approach Used to Synthesize Findings

To synthesize findings, the team categorized each article based on the SDOH or social need that was addressed (e.g., housing, food insecurity). Then, the team reviewed the articles and summary information from the database to describe the types of interventions, along with more detailed descriptions of each intervention, and subsequent outcomes. The team further coded articles to identify cross-cutting themes across all articles.

Interviews

The goal of the interviews was to identify and examine interventions that health care organizations have implemented to address social needs and SDOH as a means of reducing gaps in care.

Identification of Organizations

In collaboration with MedPAC, the team determined the types of organizations and number of each type to interview–at least two Centers for Medicare & Medicaid Innovation (CMMI) Accountable Health Communities (AHCs), at least one state, at least one Medicare Accountable Care Organization (ACO), and the rest health plans or health systems–for a total of 10 interviews. The team used a variety of methods to identify specific organizations that have been working on social needs or SDOH issues among their populations; the team conducted a brief environmental scan and used their network of stakeholders engaged in SDOH and health equity work (e.g., in their contract with the Centers for Medicare & Medicaid (CMS) Office of Minority Health, they have interviewed numerous organizations that have worked on these types of issues). In addition, to ensure a diverse selection of candidates, the team considered other criteria, such as the stage of implementation (e.g., organizations that are just beginning versus those that have iterated on their models and have outcomes), geography, and type of social need addressed.

Outreach and Screening

The team initially identified a total of 20 candidates, prioritized as either "primary" or "secondary", based on input from MedPAC and the criteria mentioned above. First, the team contacted all organizations prioritized as "primary" to schedule 30-minute screening calls to determine if they would be a good fit for a full interview. The team conducted outreach to organizations at least three times before removing them from the list of potential candidates; two organizations were removed since they did not respond. During the screening calls, the team asked candidates to provide a high-level overview of their initiatives addressing SDOH. Subsequently, the team, in consultation with MedPAC, determined that two organizations initially prioritized as "primary" were not appropriate candidates for a full interview since they did not have comprehensive initiatives to address SDOH or were just starting their interventions. To ensure a complete slate of interviews, the team provided additional suggestions from the list of "secondary" candidates to screen.

Full Interviews

The team conducted 10 one-hour interviews with the various types of organizations listed in Table 2. The team used a semi-structured discussion guide to conduct the interviews. The discussion guide consisted of questions designed to be conversational in tone and to elicit a deeper understanding of the organizations' initiatives. Although some organizations had several initiatives related to addressing social needs, the team focused on only one or two of their initiatives to solicit more specific details about their approach. Questions corresponded to a continuum of activities related to implementing programs to address social needs. See Appendix C for the full discussion guide.

Table 2. Number and Types of Organizations Interviewed

Type of Organization	Number Interviewed
CMMI AHCs	2
Health plans	3
Health systems	2
Medicare ACOs	2
State Medicaid Agency	1
Total	**10**

To prepare for the full interviews, the team reviewed materials that organizations sent prior and any other publicly available materials about the organization and their initiatives. A senior staff member led the interview discussion, and a research assistant took transcript-style notes using a note-taking template that organized the discussion into sections according to the topics in the discussion guide (see Appendix C). At least one MedPAC colleague also attended the full interviews. The team used Zoom to conduct and record the interviews and sent interview notes to MedPAC within two weeks of the interview date.

Approach Used to Synthesize Findings

The team first reviewed each set of detailed, transcript-style notes to begin identifying themes and to support the structure of this report. Then, the team developed a code tree, and two researchers coded each set of notes to ensure a systematic review and analysis of the findings. Similarly coded excerpts from the notes were compared and aggregated for reporting purposes. The team supplemented the synthesized content with examples to illustrate findings.

LITERATURE REVIEW

The team found a total of 187 articles in the preliminary search (including articles found via the "snowball" approach); 37 articles were prioritized as "high", 44 as "medium", and 106 as "low", based on the criteria described in the Methodology section. The team reviewed abstracts or full text for the articles prioritized as "high" (n = 37) and determined that four of the 37 articles should be excluded from the Findings section of this report. These four articles were excluded since there were other, more robust articles describing the same intervention/program included in this review.

The final set of 33 articles covered a variety of social needs, described 29 unique interventions, and included mixed results. More specifically, 24 of the articles showed at least one measure with statistically significant improvement, nine described trends indicative of improvement, and one article showed no impact (one article is counted twice since it covered two separate interventions). Multiple articles described each of the following programs: the Supplemental Nutrition Assistance Program (SNAP), the Support and Services at Home (SASH) program, and the Community Care Connections (CCC) program. Refer to , including a summary of the results. In the sections below, the team describes the key findings and themes from the literature alongside demonstrated results of the select interventions.

Table 3 for the range of SDOH or social needs cited in the articles, the number of unique interventions addressing each type, and which interventions included measures of utilization, clinical, or cost

Each of these articles is described in detail in Appendix A, including a summary of the results. In the sections below, the team describes the key findings and themes from the literature alongside demonstrated results of the select interventions.

Table 3. Summary of the Number of Interventions and Measures, by SDOH Type

Type of SDOH	Number of Interventions	ED Utilization	Hospital Admissions/Readmissions	Inpatient Hospitalizations	Observation Stays	Ambulance Transfers	Improved Clinical Outcomes *	Avoidable Health Care Use	Medicare Expenditures	Nursing Home Admissions
General or multiple social needs	13									
Accountable Health Communities (AHC) Model	1	X								
Care coordination models	7	X	X	X	X	X				
Transitional care	2		X							
Partnerships between medical and non-medical entities	3							X	X	
Food insecurity/nutrition	7									
Federal nutrition benefit	1	X	X					X		X
Meal delivery programs	5	X	X	X			X	X	X	X
Congregate meal settings	1								X	X
Housing or home modifications	4									

Type of SDOH	Number of Interventions	ED Utilization	Hospital Admissions/Readmissions	Inpatient Hospitalizations	Observation Stays	Ambulance Transfers	Improved Clinical Outcomes *	Avoidable Health Care Use	Medicare Expenditures	Nursing Home Admissions
Provides housing	3		X	X				X		
Home modifications	1						X			
Health literacy/education	2									
Verbal medication instructions							X			
Health promotion programs								X		
Social isolation	2									
Physical Activity							X			
Videoconferencing							X			
Transportation	1									
Providing transportation to appointments								X		
TOTAL	**29**									

** Improved clinical outcomes encompass measures such as: HbA1c levels, activities of daily living scores, blood pressure, etc.*

Interventions and Outcomes by SDOH Type

General or Multiple Social Needs

There was a total of 16 articles describing 13 unique interventions that addressed multiple or a broad range of social needs rather than one particular SDOH (e.g., care coordination strategies to connect patients to social services versus meal programs designed to address nutrition-related issues). The initiatives discussed below include the AHC Model, care coordination models, strategies to address SDOH during the transition from inpatient to home, and partnerships between community-based organizations and health care organizations.

Accountable Health Communities Model

In 2017, the Center for Medicare & Medicaid Innovation (CMMI) established the AHC Model to test whether connecting Medicare and Medicaid beneficiaries to community resources improves health care outcomes and reduces costs. The Model has two tracks: (1) In the Assistance Track, organizations provide navigation assistance to community services to beneficiaries with health-related social needs (HSRNs)[4], and (2) The Alignment Track tests universal screening, referral, and navigation in addition to engaging key stakeholders in community-level quality improvement. The first evaluation report indicated that the AHC Model is making progress on the goal of identifying and assisting beneficiaries with HRSNs, such as food insecurity. Additionally, early results showed some utilization reductions among the high-needs population targeted by the AHC Model and a high acceptance of navigation services (74 percent—or 48,077 beneficiaries—which exceeded the 40 percent that was anticipated). Specifically, Medicare beneficiaries in the Assistance Track had nine percent fewer ED visits than the control group in the first year after screening. However, there were no differences in total Medicare expenditures, overall inpatient admissions, admissions for conditions that could be avoided with appropriate ambulatory care, and primary care visits between the intervention and control group. Utilization and expenditure impact estimates for the Medicaid population were not yet available when the report was published, and these beneficiaries comprised approximately 75 percent of the navigation-eligible population. Additionally, despite the high acceptance rate of navigation services, only 14 percent of beneficiaries reported having at least one HRSN resolved after a year of navigation (RTI International, 2020).

Care Coordination Models

There were several care coordination-based interventions designed to connect individuals to social and/or medical services; these interventions generated mixed impacts on utilization and costs. Three of these interventions provided care coordination services within senior housing units. For example, affordable senior housing units in Vermont host the Support and Services at Home (SASH) program. This program uses a coordinator and wellness nurse to connect residents to health care and social services. Overall, among the entire population of participants, the SASH program had no significant impact on Medicare expenditures. In the state's one urban county, however, there were favorable impacts for dually eligible beneficiaries. In this county,

[4] CMMI defines health-related social needs (HRSNs) as "adverse social conditions that affect health and health care expenditures."

researchers saw statistically significant slower growth in total Medicare expenditures, and expenditures for certain services, including hospitalizations, ED visits, and specialist visits. The authors noted that several factors may have contributed to the urban area's lower Medicare expenditures, including the availability of additional community resources, less travel time for SASH staff to reach participants, and the additional level of support provided by SASH team leaders.[5] In these geographies, the authors also speculated that the inclusion of SASH team leads who organized events and managed documentation, in addition to the coordinator and wellness nurse, might have played a role (Kandilov et al., 2018; Kandilov et al., 2019).

Two additional programs, the Richmond Health and Wellness Program (RHWP) and The Right Care, Right Place, Right Time Project, also provide on-site care coordination services in housing units for older adults. RHWP uses a nurse-led multidisciplinary team of faculty and students from nursing, pharmacy, medicine, social work, and other health professions (physical therapy, occupational therapy, kinesiology and psychology) to provide services to older adults in low-income housing; The Right Care, Right Place, Right Time Project uses a wellness team of a nurse and social worker in senior housing sites. Both programs demonstrated statistically significant utilization reductions. RHWP participants showed an 8.6 percent reduction in ED visits and 9.8 percent reduction in hospital admissions (Parsons et al., 2021). Compared to the control, participants in the Right Care, Right Place, Right Time Project had fewer ED visits, and there was an 18.2 percent reduction in ambulance transfers in buildings where the intervention was implemented (Nadash et al., 2021).

Another care coordination-based intervention with statistically significant results was the Community Care Connections (CCC) program. In this program, physician offices, primary care clinicians, and home health agencies (HHAs) connect patients over 60 years old to the program; then social work case managers connect patients to social support services, and care coordinators help participants navigate the health care system. In the 90 days after the program, participants experienced a 28 percent reduction in visits to the ED, a 29 percent reduction in inpatient hospitalizations, and a 23 percent reduction in observation stays, compared to the 90 days before participation (Fisher et al., 2020; Fisher et al., 2021). A program using a similar care team that also produced statistically significant results was the Connecting Provider to Home program. Implemented by a health plan, the program deploys a social worker, community health worker, and primary care physician to address patients' social and medical needs. The program targeted community dwelling individuals (the mean age was 74 years old) and demonstrated reductions in acute hospitalization and ED visits compared to a control (Lee et al., 2019; Moreno et al., 2021).

The Ambulatory Integration of the Medical and Social (AIMS) model uses a slightly different approach to its care coordination model; it is a four-step care coordination model managed exclusively by master's level social workers. Compared to the control group, participants 60 or older who participated in the AIMS model experienced significantly lower 30-day hospital readmissions, ED visits, and hospital admissions (Rowe et al., 2016).

[5] The SASH Team Leader role was eventually implemented throughout the entire program; however, during most of the analysis period only individuals who lived in the urban locale benefitted from the additional support.

Another unique coordination program was a call center-based social service referral program run by a managed care organization (MCO), in which members contacted the call center and then received a free referral to community-based resources for social services. MCO representatives maintained the database of CBOs and followed up with their members to determine if their social needs were met. Post-referral, the statistically significant decrease in health care expenditures for participants who had all of their social needs met was 10 percent greater than the decrease in expenditures for participants who report that none of their social needs were met (Pruitt et al., 2018).

Transitions to Home

Two articles focused on addressing non-medical needs—such as connecting patients to meal delivery services, transportation resources, or home modifications—during the transition from hospital to home. Both of these articles highlighted initiatives that demonstrated statistically significant, positive impacts. The Chicago Southland Coalition for Transition Care (CSCTC) program is a Community-Based Care Transitions Program (CBCTP)[6] for Medicare beneficiaries and was associated with a statistically significant reduction in readmissions. The Chicago-based program was unique in the CBCTP model as it solely used social workers to manage care transitions (Evans et al., 2021). The Eastern Virginia Care Transitions Partnership is a care transition model for high-risk older adults managed by Area Agency on Aging (AAA) coaches who support home assessments and facilitate connections to social services during the post-hospital discharge period[7]. Post-intervention, 30-day hospital readmission rates among Medicare beneficiaries decreased significantly compared to baseline (Kozick, 2017).

Partnerships Between Medical and Non-medical Entities

Three articles evaluated the effect of partnerships between health care organizations and non-medical organizations on various health outcomes and costs. Brewster et al. (2019) identified features of collaborations between health care and social service organizations that are associated with either high or low performance on avoidable health care use and spending for Medicare beneficiaries. The statistically significant results indicated that deeper ties and more cohesive relationships between health care and social service organizations were associated with lower levels of potentially avoidable health care use and Medicare beneficiary spending. For example, projects cosponsored by both groups, rather than models that focus on client referrals, demonstrated better outcomes. Additionally, health care organizations that took on a more central position within the network (i.e., were more involved or engaged), tended to have lower heath care use and Medicare spending.

[6] The Affordable Care Act (ACA) created the Community-Based Care Transitions Program (CCTP) to test models for improving care transitions after hospital discharge with the goal of reducing 30-day Medicare hospital readmission rates by 20 percent.

[7] An AAA is a "public or private nonprofit agency designated by a state to address the needs and concerns of all older persons at the regional and local levels". (https://acl.gov/programs/aging-and-disability-networks/area-agencies-aging)

The other two articles examined AAA partnerships and demonstrated mixed results. Brewster et al. (2020) found that formal contractual relationships between AAAs and mental health organizations were linked to a statistically significant reduction in potentially avoidable nursing home use. The authors also estimated that partnerships (formal or informal) between hospitals and AAAs were associated with a significant reduction of $135.50 in average annual Medicare spending per beneficiary. An earlier analysis by Brewster et al. (2018), however, found that formal partnerships (those governed by a contract or memorandum of agreement) between AAAs and health care and/or social service organizations were associated with higher Medicare spending per beneficiary. The authors speculated that informal partnerships, which were associated with significantly lower hospital readmission rates, may be more representative of organizations' "habitual collaborative work", which is often supported by a network of connections across organizations. The authors also found that more formal agreements may be established in areas with a larger population of high-risk individuals.

Food insecurity/nutrition

Nine high priority articles about interventions to address food insecurity and improve nutrition were identified. These articles discussed government programs such as the Supplemental Nutrition Assistance Program (SNAP), as well as meal delivery programs and congregate meal programs. Most of the articles demonstrated preliminary improvement in measures, and four included statistically significant findings for certain measures. Instances where there are statistically significant findings are noted in the text.

Supplemental Nutrition Assistance Program (SNAP)

Two articles examined SNAP participation among older adults dually eligible for Medicare and Medicaid in Maryland from 2000-2012. One study found that each $10 increase in monthly SNAP benefits was associated with a reduced likelihood of hospitalization, but not ED use (Samuel et al., 2018). The other study found that SNAP participants were 23 percent less likely to be admitted into a nursing home compared to non-participants (Szanton et al., 2017). An additional $10 of monthly SNAP assistance for SNAP participants was also associated with lower odds of admission to a nursing home, and fewer days among those who were admitted.

A separate study examined whether nutritional assistance programs like SNAP among older adults moderated the association between food insecurity and dietary quality as measured by the Alternative Healthy Eating Index (Bishop et al., 2020). This study found that food insecurity and the receipt of SNAP benefits were not associated with the changes in dietary quality, but the receipt of supplemental food (such as Meals on Wheels and food banks) was linked to reductions in food insecurity.

Meal Delivery

Five articles discussed meal delivery interventions, which ranged from programs providing non-tailored food to medically tailored meals for specific chronic conditions. Meals on Wheels delivers nutritious meals to homebound seniors who are unable to obtain or prepare meals independently. One study conducted on the Meals on Wheels program found that individuals cannot attribute improved health outcomes to the program during the first six months of service.

As length of service increases to two-to-five years, reported health improves and hospitalizations decrease (Som et al., 2017). This study found no significant correlation between the length of service and food insecurity.

Another program, Simply Delivered for Maine (SDM) meals, is run by the Maine Medical Center in partnership with the Southern Maine Agency on Aging and provides specialized meals on a voluntary basis to high-risk Medicare patients. Patients who received SDM over two years had a 10.3 percent 30-day readmission rate compared to the 16.6 percent readmission rate at baseline (Martin et al., 2018). Additionally, the estimated cost savings for the reduced readmissions of 622 patients was $212,160 with a return on investment (ROI) of 387 percent. Two articles focused on interventions that provided medically tailored meals. Project Angel Heart is a nonprofit organization in Colorado that delivers medically tailored meals to individuals with life-threatening illnesses (all age groups are eligible if they have a qualifying diagnosis). One study found that clients with a primary diagnosis of congestive heart failure (CHF), chronic obstructive pulmonary disease (COPD), or diabetes saw the greatest reduction in health care costs while receiving meals (Project Angel Heart, 2018). These statistically significant reductions in cost ranged from $416 per month to $736 per month. Similar average inpatient cost reductions were observed for clients with CHF, COPD, diabetes, and end-stage renal disease (reductions for CHF and ESRD were statistically significant). Another article discussed the integration of the Metropolitan Area Neighborhood Nutrition Alliance (MANNA) food is medicine model with managed care organization Health Partners Plan (HPP). This model combines medical nutrition therapy and medically appropriate home-delivered meals. Initially, HPP targeted Medicaid members with diabetes but has since served nearly 1,900 members including Medicare beneficiaries with chronic disease. One study of members who received MANNA services showed lower HbA1c scores and decreased inpatient admissions, ED utilization, and primary care physician and specialist visits in the six months after the program (Health Partners Plan, n.d.).

Meal delivery interventions have proven efficacy among older adults whether non-tailored food (NTF) or medically tailored meals (MTM) are delivered. One study compared the home delivery of the two types of programs and their effect on health care utilization and expenditures amongst dually eligible individuals. This study found that both NTF and MTM program participants had fewer ED visits compared to non-participants (Berkowitz et al., 2018). MTM participants also had fewer inpatient admissions and lower medical expenditures than non-participants; while NTF was not associated with fewer inpatient admissions, it was associated with lower medical expenditures.

Congregate Meal Settings

Another study evaluating the effect of the Older Americans Act Title III-C nutrition program found that participants in the congregate meal program had lower health care expenditures and were 2.3 percent less likely to be admitted into a nursing care facility when compared to non-participants (Mabli et al., 2020). For nearly all other outcomes (such as hospital admission, readmission, ED visits etc.), there were no statistically significant differences between congregate meal participants and nonparticipants. Home delivered meal participants were more likely to be older and have more medical conditions and did not demonstrate lower health care

expenditures. Home delivered meal participants were also more likely than nonparticipants to have an ED visit leading to a hospital admission.

Housing

Four high priority articles focused on a housing intervention or program. Three of these interventions leveraged community networks to provide affordable housing in coordination with social services and case management services.

The Cultivating Health for Success (CHS) program is a partnership between University of Pittsburgh Medical Center (UPMC), Pennsylvania U.S. Department of Housing and Urban Development (HUD), and community service providers. This program provides stable housing in addition to care management to eligible members who meet the HUD criteria for homelessness. Medicaid and dually enrolled beneficiaries are placed in permanent housing and provided a team of two care managers (Sorbero et al., 2018). Similarly, SelfHelp Community Services in NY operated the SelfHelp Active Services for Aging Model (SHASAM) in nine affordable apartment buildings where residents had access to supportive social services such as health education, wellness programs, and physical activity programs. Residents also had access to lists of community service providers that offered transportation, home care, and physician services (Gusmano et al., 2018). Finally, the Health Plan of San Mateo (HPSM) initiated a pilot aimed at transitioning individuals with long-term services and support needs from institutionalized settings to stable community living. This model paid for a portion of the housing services and worked with local nonprofits that specialize in affordable housing and case management (Van Beek et al., 2018).

All three of these interventions found improvements in cost or utilization measures. Following the HPSM intervention, the average costs of care per member dropped 43 percent from $10,055 to $5,721 per month (Van Beek et al., 2018). The most significant savings were for long-term care residents placed back into the community setting. Also, CHS participants had statistically significant lower costs associated with unplanned care compared to individuals experiencing homelessness, and the plan estimated that it saved approximately $500 per participating beneficiary (Sorbero et al., 2018). The SHASAM found statistically significant lower total hospital discharge rates and shorter mean length-of-stay in the intervention group than the comparison group (Gusmano et al., 2018). The comparison group was Medicare beneficiaries living in the same neighborhood as the intervention group but under different housing arrangements, demonstrating that this model may reduce utilization and subsequent cost for Medicare. These studies are limited in size and geography and the authors recognize that further research is needed to understand the link between affordable housing and health among older people.

Home Modifications

The Community Aging in Place – Advancing Better Living for Elders (CAPABLE) intervention targeted the home environment for low-income older adults with disabilities. CAPABLE participants received home sessions with an occupational therapist and registered nurse for five months, alongside $1,300 in home repairs, modifications, and assistive devices (Szanton et al.,

2019). Participation resulted in a statistically significant 30 percent reduction in activities of daily living (ADL) score at five months for the intervention population compared to the control and a non-statistically significant 17 percent reduction in instrumental ADL score (note: lower scores represent greater independence).

Health Literacy/Education

Two high priority articles discussed interventions addressing health literacy or health education among elderly populations, both of which demonstrated statistically significant results. In one intervention, ethnically diverse and low-income elderly patients received Talking Pill Bottles that provided verbal instructions for hypertensive medications (Lam et al., 2016). The intervention demonstrated statistically significant decreases in blood pressure in the intervention group, and the pill bottles were well accepted by participants, though there were minimal changes in measures of medication adherence during the study period. The authors cautioned that further research involving newly diagnosed patients is needed to mitigate possible ceiling effects that the researchers observed in an experienced population (i.e., those experienced with hypertension and medication history).

Brewster et al. (2021) evaluated the association between health promotion (education) programs offered by AAAs and health care utilization and costs. Across a national sample of AAAs, beginning to offer any health promotion program and expanding the breadth of existing programs were associated with significant reductions in potentially avoidable nursing home use in counties covered by the AAA. However, expansion of health promotion programs was not associated with reductions in other measures, including county-level readmission rates, ambulatory care sensitive hospitalizations, or Medicare spending per beneficiary.

Social Isolation

Two high priority articles focused on social isolation among older adults. One was a literature review evaluating the effectiveness of interventions targeting isolation on health or health care utilization while the other was a randomized controlled trial (RCT). The literature review examined 16 studies, eight of which were designated good- or fair-quality studies by the authors (Veazie et al., 2019). Five of the eight studies examined physical activity, two looked at social interventions, and one targeted arts and recreation. The review found that while physical activity interventions demonstrated the most promise in improving the health of older adults, the effects were inconsistent and short-term. Additionally, there was no clear relationship between the effects on social isolation and the effects on health care utilization among interventions that improved both.

The RCT examined the effectiveness of a short-term videoconferencing behavioral activation (Tele-BA) intervention on improving social connectedness among homebound older adults (Choi et al., 2020). Compared to the active control group, Tele-BA participants had a greater increase in social interaction and satisfaction with social support and a decrease in loneliness, depression, and disability. Both articles noted the need for further research on the effectiveness of social isolation interventions.

Transportation

Only one high priority article focused on a transportation intervention. The program, HealthTran, was started by the Missouri Rural Health Association. The program trained clinic and hospital staff to ask patients if they needed a ride when scheduling appointments, and if they did, to alert the HealthTran coordinator who assessed transportation needs and delivered a cost-effective solution (Alewine, 2017). In one example, HealthTran arranged 70 private rides for a senior patient with limited access to transportation at a cost of $6,000. This patient had diabetes and needed oxygen treatments to halt infection resulting from a toe amputation. In this instance, the hospital was able to bill Medicare for treatment and avoided penalties for a hospital readmission while Medicare may have avoided the cost of a leg amputation and a possible transfer of the patient to a nursing home. For one hospital system, HealthTran provided 2,470 rides over 17 months at an average of $33 per ride. The article estimated the hospital earned $7.68 in reimbursement for every $1 invested in transportation (Alewine, 2017). The authors also noted that the HealthTran model helped senior citizens live independently and avoid admission to nursing homes or assisted-living facilities, saving the government and other insurers money in the long run.

STAKEHOLDER INTERVIEWS

The team conducted interviews with 10 organizations representing a range of health care organization types. The 29 individuals who participated in interviews represented three health plans that offer Medicare Advantage products, a Medicare ACO, a health system with more than 14 Medicare ACOs, two health systems, two CMMI Accountable Health Communities, and a state Medicaid agency.

All organizations reported that food insecurity is a primary area of focus, and nearly all also cited transportation. Half of the organizations prioritize efforts to address patients'[8] housing concerns, which includes both the provision of housing and improvements to housing quality. Table 4 presents all the SDOH domains organizations mentioned (this table covers more than what is presented in the Findings section, which focuses only on those interventions discussed in-depth during the interviews).

Table 4. Interview Participants' Priority Focus Areas

	# of Orgs	Food insecurity	Transportation	Housing *(Includes home improvement)*	Other
CMMI AHCs	2	✓✓	✓✓	✓	✓ (SI, U, IPV)
Health plans	3	✓✓✓	✓✓✓	✓✓✓	✓ (MLP, E&W)
Health systems	2	✓✓	✓	✓	✓ (SI, IPV) ✓ (CCM)
Medicare ACOs	2	✓✓	✓✓	✓	✓ (SI)
State	1	✓	✓	✓	✓ (IPV)

MLP= Medical-Legal Partnerships; E&W = Education and Workforce Training; SI = Social Isolation; IPV = Interpersonal Violence; CCM = Chronic Care Management; U = Utilities
Note: The domains shown above reflect the areas discussed during interviews and organizations may be active in domains that are not represented here.

[8] Organizations use different terms (e.g., beneficiary, member, resident) to refer to the individuals they serve. For brevity, this report uses the term patients to refer to individuals served by the interviewee organizations, unless otherwise noted.

Planning and Design

When organizations were asked about the impetus for trying to address social needs and SDOH, the responses reflected an awareness of the impact an individual's environment and community has on their health status and well-being. Several interviewees shared that their organizations' mission statement and values specifically emphasize attention to individuals' social needs. One of the health plans stated that its expansion of benefits and providing support for beneficiaries' social needs is "what being a health plan is about". Whether mission-driven, responding to community needs, or positioning themselves to be successful under value-based care arrangements, organizations unanimously acknowledged the body of evidence emphasizing the significance of unmet social needs on health outcomes.

All the interviewees also cited the communities in which they operate as a driving factor in their decision calculus. For example, one AHC's community health needs assessment highlighted specific SDOHs where the organization could intervene, while a health system shared that more than one in ten inpatient visits were individuals who experience homelessness. One health plan stated it predominantly serves older, community-dwelling adults with multiple chronic conditions and social needs, while another pointed to high rates of poverty in the geographic region where it offers products.

Focus of Interventions

All of the organizations interviewed discussed their engagement in programs to identify and address individuals' HRSNs (health related social needs). HRSNs were most frequently described as challenges that health care organizations are positioned to identify and to try to intervene upon. To provide solutions for the identified needs, all of the organizations collaborate with external stakeholders in their communities. In all of the cited instances, the organizations lead or co-lead the initiatives to address social needs, as opposed to being in the role of contributor or a partner overseen by another entity.

Only one organization made mention of its active involvement in large-scale, multi-sector initiatives to address structural or institutional barriers, or 'upstream determinants'. These upstream determinants refer to economic and social opportunities, as well as living and working conditions in communities, for example.[9] Such interventions require policy-level change and broad-based solutions to address complex pathways and likely require years of investment before results can be observed.[10] While the discussion protocol did not include specific questions about addressing community-level determinants, during the discussions other organizations acknowledged the role of and need for upstream initiatives. At present, however, their efforts are concentrated on addressing their populations' immediate needs (e.g., transportation, food).
The following sections discuss the design, implementation, and evaluation and sustainability of interviewee organizations' SDOH and social needs interventions. The first section (Identifying Social Needs and SDOH) describes how organizations identify individuals' social needs and build capacity to implement the interventions, the next section (Intervention Implementation)

[9] https://www.rand.org/content/dam/rand/pubs/working_papers/WR1000/WR1096/RAND_WR1096.pdf
[10] https://ihpl.llu.edu/blog/addressing-social-determinants-health-upstream

includes core operational and structural aspects of the interventions, and the final section (Evaluation and Sustainability) presents preliminary results and insights about the sustainability and replicability of the interventions.

Identifying Social Needs and SDOH

During the interviews, organizations were asked to describe their approach to identifying social needs. All organizations reported using one or several screening tools to capture and/or continually monitor patients' self-identified social needs. Commonly, organizations supplemented social needs information with data from other sources which is discussed further below.

Approaches Used to Identify Social Needs

The organizations employed a multi-pronged approach to identifying social needs of patients. All organizations paired patient self-identified needs from screening instruments with data from other sources, such as cost or clinical information. Interviewees shared that this supplemental, contextual information comes from chart reviews, EHR queries, administrative claims data, or algorithms driving predictive analytics.

Organizations' processes to identify social needs in their population varied based on the point in time when screening tools were used. In some instances, identified social needs are the byproduct of screening responses from patients coupled with secondary data analyses the organization conducted. In contrast, other organizations lead with predictive analytics or analysis of utilization trends (e.g., ED encounters, readmissions) and supplement the findings with information from patient screenings. More specifically:

- Six organizations conducted screening first. Secondarily, they used data that may include community health indicators, medical costs, utilization of specific services, and/or presence of specific clinical indicators (e.g., ESRD, COPD, OUD, behavioral health conditions).

- Four organizations used predictive analytics as an initial step toward prioritizing or 'flagging' individuals who may have HRSNs or benefit from support given their complex medical needs. This approach typically employed proprietary modeling and integrates data feeds containing public and privately acquired consumer data. Organizations described accessing multi-payer claims, data from hospitals, health centers and other facilities, information on behavioral health, and social risk information. Patients were asked to complete social needs screenings as a secondary step.

All organizations conducted patient screening for social needs and SDOH; however, the interview team observed differences in how populations are screened. Just over half (six) of the organizations conducted payer-agnostic, universal screening for all patients. The other four organizations conducted screening for specific populations which the organizations prioritize based on a range of criteria: Two screened all Medicare, Medicaid and dually-eligible patients, another screened patients with select disease states, and the fourth screened individuals thought to have specific HRSNs. Whether an organization screened all patients or a subset of individuals,

screening is typically initiated during intake for a provider appointment or shortly after enrollment in a health plan.

Finally, half of the organizations discussed how they used health information technology (IT) platforms to capture and update social needs data. Often, the IT solutions included access to community resource referral platforms such as NowPow,[11] Unite Us, or Aunt Bertha or a homegrown referral network. For example, one organization stated that the system used to track SDOH screening information was also a platform where health care and human service organizations can share information and make referrals. Another organization's system stored SDOH screening data in addition to information on patients who have had two or more ED visits. Patients who screened positive for a social need and have had multiple ED visits are identified as 'high-risk' and may be eligible for care navigator support, in addition to referrals to community services.

Intervention Implementation

During the interviews, organizations were asked to share details of the key activities and interventions they implemented to address social needs and SDOH. Interviewees focused generally on those interventions where they had shown the most progress (the findings discussed below may not reflect the tallies reported earlier in Table 4). As part of these discussions, interviewees also provided details about key features or success factors including partnerships, staffing and funding of these interventions.

Key Activities

The interviewees discussed a range of interventions intended to address the social needs of their patients. Most (six) organizations made referrals to needed services in response to patients' social needs and a subset of (four) organizations also engaged in direct interventions to address housing needs, food insecurity, and a lack of transportation. Whether the organization used a "screen and refer to services" or a "screen and provide services" approach, all collaborated with community-based organizations (CBOs) to link patients with non-medical support services. Each of the key activities and interventions are discussed below.

Referrals to Needed Services

Six of the organizations took a broad stroke approach to addressing social needs by conducting universal screening for SDOH (discussed in detail earlier in this report). When needs were identified, the organizations subsequently made referrals to services, such as food banks, transportation providers, and housing resources, among others. Each of the organizations relied on a technology platform—either a home grown or commercially available system—to manage their referrals to CBOs. The platforms contained databases with information about places/organizations to refer individuals to and included the ability to track whether the

[11] In Sep. 2021, Unite Us announced that it had acquired NowPow (https://uniteus.com/nowpow/). The language used in the report reflects the product names interviewees used.

individual and CBO(s) successfully connected (a "closed-loop" referral); all of the organizations focused on trying to close the loop on referrals.

Housing

Three of the organizations focused on housing issues and more specifically on addressing housing insecurity, homelessness, or housing modifications.

One organization, a health system, described using two models to address different housing challenges. For individuals who screen positive for housing insecurity, the health system focused on ways to help stabilize the patient's housing situation. The health system partnered with a social service organization that specializes in homelessness prevention and whose staff were co-located within a couple of the health system's teams/departments. Patients can work with these housing specialists to access funds for utility bills, back rent, and connect with state-funded programs. The health system's other model was managed through their complex care management program. Patients who are medically complex and screen positive for homelessness can be triaged to the complex care management program and are eligible for the "housing prescription" model. The health system has internal staff trained as housing specialists for this model. For example, specialists help individuals apply for housing vouchers, find housing units, and support move-ins. They typically follow the patient through the complex care management program for about a year post-move in to provide care management and support the patient's transition to independent living.

One of the health plans discussed partnering with an area health system, a CBO, and another health plan to supply housing for homeless patients. The health system generated lists of individuals who have a high number of avoidable ED visits and who met other criteria the health plans and health system agreed upon (e.g., presence of certain diagnoses). The CBO partner matched the list of prioritized patients to a database of individuals experiencing homelessness. The health plans coordinated with the CBO to conduct outreach to those patients and CBO staff with backgrounds in care coordination, behavioral health and tenant placement arranged housing and other necessary supports. Funding for the housing subsidies was provided by the health system. Initially launched on a limited scale and primarily focused on individuals with OUD, the program is slated to expand in 2022 using funds from value-based contracts.

Another organization—a payer with Medicare Advantage plans—discussed offering a home modification allowance for Medicare patients with COPD to support their purchase of an air conditioning window unit.[12] The health plan found that some patients with COPD experienced exacerbations of symptoms due to a hot and humid climate. Air conditioning units can help stabilize the indoor temperature and humidity, and offers some air filtration, which can benefit COPD patients. To qualify for the allowance, Medicare patients must have a COPD diagnosis and must enroll in the health plan's COPD care management program.

[12] This allowance is offered as part of the Medicare Advantage Special Supplemental Benefits for the Chronically Ill (SSBCI) program.

Food Services

Four organizations—one health system, one Medicare ACO and two health plans—shared that they provide varying levels of intervention to address food insecurity.

The health system described a robust model with two pathways to address food insecurity. If during the social needs and SDOH screening process a patient screened positive for food insecurity, the health system referred the patient to the local foodbank and helped the individual enroll in SNAP. Patients with food insecurity who also met clinical criteria (diagnoses of hypertension, high blood pressure or diabetes) were eligible to participate in a "Food as Medicine" program. This program not only provided a source for food beyond shelf stable provisions, but also included support from a dietetic aide, who can help the patient with their dietary needs and introduce him/her to new healthy recipes. If a patient presented with three or more social needs, the health system connected the patient with a community health worker who can provide additional support to assist with all their needs.

The Medicare ACO developed a proactive approach to identifying individuals experiencing food insecurity. They started using predictive data analytics to create a list of patients who are at risk of food insecurity. This list was their starting point for care coordinators' outreach to patients to assess needs. The ACO has found two different methods that elicit positive responses and feedback from patients:

1) An ACO care coordinator reaches out to the patient to conduct a general check-in. For example, the care coordinator might say, "*We're calling on behalf of your primary care provider. It's been a really tough year, how are you doing?*", and
2) An ACO care coordinator conducts outreach ahead of a planned clinical event. For example, if a patient has a visit coming up, the care coordinator calls to remind them and then asks follow-up questions, such as, "*how are you doing managing food and sleep?*"

The ACO care coordinators then documented their conversations with patients in the EHR system, and where warranted, made referrals to CBOs via the SDOH platform. The referral would trigger an individual from the CBO to reach out to the patient and provide a service. The care coordinators followed up within a week of the referral to make sure the patient got the help they needed through the CBO.

One of the health plans described two variations on their approach to address food insecurity. The first was a grocery card, where individuals were provided a reloadable card to purchase groceries at participating locations. The allowance varied by specific Medicare Advantage health plan and expired at the end of each month. There were limits on what could be purchased on the grocery card – only healthy groceries were allowed, such as fruits, vegetables, meats, dairy, etc. The health plan also had a program for individuals with end-stage renal disease (ESRD), which was modeled on a disease management approach. Individuals with ESRD were offered home meal delivery if they also enrolled in care management. The health plan offered both of these approaches under the MA Special Supplemental Benefits for the Chronically Ill (SSBCI) program.

Finally, the other health plan also provided a grocery card benefit for their Medicare Advantage members (under the SSBCI program). The grocery card could be used to purchase fresh produce at a variety of participating locations. The health plan also partnered with a local organization to provide home delivery of groceries purchased with the grocery card. Interviewees shared that the health plan is planning to expand the program in 2022 to allow individuals to use the card for groceries and over-the-counter medical supplies, such as walking canes.

Transportation

Once Covid-19 vaccines were given emergency use authorization and offered to persons 65 and older, one of the health plans implemented a transportation benefit to support vaccination efforts for their MA customers. They added the transportation services to both MA plans that did not previously have a transportation benefit as well as those with limited transportation benefits. This benefit aimed to remove one of the barriers seniors faced in getting vaccinated.

Another health plan offered transportation to and from appointments at its affiliated-health centers. The health plan framed offering transportation as a way to increase access to care and to help decrease appointment "no shows". They also assisted patients in finding transportation, as needed, to non-affiliated medical facilities (the plan does not directly offer transportation to non-affiliated facilities due to their interpretation of the Anti-Kickback Statute and Stark Law).

Partnerships

When organizations were asked about the organizational relationships that support their interventions, most cited CBOs as vital to their efforts. Organizations specializing in food distribution and nutrition support came up often, as did CBOs specializing in housing and tenancy support services, which included housing authorities, housing and emergency shelter operators, and home improvement organizations. Some organizations paired care management services provided by organization staff with referrals to CBOs or social service agencies; others limited their current interventions to screening for social needs and making referrals. Despite taking different approaches to screening and implementing interventions, none of the interviewee organizations suggested that they would be capable of addressing social needs or SDOH without the expertise, capabilities, or capacity of other entities in their respective communities.

Staffing

All of the interventions discussed were conducted using a team format. Staff brought a range of expertise, and while the team composition varied based on the actual intervention being executed, most often, staffing included nurses and/or non-medical personnel, such as community health workers (CHWs). Other team members included case/care managers, care coordinators, and social workers, all of whom were responsible for helping to coordinate and manage the interventions.

In a few cases, organizations relied on outside vendors or partners to support the interventions. In these cases, the organizations were looking to staff roles not traditionally filled by clinicians and staff in health care organizations. For example, the health system that implemented interventions

to address housing insecurity partnered with a social service organization that specialized in homelessness prevention and co-located housing specialists with the health system's team.

Funding

Funding sources for the interventions varied among the organizations though four predominant types of funding streams were discussed – pilot and demonstration dollars, ongoing operational revenues (including SSBCI rebates), philanthropy, and shared savings. The two organizations participating in CMMI demonstrations, both AHCs, were trying to establish how to continue funding their interventions after the demonstration concludes. One of the AHCs discussed exploring how to fund ongoing activities through existing operations dollars; the other AHC was seeking funding from health system partners.

Evaluation and Sustainability

While some of the interventions are well established, most are midstream in terms of implementation and organizations generally have not yet conducted objective evaluations of the interventions' impacts. Where they could, however, interviewees provided insights into what they expect to measure. In a few instances, preliminary results were available. Also during the interviews, interviewees offered perspectives on whether their interventions were sustainable and/or replicable. Each of these topics is discussed further below.

Planned Measurement Activities

Each of the organizations were making efforts to evaluate and track the results of their interventions. The organizations were planning to look at different measures to understand the impact of their interventions, though the measures themselves can be grouped by type: process, utilization, costs, and clinical outcomes. The following table (Table 5) includes a summary of the measures the interviewees indicated will be gathered and monitored as part of their evaluation efforts.

Table 5. Expected Measures by Metric Type

Measure types	Measures
Process (participation)	• Number of patients served • Patient acquisitions • Patient retention • Rate of screening for unmet social needs • Resolution rates • Whether patients get connected to community-based service • Whether the service is delivered (as reported by the patient)
Utilization Measures	• Average length of stay • ED visits • Readmission rates • Inpatient utilization – general hospital/acute care • Appointment no-show rates • Utilization of ambulatory care (e.g., primary and preventive care) • Health related quality of life
Costs	• Associated/related medical costs (e.g., overall, by condition, by setting) • Total cost of care
Specific Clinical Outcomes	• Comprehensive diabetes care, decrease in HbA1c • Controlling high blood pressure • Decrease in BMI, change in eating behaviors • Initiation of substance use treatment

Results

As noted, the majority of the interviewees were not able to provide results from their interventions since many initiatives are in the nascent or midstream stages. However, a few examples of early results that the interviewees shared include:

- One of the organizations focused on a **food service** intervention noted that patients reported (through a set of focus groups) an increase in the amount of vegetables and fruit eaten and a decline in their consumption of fast food. This health system also reported that ED visits for participants was generally trending downward, but the results were not statistically significant.

- One of the AHCs that described providing **referrals to needed services** has preliminarily found: (1) it was unusual for patients who do not have a need at baseline screening to develop a need later, and (2) that food insecurity continued to have the lowest resolution rate, particularly among those with a severe need.

- One of the health plans that provided **referrals to needed services** reported that they have made about 23,000 referrals, and of those, they have enrolled about 77 percent into an appropriate evidence-based program.

- A health plan with a **food service** intervention reported that in July and August of 2021, just over 50 percent of eligible members activated the grocery card offered.

- A health plan with a **housing** intervention noted that they observed reductions in inpatient stays, readmissions and ED utilization and increased linkage between patients and primary care providers.

Replicability and Sustainability

Interviewees provided different perspectives as it relates to repeatability and sustainability. For example, one organization stated that their intervention was likely not scalable or replicable by others since they built so much of the infrastructure from scratch. However, this organization trusted that their efforts are sustainable since they invested so much in the infrastructure, and they are able to provide some funds to their CBO partners upfront and have implemented quick turnarounds on reimbursements.

Another organization stated that they are seeking ways to bill for the services they provide in order to ensure sustainability going forward. This health system also plans to continue evaluating their interventions over time to assess whether the intervention has had an impact on population health and is worth the investment. A different health system was using a mechanism through Medicaid to bill for certain services provided by CHWs to support sustainability. One of the health plans shared that SSBCI has made it possible for health plans to expand their services to try to address social needs and the funding (in the form of rebates) supports sustainability.

Both of the AHCs provided insights into the sustainability of their interventions. One of the AHCs shared that to support sustainability going forward that there needs to be an incentive (financial or operational) for health systems to focus on treating the whole person and their social needs. This same organization suggested that funding for the CBOs must also improve in order for them to manage the influx of referrals they are receiving from the different ongoing social needs and SDOH initiatives. The other AHC described their plans to expand the model beyond Medicare, Medicaid and dual-eligibles, to a universal program where they screen all patients for social needs regardless of payer. They described this work as part of their role in the community and part of their mission.

One of the Medicare ACOs discussed their desire to expand into interventions to address food insecurity. They were looking at their other lines of business to understand where they might have the biggest impact. Specifically, they used predictive analytics to look at populations to

understand their needs. Another avenue they are considering is looking at different geographies to consider if a food insecurity intervention would be scalable, e.g., to a rural setting.

Lessons Learned

Interviewees shared a host of lessons learned related to their interventions to address social needs. A few themes discussed across the organizations, include: (1) the need for stakeholder engagement and collaboration, (2) availability and flexibility in funding to support efforts, (3) training and education for key staff, and (4) employing a population health perspective.

Stakeholder engagement. Generally, interviewees recognized that addressing social needs and SDOH issues requires collaboration with other stakeholder audiences, such as CBOs and/or human service organizations, payers, providers, etc. One organization noted the importance of leveraging their own experience managing data with the expertise of other stakeholders in order to develop efficient and scalable interventions. Interviewees shared that working with stakeholders and gathering their input is important to the success of social needs interventions. Incorporating stakeholder feedback encourages collaboration and overall engagement.

One organization also included patients in their discussion about stakeholders. They shared that although they have built a program to deliver primary care and serve the social needs of their patients, they recognized a gap between what patients think they need and what will actually improve their health. This organization shared that due to this gap, they have struggled with patient uptake. They emphasized the importance of adequate patient engagement to make interventions successful.

Availability of resources and flexibility in funding. Interviewees also shared that key to managing these social needs interventions is the availability of resources and funding. One organization noted the importance of CMS's continued flexibility in allowing MA funds to be used to support non-medical needs for patients. Another interviewee stated that having the flexibility to use their funding toward capacity building was essential to supporting their interventions. One of the health plans described its efforts to identify and cobble together resources to develop a housing program. Funding for the housing units is provided by an area health system, two health plans provide programmatic support and administrative oversight, and a CBO employs the staff members who contact homeless patients, schedule appointments, create linkages to needed resources, and secure housing.

Many of the interviewees expressed concern that CBOs may not have adequate funding or capacity to manage the increase in referrals to address patients' social needs. An interviewee stated that improvements toward alleviating or resolving social needs may lag until funding for CBOs improves. Interviewees also maintained that stakeholders, specifically hospitals, health systems, and payers that are identifying social needs, should also make resources available to fund social needs interventions and to support the efforts of partner CBOs. One organization suggested that CBOs would benefit from upfront payments, rather than retrospective reimbursement or funding, to support their ongoing operations.

Training and education of key staff. Organizations shared that adequate training and education of involved staff—nurses and/or non-medical personnel, such as CHWs, case/care managers, care coordinators, and social workers—is key. Many organization are either new to social needs and SDOH work or are new to collaborating with each other. Providing training, opportunities to share experiences, lunch and learn opportunities, and technical assistance is particularly beneficial to intervention efforts. One organization shared that a key lesson for them is to ensure they maintain a small, concentrated group of highly trained individuals who can conduct the screening and care navigation work, rather than leaning on a larger team where the work is so dispersed that no one becomes an expert in the role.

Employing a population health perspective. A few of the organizations highlighted that social needs and SDOH are really population level issues, so in order to address them, organizations need a population level approach. One organization shared (with the benefit of hindsight) that having a critical mass of patients in value-based arrangements affords them the flexibility to look at social needs from a population health perspective – that is, SDOH interventions fit into models that pay for accountability.

CONCLUSIONS

Takeaway 1: Align incentives to encourage uptake of SDOH interventions.

Interviewees across the ten organizations the team interviewed, all of whom are actively engaged in SDOH initiatives, emphasized repeatedly that *accountability drives outcomes*. It is widely acknowledged that SDOH initiatives are difficult to implement in the traditional FFS environment as reducing episodes of care—whether it's necessary or unnecessary—decreases revenue. However, under APMs such as ACOs and other VBP arrangements that allow providers to earn shared savings, keeping costs under a target amount may justify investments in staff, services, and partnerships that would otherwise be considered extraneous costs that do not support revenue growth. Likewise, capitated payments provide similar incentives for health care providers and health plans to consider patients' health holistically, which often means attending to social needs and SDOH.

Among the interviewee organizations, most have significant incentive to address social needs and SDOH of the populations they serve – they are operating under capitated arrangements and/or taking financial risk under an APM. Given this, the organizations recognized that their ability to improve patient outcomes, achieve quality measure targets, and generate shared savings is either enhanced or constrained by the degree to which they identify and address their patients' non-medical circumstances. Accordingly, several interviewees suggested that policymakers can encourage accelerated transition to capitated and global payments in federal programs, such as those operated by CMMI. As organizations take financial risk, the depth and breadth of social needs and SDOH programming is likely to scale up.

Among SDOH programming that is already underway, key themes and similarities emerged across programs described in the literature and those implemented by stakeholder interviewee organizations. The programmatic components that appear to be instrumental in the planning and execution of SDOH interventions that are aimed at improving health care outcomes and reducing costs include: identifying patients with SDOH or social needs, collaborating with CBOs, using non-medical staff, and providing on-site services. Each of these areas warrants further attention by policy makers. Although these components were commonly discussed, there is still a need for conclusive evidence that confirms that interventions with these components are successful.

Takeaway 2: Consider how to encourage a comprehensive approach to identifying patients with social needs.

A key starting point in all of the SDOH and social needs focused interventions discussed by the interviewees and in some of the articles is the identification and/or screening of patients for social needs. Different approaches to identifying patients in need were highlighted, such as the use of screening tools and predictive analytics (models or algorithms). Often screening results were paired with other data sources, such as clinical and/or administrative data, to further understand social needs.

Identifying patients with social needs aids organizations in two ways: understanding their patient populations' challenges helps inform organizational-level strategic planning for how to address social needs, and it supports the organization's efforts to address immediate needs of individual patients. Encouraging a comprehensive approach to identifying patients with social needs represents an opportunity to help organizations ramp up more quickly as many are still in the early stages of developing interventions.

Takeaway 3: Foster partnerships between health care and non-health care organizations to address SDOH.

To fully support the needs of older adults, collaboration between health care organizations and CBOs that can provide needed services is essential. Both the literature review and stakeholder interviews offer numerous examples of collaborations to address housing needs, food insecurity, and linkages to social and community services. According to interviewees, a substantial gap exists though, as incentives for health care and non-health care organizations to develop partnerships to address SDOH are lagging. In the interim, interviewees cautioned against 'medicalizing' the process of identifying and addressing SDOH. Such action could have unintended consequences. For example, a billing code that allows health care providers to bill for SDOH screening will undoubtedly yield an increase in screening activity. In this scenario, absent incentives for partnering with organizations that have the capacity to act on the identified needs, there will not be a corresponding increase in social needs actually being met.

In the literature and for at least one interviewee, AAAs appeared to be a key strategic partner. Several interventions demonstrated how collaborations with or the use of AAAs to address social needs improved outcomes such as hospital readmissions or avoidable nursing home use. AAAs may be a particularly valuable resource for health care organizations to create collaborative teams to address older adults' social needs, as their mission is already aligned with these goals.

Takeaway 4: Examine potential opportunities for non-clinicians to bill for their services.

Attending to clinical issues requires different skill sets than addressing and navigating social needs and SDOH. Integrating these types of roles into care delivery and in care teams to address social needs is beneficial to physicians and other frontline clinicians, as they often have insufficient time during a visit to do so.

In both the literature and in practice, most interventions used non-medical staff. Social workers, care coordinators or navigators, and CHWs were responsible for a variety of activities including patient outreach, home visits, patient education and engagement, among others. In the literature, the majority of interventions using non-medical professionals demonstrated improvements in various health care utilization outcomes or costs. Organizations asserted that staff such as CHWs, peer specialists, care navigators, and others who are trained to focus on social needs are more effective at linking patients to needed social and community services than clinicians.

Takeaway 5: Consider the range of settings where patients may be best served.

An important priority for health care organizations that care for Medicare patients—specifically those with financial risk for their population—is providing support that keeps them out of the hospital and avoids other costly health care settings, such as nursing homes. This may be mitigated by bringing services to the patient, as discussed by several articles and described by interviewees. The literature offers examples of health care providers or care coordinators located in senior housing units and who connect residents to health and social services within the community. Bringing services directly to patients is a model used by the health system that has housing specialists on-site in the hospital, the health plan that funds improvements to make homes more livable, and the organizations that deliver meals or groceries to patients' homes. The literature indicates that most of the programs that provide these types of "on-site" services were associated with positive outcomes, such as reduced hospital readmissions. It is important for policy makers to consider the wide range of health care and non-health care settings where patients may be best served and where social needs can be addressed most effectively.

APPENDIX A: SUMMARY OF RELEVANT INFORMATION FROM LITERATURE REVIEW ARTICLES

Article Title	Summary of Major Findings and Outcomes	Intervention	Study Design	Study Timeframe	Population	Result Type(s) ** Statistically significant ^^ Trended improvement ∅ No change
	General Social Needs					
Addressing Social Determinants of Health Needs of Dually Enrolled Beneficiaries in Medicare Advantage Plans	SCAN Health Plan – 1) There was a 20 percent reduction in hospitalization rate among frail, dually enrolled members receiving care management services compared with Medicare-only members not receiving care management services. 2) The "Provider to Home Pilot" reduced ED visits by 39 percent and hospitalizations by 27 percent.	SCAN Health Plan – 1) Complex care management program where a care manager helps duals and Medicare-only beneficiaries navigate health care services and help promote members' health. 2) "Provider to Home Pilot" – A PCP, social worker, and community health worker work to address SDOH and develop a comprehensive treatment plan.	SCAN Health Plan – internal evaluations comparing its members to state- and national-level benchmarks.	Unclear	Unclear	**
Collaborating to Reduce Hospital Readmissions for Older Adults with Complex Needs: Eastern Virginia Care Transitions Partnership	- Conducted 25,655 home visits for Medicare beneficiaries discharge from the hospital - Overall, 30-day readmits down from 18.2 to 8.9 percent (Feb 2013 – Jan 2015), which is an estimated $17M savings (avoided 1,804 readmits) - For Medicare beneficiaries, readmits were 9.1 percent, as compared to the target of 14.4 for the group; declined from 23.4 percent in 2010 (baseline) - Pilot study of 945 Medicaid	Hospital to home care transitions counseling and home assessments provided to high-risk older adults by AAA coach; focuses on establishing services needed to successfully transition, including transportation to appointments, home delivered meals, and home repairs to support the patient remaining independent.	Analysis of the change in 30-day readmission rates post-intervention implementation .	Feb. 2013 – Jan. 2015	Medicare and Medicaid beneficiaries served by 5 health systems partners	**

Article Title	Summary of Major Findings and Outcomes	Intervention	Study Design	Study Timeframe	Population	Result Type(s) ** Statistically significant ^^ Trended improvement ∅ No change
	beneficiaries, established savings of about $1.5M from a decline of 25 to six percent readmit rate.					
Working Across Sectors To Improve Health For Older People: The Community Care Connections Program	- Participants were referred to an average of four different types of services -participants experienced a 28% reduction in visits to the ED, a 29% reduction in inpatient hospitalizations and a 23% reduction in observation stays in the 90 days after initiating program participation, compared to the 90 days before participation.	Community Care Connections: integrate social services into medical systems of care to meet the triple aim of improved patient experience, better patient health, and lower health care costs.	Mixed-method evaluation examining 1) pre-post differences in rate of ED visits and inpatient hospitalizations and 2) how the project affected fragmentation and alignment of social service and medical systems.	2016 – 2019	1,225 CCC participants	**
Aligning social and health care services: The case of Community Care Connections	- Hospitalizations decreased by 30%, ED visits decreased by 29%, and observation stays decreased by 23% in the 90 days after program enrollment compared to the 90 days before enrollment. - Among participants with the most prevalent health conditions, ED visits decreased by 37% for those with hypertension and by 30% for those with high cholesterol during the pre-post period. Observation stays decreased by 46% for those with	The Community Care Connections (CCC) program aims to improve coordination of social and healthcare services. Physician offices, PCPs, and HHAs connect patients to the program; social work care managers conduct a home visit and intensive geriatric wellness assessment and connect patients to social support services; and care coordinators also provide	90-day pre-post analyses to examine changes in hospitalizations, ED visits, and observation stays before and after clients joined the CCC program. Paired t-tests	Jun. 2016 – Mar. 2019	1214 adults (64% were 75 or older)	**

Article Title	Summary of Major Findings and Outcomes	Intervention	Study Design	Study Timeframe	Population	Result Type(s) ** Statistically significant ^^ Trended improvement ∅ No change
	diabetes and by 44% for those with high cholesterol during the post period.	support related to accessing health care.	were used to compare changes in health care outcomes for everyone and for those with the three most prevalent chronic health conditions (hypertension, diabetes, and high cholesterol)—conditions that are costly to Medicare beneficiaries with multiple chronic conditions.			
Linking Health And Social Services Through Area Agencies On Aging Is Associated With Lower Health Care Use And Spending	- Formal contractual relationships between AAAs and mental health organizations saw a significant reduction of 0.5 percentage points in low-care nursing home use. - Partnerships (of any type) between hospitals and AAAs were associated with a significant reduction of $135.50 per beneficiary per year in Medicare spending. - AAA dedicated spending for participation in livable community initiatives was associated with a	1) AAA partnerships with different types of health care organizations (e.g., hospital, mental health organizations) and 2) AAA involvement in livable community initiatives ("an umbrella term for local efforts that bring together multiple stakeholders with the goal of making social and physical environments more conducive to the health and	Longitudinal study using repeated measures data from the National Survey of Area Agencies on Aging (AAA). Survey data were linked to data on health care use and spending for	1) 2008-2013 (health care organization partnerships) 2) 2010-2016 (livable community initiatives)	89,406 adults ages 60 and older	**

Article Title	Summary of Major Findings and Outcomes	Intervention	Study Design	Study Timeframe	Population	Result Type(s) ** Statistically significant ^^ Trended improvement ∅ No change
	significant reduction in low-case nursing home use of 0.98 percentage points.	well-being of residents as they age").	older adults in the counties served by each AAA in the year after the survey (that is, lagged one year). Different-in-difference approach to determine the effect of changes in AAA partnerships on changes in health care spending and utilization over time			
Reducing Readmission by Addressing the Social Determinants of Health	- Few of the Community-Based Care Transitions Program (CBCTP) participants, many of which used a medically driven transitions model, showed sustained reduced hospital readmissions. - This study focused on one of the CBCTP sites that used social workers (rather than a medical model) to manage transitions after a hospitalization - found a statistically significant reduction in readmissions.	Community-Based Care Transitions Program; focused on one program in Chicago called the Chicago Southland Coalition for Transition Care (CSCTC) which uses social workers to manage transitions rather than other programs that are more traditionally focused	Difference-in-difference modeling; comparison group was hospitals in Chicago with similar pretreatment readmissions and discharge trends.	2010 – 2015	CSCTC hospitals pre- and post-intervention (45,522 and 42,245, respectively); Comparison hospitals pre- and post-intervention	**

Article Title	Summary of Major Findings and Outcomes	Intervention	Study Design	Study Timeframe	Population	Result Type(s) ** Statistically significant ^^ Trended improvement ∅ No change
					(127,443 and 132,889, respectively)	
The Impact of the Vermont Support and Services at Home Program on Healthcare Expenditures	- Overall, no impact of the SASH program was found on Medicare expenditures. - There was some evidence of favorable impacts in certain geographies for dually-eligible beneficiaries; in these geographies, there were SASH team leads in addition to the coordinators and wellness nurses, who help organize events and manage documentation. The evaluators hypothesize that the team leaders may have impacted these sites' success.	Support and Services at Home (SASH) program in VT; the program uses teams (coordinators and wellness nurses) embedded in senior housing properties as a platform to connect residents to health services and social supports in the community.	Difference-in-difference modeling; comparing expenditures between program participants and comparison group beneficiaries.	2011 – 2016	2,986 SASH participants; 3,437 comparison group	∅
The impact of health-related supports in senior housing on ambulance transfers and visits to emergency departments: The Right Care, Right Place, Right Time Project	- Health-related supports in senior housing sites can be effective in reducing emergency transfers and visits to EDs. - This study found an 18.2% statistically significant reduction in ambulance transfers in buildings where the intervention was implemented, with greater declines in buildings that had fewer services available at baseline, compared to other intervention sites. - Medicare claims analysis,	Wellness support team intervention examining the impact of a nurse and social worker in senior housing on ambulance transfers and visits to EDs over 18 months.	Researchers used a pre/post difference in difference quasi-experimental design applying several analytic methods. Data derive from building-level ambulance	Preintervention period: Jan. 2016 – Mar. 2017, Intervention period: Jul. 2017 – Dec. 2018 (18 mos.)	Participants in the intervention (n = 353) and control (n = 208) sites.	**

Article Title	Summary of Major Findings and Outcomes	Intervention	Study Design	Study Timeframe	Population	Result Type(s) ** Statistically significant ^^ Trended improvement ∅ No change
	adjusted for the proportion of residents over age 75 per building, found fewer visits to EDs in intervention buildings (versus control buildings).		data from emergency responders; building-level Medicare claims data on ED utilization; and individual-level baseline assessment data from participants in the intervention and control sites.			
The Ambulatory Integration of the Medical and Social (AIMS) model: A retrospective evaluation	- Significantly lower mean utilization of 30-day hospital readmissions, ED visits, and hospital admissions for the study sample exposed to the AIMS intervention compared to the larger patient population. - Comparison to national population statistics shows significantly lower mean utilization of 30-day admissions and ED visits for the study sample but not lower hospital admissions.	Social worker-based care coordination model that integrates medical and non-medical services to address health care outcomes and focuses on impacting utilization of services among older adults. The model is designed to be completed in 6 weeks. The intervention/model is called the "Ambulatory Integration of the Medical and Social (AIMS)" model.	Exploratory retrospective evaluation with a one-group design to assess whether the intervention affected 30-day readmissions, ED visits, and hospital admissions at the health system where the study took place. Service utilization for the	Mar. 2010 – Feb. 2014	Sample was 640 patients aged 60 and older who received the AIMS intervention. Approximately 60 percent of the sample population had Medicare coverage and 31 percent	**

Article Title	Summary of Major Findings and Outcomes	Intervention	Study Design	Study Timeframe	Population	Result Type(s) ** Statistically significant ^^ Trended improvement ∅ No change
			intervention group was compared to that of the broader population served by the system, as well as national and regional benchmarks.		had "other insurance providers" (included self-pay, private HMOs, and PPO).	
Accountable Health Communities (AHC) Model Evaluation	- Initial evaluation findings indicate the AHC Model is making progress on the goal of identifying and assisting beneficiaries with HRSNs such as food insecurity. The model is effectively identifying higher cost and utilization beneficiaries, and these beneficiaries are accepting navigation at much higher rates than anticipated.	The CMMI AHC model has two tracks: (1) In the Assistance Track, Medicare and Medicaid beneficiaries with HRSNs and provision of navigation assistance to connect navigation-eligible beneficiaries with the community services they need. Navigation-eligible beneficiaries in this track are randomly assigned to an intervention group or a control group - both groups receive their usual clinical care and a community referral summary; intervention group beneficiaries are also offered navigation assistance. (2) The Alignment Track tests universal screening, referral, and navigation COMBINED WITH engaging key stakeholders in community-level continuous quality	Descriptive statistics of Medicare and Medicaid beneficiaries' sociodemographic characteristics, HRSNs, participation in navigation, and navigation outcomes as well as FFS Medicare expenditure and utilization patterns.	AHC Model period: May 2017 – Apr. 2022. Report covers the first 18 months of implementation (May 2017 – Dec. 2019).	Total N for all beneficiary-level results was 4,625 unique beneficiaries.	^^

Article Title	Summary of Major Findings and Outcomes	Intervention	Study Design	Study Timeframe	Population	Result Type(s) ** Statistically significant ^^ Trended improvement ∅ No change
		improvement to align community service capacity with the community's service needs. All navigation-eligible beneficiaries in this track are considered to be in the intervention group.				
Expenditure Reductions Associated with a Social Service Referral Program	- Study results showed that the decrease in second year mean health care expenditures for the group of participants from a managed care organization (MCO) who reported all of their social needs met was $2443 (10%) greater than the decrease in second year mean expenditures for the group who reported none of their social needs met, after controlling for group differences. - The overall takeaway is that organizations that integrate medical and social services may thrive under policy initiatives that require financial accountability for the total well-being of patients.	A medical and social service coordination model implemented by an MCO that matches participant needs to available social services. WellCare Health Plans' call center-based social service referral program aimed to assist participants address their health-related social needs. Referrals were tracked in a database and representatives followed up with participants to see if their social needs were met.	Retrospective, secondary data analysis to examine the association between social needs being met and health care expenditures. Specifically, the study compared the change in mean health care expenditures for 2 groups of participants – all social needs met versus no social needs met – in the 12 mos. prior to referral and 12 mos. following referral.	Social service referral tracking data were connected to MCO medical claims for each participant with records between Jan. 2014 – Mar. 2017.	Study sample included participants insured through MA or Medicaid managed care in 14 states who called WellCare's HealthConnections program between January 1, 2015, and March 1, 2016 seeking referrals to a broad array of community-based public assistance programs,	**

Article Title	Summary of Major Findings and Outcomes	Intervention	Study Design	Study Timeframe	Population	Result Type(s) ** Statistically significant ^^ Trended improvement ∅ No change
					such as housing services and utility assistance. N = 2718 participants in the analysis; 1521 (56%) reported all of their identified social needs were met and 1197 (44%) reported that none of their needs were met.	
Cross-Sectoral Partnerships By Area Agencies On Aging: Associations With Health Care Use And Spending	- Counties whose AAAs maintained informal partnerships with a broad range of organizations in health care and other sectors had significantly lower hospital readmission rates, compared to counties whose AAAs had informal partnerships with fewer types of organizations. - Counties whose AAAs had programs to divert older adults from nursing home placement had significantly lower avoidable nursing home use, compared to	AAA formal and informal partnerships with social service and health care organizations.	Retrospective cross-sectional study using data from a survey of AAAs and measures of avoidable health care use and spending for the older adults they covered (all-	2013 – 2014	Data were available on dependent variables and covariates for 1,110–1,560 counties	**

Article Title	Summary of Major Findings and Outcomes	Intervention	Study Design	Study Timeframe	Population	Result Type(s) ** Statistically significant ^^ Trended improvement ∅ No change
	counties whose AAAs lacked such programs. - Counties whose AAAs had broader formal partnership networks had higher Medicare spending per beneficiary.		cause risk-stratified hospital readmission rates), percentage of nursing home residents in each county who had low-care status, total Medicare spending per beneficiary).			
Collaboration in Health Care and Social Service Networks for Older Adults: Association With Health Care Utilization Measures	- High-performing networks were distinguished from low-performing networks by 2 features: (1) health care organizations occupied positions of significantly greater centrality and (2) subnetworks of cosponsor ship ties (e.g., projects or advocacy) were more cohesive. - Across all networks, AAAs were more centrally positioned than any other type of organization (P< 0.05).	Collaborative networks between health care and social service organizations.	Survey administered to health care and social service organizations to identify collaborative ties between the two types of organization in 20 U.S. communities with either high or low performance on avoidable health care use and spending for Medicare beneficiaries	Jun. 2017 – Oct. 2017	Diverse sample of 20 US communities, 12 communities with low levels of avoidable health care use and spending (high performers) and 8 communities with high levels of avoidable health care use and spending	**

Article Title	Summary of Major Findings and Outcomes	Intervention	Study Design	Study Timeframe	Population	Result Type(s) ** Statistically significant ^^ Trended improvement ∅ No change
			across 3 outcomes: (1) hospitalizations for ambulatory care sensitive conditions; (2) risk-standardized hospital readmission rates; and (3) Medicare spending per beneficiary.		(low performers). 57 health care and 132 social service organizations completed the survey.	
Support And Services at Home (SASH) Evaluation: SASH Evaluation Findings, 2010-2016	- The SASH program had no statistically significant impact on the growth of any of the examined Medicare expenditure measures for the entire population of SASH participants in the sample, across the first 5.5 years of the SASH program - For the Cathedral Square Corporation (CSC) Designated Regional Housing Organization (DRHO) panels and for the urban panels (subset of the CSC DRHO panels), results show significantly slower PBPM growth in total Medicare expenditures, acute hospital care expenditures, ED expenditures, and specialist physician expenditures.	"Panels" of residents in affordable housing units are assigned a SASH coordinator and wellness nurse to connect residents to health care and social services.	Linear version of the difference-in-differences (DID) model using Medicare claims data to compare the Medicare expenditures before and after the participants enrolled in the SASH program to the Medicare expenditures for comparison group beneficiaries	Jan. 2006 – Dec. 2016	2,973 SASH participants who are Medicare FFS beneficiaries living in HUD-assisted or LIHTC housing properties that host the SASH program	** (CSC DRHO panels) ∅ (SASH program overall)

Article Title	Summary of Major Findings and Outcomes	Intervention	Study Design	Study Timeframe	Population	Result Type(s) ** Statistically significant ^^ Trended improvement ∅ No change
			during the same time periods. Expenditure metrics include total Medicare, acute hospital care, post-acute care, ED, outpatient department, primary care physician, specialist physician, and hospice care.			
Evaluation of an interprofessional care coordination model: Benefits to health professions students and the community served	- Health care utilization among participating residents showed an 8.6% reduction in ED visits and a 9.8% reduction in hospital admissions. - Engagement of resident-participants with Richmond Health and Wellness Program (RHWP) steadily grew over the initial 3-year evaluation period. The two services most frequently used during the evaluation period were disease monitoring (35%) and health education (28%).	The RHWP model focuses on resident-centered care in three cluster areas: assessment and access to care, health promotion and prevention service, and social determinants of health services. RHWP is an on-site nurse-led program offering wellness and care coordination services to individuals residing in low-income housing for older adults in 5 locations.	To evaluate the impact of RHWP on healthcare utilization, a subset of RHWP enrollees' aggregate chronic disease burden, medication and health care utilization were compared to Medicare beneficiaries living in the same ZIP	Jan. 2014 – Dec. 2016	368 RHWP Enrollees	**

Article Title	Summary of Major Findings and Outcomes	Intervention	Study Design	Study Timeframe	Population	Result Type(s) ** Statistically significant ^^ Trended improvement ∅ No change
			codes as the RHWP residential sites. Utilization data and enrollment status were compiled by quarter and compared over time using a zero-inflated Poisson regression model.			
Connecting Provider to home: A home-based social intervention program for older adults	- Pre/post-acute hospitalizations and ED visits were reduced in the intervention group. The average per patient per year reduction in acute hospitalizations was −0.66, whereas the average per patient reduction in ED use was −0.57. - Patients enrolled in the program reported high levels of satisfaction and rated the program favorably.	The Connecting Provider to Home program deployed teams of a social worker and a community health worker (CHW) to support patients with social issues and access to primary care.	Retrospective quasi-experimental observational study with matched comparator group. Acute hospitalization and ED visits in the 12 months preceding and following enrollment in the pilot program. A “difference-in-difference” analysis using a matched	Unclear	400 community dwelling adults	**

Article Title	Summary of Major Findings and Outcomes	Intervention	Study Design	Study Timeframe	Population	Result Type(s) ** Statistically significant ^^ Trended improvement ∅ No change
			comparator group was conducted.			
	Food Insecurity/Nutrition					
Simply delivered meals: a tale of collaboration	- Among the 622 high-risk Medicare beneficiaries participating in Simply Delivered for ME (SDM), the readmission rate decreased from 16.6 percent at baseline to 10.3 percent (after 24 months), a 38 percent decrease. - The program was also resulted in cost savings of approximately $200,000, equivalent to a benefit-cost ratio of $3.87 for every $1.00 spent on meals.	The Maine Medical Center and Southern Maine Agency on Aging offered a Community-based Care Transition Program (CCTP) with an optional add-on program, SDM. SDM was marketed to CCTP participants at no cost, consisted of a weekly delivery of frozen meals, and included a seven-meal supply delivered within four days of discharge.	Time-series design with rolling enrollment	July 2013 – July 2015	622 high risk (CMS HCC score > 1.6) Medicare beneficiaries	^^
Does the Supplemental Nutrition Assistance Program Affect Hospital Utilization Among Older Adults? The Case of Maryland	- SNAP participation and increased SNAP benefits among participants were associated with reduced hospitalization rates, but not ED visit rates, in dually eligible older adults. - SNAP participants were less likely to have an inpatient hospital expense (1.5 percentage points). - Of the hospitalized, SNAP participants had 5.8% lower expenses than nonparticipants. - Study team estimates that expanding SNAP benefits to nonparticipants (2012) could have been associated with total savings of $19M – half related to avoided	Comparison of SNAP participants to non-SNAP participants; modeled increasing benefit levels to observe impact on utilization measures (ED and hospitalizations).	Comparison of dually-eligible SNAP participants to non-participants; used zero-inflated negative binomial regression models to analyze the impact of SNAP benefits and increased benefit levels	2010 – 2012	68,956 Maryland residents aged ≥65 years who were dually enrolled in Medicare and Medicaid	**(Hospitalization) ^^ (ED rates)

Article Title	Summary of Major Findings and Outcomes	Intervention	Study Design	Study Timeframe	Population	Result Type(s) ** Statistically significant ^^ Trended improvement ∅ No change
	admissions and the rest related to less costly hospital stays. - A $10 increase in SNAP was associated with a 0.2 %-point lower probability of incurring inpatient-related hospital costs and a 1% lower average inpatient cost for those who were hospitalized.		on inpatient hospital days and ED visits.			
Food as Medicine Model - A Framework for Improving Member Health Outcomes and Lowering Health Care Costs	- Health Partners Plans' (HPP) members who completed MANNA services by May 2017 showed lower HbA1c scores and decreased inpatient admissions, ED utilization, and PCP and specialist visits in the six months after the program.	HPP developed a contract to allow MANNA, a non-profit, to operate as one of its providers to offer medically tailored home-delivered meals to members. Participants receive three medically tailored meals per day, seven days a week, for six weeks at no cost to them.	Unclear – Appears to be an internal HPP study.	Unclear	HPP members (Medicaid and Medicare with multiple chronic conditions) who completed MANNA services by May 2017. Unclear sample size.	^^
Food assistance is associated with decreased nursing home admissions for Maryland's	- SNAP participants had a 23% reduced odds of nursing home admission than nonparticipants. - For SNAP participants, an additional $10 of monthly SNAP assistance was associated with lower odds of admission and fewer days stay among those admitted.	SNAP enrollment	- Zero inflated negative binomial regression, adjusting for demographic and health factors, tested the association	2010 – 2012	77,678 older adults dually eligible for Medicaid and Medicare in Maryland	^^

Article Title	Summary of Major Findings and Outcomes	Intervention	Study Design	Study Timeframe	Population	Result Type(s) ** Statistically significant ^^ Trended improvement ∅ No change
dually eligible older adults	- Providing SNAP to all 2012 sample nonparticipants could be associated with $34 million in cost savings in Maryland.		of either lagged SNAP enrollment or lagged benefit amount with nursing home admission. - Heckman two-step model was used to calculate potential savings of SNAP enrollment through reduced nursing home admissions and reduced duration.			
Food Insecurity and Dietary Quality in Older Adults: Do Nutrition Assistance Programs Play a Protective Role?	- Receipt of supplemental food may be associated with better diets for older food insecure adults. - This study suggests – on a preliminary basis – that participants with SNAP benefits did not show improvements in the quality of their diets.	Comparison of SNAP participation and food assistance programs impact on dietary quality	Secondary data analysis using general linear modeling of samples drawn from the 2012 Health and Retirement Survey and 2013 Health Care and Nutrition Study; Food insecurity	2012 and 2013	3779 respondents representing a population of 37,217,566 adults aged 65 and older	^^

Article Title	Summary of Major Findings and Outcomes	Intervention	Study Design	Study Timeframe	Population	Result Type(s) ** Statistically significant ^^ Trended improvement ∅ No change
			identified based on the USDA six-item U.S. Adult Food Security Survey Module. Food assistance identified as SNAP or receipt of supplemental food from Meals-on-Wheels or food banks.			
Cost Savings from Medically-Tailored Meals for the Chronically Ill	- Thirty-day, all-cause hospital readmissions across diseases and insurance providers dropped by 13 percent during the time that Project Angel Heart clients received meals. - Clients with a primary diagnosis of congestive heart failure (CHF), chronic obstructive pulmonary disease (COPD), or diabetes saw the greatest reductions in total medical costs while receiving meals, with statistically significant reductions in cost ranging from $416/month to $736/month. On average, total medical costs for people in this group were reduced by 24 percent during the time that they received meals. - Average inpatient cost	Project Angel Heart is a nonprofit organization that provides two meal delivery programs: 1) The core program is community-funded and provides medically tailored meals at no charge to qualifying individuals referred by a health care provider; and 2) The other program, Meals for Care Transitions, is funded by health care organizations and/or insurance providers and provides meals at no charge to patients or members with an aim of reducing hospital readmissions and/or supporting individuals after an acute medical episode.	This retrospective data analysis used health insurance claims data from the Colorado All Payer Claims Database (CO APCD) to calculate per-member-per-month health care costs for Project Angel Heart clients for the six months prior to receiving	Jan. 2010 – Jun. 2013	708 Project Angel Heart clients age 18 or older who: '- Participated in Project Angel Heart's core program - Received medically tailored meals (five to ten meals per week,	**(Total medical cost, inpatient cost reductions for CHF and ESRD) ^^ (Average inpatient cost reductions for COPD and diabetes)

Article Title	Summary of Major Findings and Outcomes	Intervention	Study Design	Study Timeframe	Population	Result Type(s) ** Statistically significant ^^ Trended improvement ∅ No change
	reductions ranging from $111 to $555 per-member-per-month were observed for clients living with CHF, COPD, diabetes, and end-stage renal disease (ESRD), of which reductions for CHF and ESRD were statistically significant. - The most significant cost reductions were observed for clients covered by Medicare (14 percent) as well as for dually eligible clients across different diseases and lines of service.		medically tailored meals. These costs were compared to costs incurred while receiving meals and broken out by where they were incurred (inpatient, outpatient, professional, pharmacy, ED, or total), and segmented by primary disease diagnosis and the insurance provider of meal recipients.		delivered free of charge) for any given month(s) from January 2010-June 2013 -Were diagnosed with at least one of the following diseases: cancer, congestive heart failure, chronic obstructive pulmonary disease, diabetes, end-stage renal disease, HIV/AIDS, or multiple sclerosis -Were covered by Medicaid or Medicare, or were	

Article Title	Summary of Major Findings and Outcomes	Intervention	Study Design	Study Timeframe	Population	Result Type(s) ** Statistically significant ^^ Trended improvement ∅ No change
					dual-eligible	
Meal Delivery Programs Reduce The Use Of Costly Health Care In Dually Eligible Medicare And Medicaid Beneficiaries	- Medically-tailored meal (MTM) program participants had fewer ED visits, inpatient admissions, and uses of emergency transportation visits, in addition to lower medical expenditures than non-participants. - Non-tailored food (NTF) program participants had fewer ED visits and uses of emergency transportation and lower program expenditures than non-participants.	1. MTM program that provides meals customized to participant's medical needs. The program delivered meals to the participant's home weekly (five days of lunches, dinners, and snacks). A registered dietician tailored meals across 17 dietary "tracks" (e.g., diabetes, renal, soft, etc.) with combinations of up to 3 "tracker" permitted. 2. NTF program that provides nutritious meals that are not tailored to medical needs are delivered daily (five days of prepared lunches and dinners).	Coarsened exact matching (CEM) to create the comparison cohort, regression adjusted analyses using generalized linear models.	Jan. 2014 – Jan. 2016	Dually eligible adults >21 years (from Commonwealth Care Alliance health plan). CCA members with at least 6 months continuous meal program enrollment between Jan 1, 2014 and Jan 1, 2016 vs randomly selected CCA members not in the program during the same time period. MTM – 133 who received meals vs	**

Article Title	Summary of Major Findings and Outcomes	Intervention	Study Design	Study Timeframe	Population	Result Type(s) ** Statistically significant ^^ Trended improvement ∅ No change
					1002 controls NTF – 624 who received meals vs 1318 controls	
Aging in America and Meals on Wheels: Exploring Impacts on Food Insecurity, Health Outcomes, and Hospitalizations	- Survey respondents self-reported higher levels of health improvement (76.1 to 91.5%) and lower levels of food insecurity (9.4 to 29.7%) after Meals on Wheels (MOW) participation. - Findings suggest that as length of the MOW service increases, improved health outcomes increase while hospitalizations decrease. - However, there isn't a significant relationship between the MOW length of service and food insecurity, which may be influenced by the fact that MOW offers 2-5 meals per week and the number of meals does not change.	Nutrition intervention program of home-delivered meals for homebound seniors who are unable to make or obtain meals.	Secondary analysis of Eighth National Survey of Older Americans Act (OAA) Participants to explore the impact of MOW service on health outcomes, hospitalizations, and food insecurity. (Most MOW programs are largely funded by the federal OAA Nutrition Program.)	2013	Total number of older adults in the survey sampling frame for the Meals on Wheels service type was 1,078 participants.	^^
Evaluation of the Effect of the Older Americans Act Title III-C	- While the study found few statistically significant effects of congregate meal participation on health care utilization, it did show a lower likelihood of hospital	A core component of the federal NSP is the provision of group (congregate) meals. NSP congregate meal participants can receive a	Cross-sectional survey of NSP participants linked to	Survey: Oct. 2015 – Apr. 2016	n = 316 congregate meal participants n = 367	** (Hospital readmissions within 30 days of discharge)

Article Title	Summary of Major Findings and Outcomes	Intervention	Study Design	Study Timeframe	Population	Result Type(s) ** Statistically significant ^^ Trended improvement ∅ No change
Nutrition Services Program on Participants' Longer-Term Health Care Utilization	readmission among participants, relative to non-participants, particularly among lower-income persons. This may indicate that the Nutritional Services Program (NSP) serves as a primary access point for many home- and community-based services to help older adults meet their health and nutrition needs. - In addition to lower rates of hospital readmission among lower-income individuals, the study showed a lower rate of admission to LTC facilities among lower-income participants compared with lower-income non-participants. This pattern was sustained over the 3-year study period, suggesting that the program is achieving its goal of improving the older adults' ability to age in place and delaying institutionalization.	nutritious meal at a senior center or other congregate meal sites. The study aimed to determine the impact of NSP meals and nutrition services on overall wellness and well-being by comparing outcomes for NSP participants and nonparticipants.	Medicare administrative (claims) data, with a matched comparison group of program-eligible non-participants. The study team used ordinary least squares regression analysis to analyze the number of events that occurred in a given observation period and average monthly Medicare expenditures.		program-eligible non-participants	^^(home health episode, hospital admissions) ∅ (Mixed results for admission to SNF, ED visit that did not lead to an admission)
	Housing					
Investing in social services as a core strategy for healthcare organization	Health Plan of San Mateo (HPSM) – The average cost of care per member dropped 43 percent from $10,055 to $5,271 following the intervention.	HPSM – The "Community Care Settings Pilot" coordinates with two local nonprofits that specialize in affordable supportive housing and transitional case management and pay for a portion of the housing	Pre-post analysis method.	2014 – 2017	91 LTC dually eligible members across varying housing types with	^^

Article Title	Summary of Major Findings and Outcomes	Intervention	Study Design	Study Timeframe	Population	Result Type(s) ** Statistically significant ^^ Trended improvement ∅ No change
		services. HPSM and their partners make recommendations for an appropriate community setting referral to assisted living, individual home support, or affordable housing.			at least six months of adjudicated claims prior to the housing transition and six months of adjudicated claims post transition	
Medicare Beneficiaries Living In Housing With Supportive Services Experienced Lower Hospital Use Than Others	- Hospital discharge rates were 32% lower; hospital lengths-of-stay one day shorter, and ambulatory care sensitive conditions (ACSC) rates 30% lower among residents in the intervention group than among people in the comparison group.	The Selfhelp Active Services for Aging Model (SHASAM) is an affordable housing program with supportive social services for individuals 65 and older. All of the programs and services are provided directly through the program and are available to all program residents.	Retrospective analysis of Medicare claims data from 2014.	2014	Intervention group: 1,248 Medicare beneficiaries 65 and older who resided in the six Selfhelp affordable housing buildings that offer the SHASAM program vs. Comparison group: 15,947 other Medicare beneficiarie	**

Article Title	Summary of Major Findings and Outcomes	Intervention	Study Design	Study Timeframe	Population	Result Type(s) ** Statistically significant ^^ Trended improvement ∅ No change
					s 65 and older who lived in other buildings in the same ZIP codes	
Effect of a Biobehavioral Environmental Approach on Disability Among Low-Income Older Adults	- Community Aging in Place—Advancing Better Living for Elders (CAPABLE) participation resulted in statistically significant 30% reduction in ADL disability scores at 5 months vs the control participation. - CAPABLE participation resulted in a statistically nonsignificant 17% reduction in IADL disability scores vs the control participation. - Participants in the CAPABLE group vs those in the control group were more likely to report that the program made their life easier, helped them take care of themselves, and helped them gain confidence in managing daily challenges.	The CAPABLE intervention consisted of 10 home visits over 5 months by occupational therapists (OTs), registered nurses (RNs), and home modifiers to address self-identified functional goals by enhancing individual capacity and the home environment.	Single-blind, 2-arm randomized clinical trial. All study participants were interviewed in their home at baseline, 5 months (main study end point), and 12-month follow-up by trained research assistants who were masked to the group allocation. The study evaluated participant assessment of study benefits using a survey adapted from previous trials.	Intervention: Mar. 2012 – Apr. 2016 Data analysis: Sep. 2017–Aug. 2018	300 low-income (< 200% FPL), community-dwelling older adults aged 65 and older with a disability (reported difficulty with at least 1 ADL) in Baltimore, MD	** (ADL) ^^ (IADL)

Article Title	Summary of Major Findings and Outcomes	Intervention	Study Design	Study Timeframe	Population	Result Type(s) ** Statistically significant ^^ Trended improvement ∅ No change
Addressing Social Determinants of Health Needs of Dually Enrolled Beneficiaries in Medicare Advantage Plans[13]	UPMC for You – Participants' use of care shifted from unplanned health care such as ED visits and hospitalizations to planned physician appointments and improved medication adherence. Participants had statistically significantly lower costs associated with unplanned care and significantly higher pharmacy costs.	UPMC for You – "Cultivating Health for Success" is a program for homeless enrollees that pairs stable housing with case management. Participants are placed in permanent housing in locations throughout the city and have a team of two care managers—one from the health plan and one from a U.S. Department of Housing and Urban Development vendor.	UPMC for You – internal 2-year evaluation comparing participants in the program to homeless non-participants	Unclear	Unclear	**
	Health Literacy/Education					
Achieving Population Health Impacts Through Health Promotion Programs Offered by Community-based Organizations	- Across the full sample of AAAs, beginning to offer any health promotion program in the AAA was associated a with 0.94 percentage point reduction in potentially avoidable nursing home use in counties covered by the AAA, equivalent to a 6.5% change. - Expanding the breadth of programs offered by the AAA was also associated with a significant reduction in potentially avoidable nursing home use. - Expansion of health promotion programs offered by AAAs was not associated with the change in	Health promotion programs offered by AAAs.	Longitudinal survey data from AAAs linked with data on potentially avoidable health care use and spending for older adults in the counties served by each AAA. Panel regression models were used to	2008 – 2016	All US counties that could be matched to AAAs that responded to the National Survey of Area Agencies on Aging in any of the years 2008, 2010,	** (Potentially avoidable nursing home use) ∅ (Effects on HRR, ambulatory care sensitive hospitalizations, Medicare spending)

[13] This article appears twice in the table because it discusses two separate interventions: SCAN Health Plan and UPMC for You

Article Title	Summary of Major Findings and Outcomes	Intervention	Study Design	Study Timeframe	Population	Result Type(s) ** Statistically significant ^^ Trended improvement ∅ No change
	county-level hospital readmission rates (HRR), ambulatory care sensitive hospitalizations, or Medicare spending per beneficiary.		examine whether AAA expansion of health promotion programs was associated with a change in 4 measures of potentially avoidable health care use and spending.		2013, and 2016.	
Addressing low health literacy with "Talking Pill Bottles": A pilot study in a community pharmacy setting	- Study results suggest that providing audio-assisted medication instructions in Talking Pill Bottles positively affected blood pressure control and was well accepted by patients with low health literacy. Further research involving newly diagnosed patients is needed to mitigate possible ceiling effects that the study observed in an experienced population (i.e. those experienced with hypertension and medication history). - Specifically, in both the intervention and control arms, the study found high baseline scores in medication knowledge test, Self-Efficacy for Appropriate Medication Use Scale (SEAMS), Morisky Medication Adherence Scale (MMAS-8), and minimal	Participants in the intervention arm received antihypertensive medications and recordings of pharmacists' counseling in Talking Pill Bottles at baseline. Control arm participants received antihypertensive medications and usual care instructions.	Longitudinal (90-day) non-blinded randomized trial with standard treatment and intervention arms.	Unclear: study likely occurred in 2013 or earlier	Population: Participants were consented patients with antihypertension prescriptions who screened positive for low health literacy based on the Test of Functional Health Literacy Short Form. Of 871	** (Blood pressure) ∅ (Medication adherence)

Article Title	Summary of Major Findings and Outcomes	Intervention	Study Design	Study Timeframe	Population	Result Type(s) ** Statistically significant ^^ Trended improvement ∅ No change
	changes in these measures over the 90-day study period. In the intervention arm, blood pressure decreased significantly and acceptability scores for the Talking Pill Bottle technology were high.				patients screened for health literacy, n = 134 eligible participants were enrolled in the trial. Sample: Elderly, ethnically diverse, of low income, and experienced regarding hypertension and medication history. Average age of the sample population was 70, equal breakdown by sex, and most of the sample had less than an high school education.	

Article Title	Summary of Major Findings and Outcomes	Intervention	Study Design	Study Timeframe	Population	Result Type(s) ** Statistically significant ^^ Trended improvement ∅ No change
	Social Isolation					
Addressing Social Isolation To Improve the Health of Older Adults: A Rapid Review	- Identified 16 studies focused on interventions to address social isolation in older adults; physical activity studies showed the most promise of reducing isolation and improving health and health care utilization. The authors caution that the results are inconsistent and suggest health care systems need to conduct evaluations of their efforts to better understand the impact of physical activity interventions.	Sought interventions that address social isolation and have an impact on health and health care utilization.	Rapid review methodology; conducted searches for systematic reviews published between 2013 – 2018 and primary research from 2016 – 2018.	2013 – 2018	Identified 272 systematic review; 8. Met inclusion criteria and the team added 4 others. Found 131 primary research studies from the systematic reviews and 1,572 primary studies; included 16 studies. The 16 studies included: 5 physical activity studies, 5 social isolation interventions, 4 arts and recreation,	^^

Article Title	Summary of Major Findings and Outcomes	Intervention	Study Design	Study Timeframe	Population	Result Type(s) ** Statistically significant ^^ Trended improvement ∅ No change
					and 2 improving health access interventions	
Improving Social Connectedness for Homebound Older Adults: Randomized Controlled Trial of Tele-Delivered Behavioral Activation Versus Tele-Delivered Friendly Visits	- A lay-coach-facilitated, short-term telehealth-behavioral activation (Tele-BA) intervention is a promising intervention for the growing numbers of homebound older adults lacking social connectedness. Intervention group participants had greater increase in social interaction, satisfaction with social support, and decrease in loneliness, depression and disability compared to the active control group. The Tele-BA intervention holds promise for scalability in programs that already serve homebound older adults.	Participants received five weekly videoconference sessions of either Tele-BA or telehealth-friendly visits (Tele-FV (friendly visits; active control)).	A two-site, participant-randomized controlled trial with older adults who were recipients of, and initially screened by, home-delivered meals programs. Primary outcomes were: social interaction, subjective loneliness, and satisfaction with social support; secondary outcomes were depression severity and disability. Mixed-effects regression models were fit	Jun. 16, 2017 – Sep. 1, 2020	N = 89 older adults (averaging 74 years old). All participants reported loneliness; many reported being socially isolated and/or dissatisfaction with social support.	**

Article Title	Summary of Major Findings and Outcomes	Intervention	Study Design	Study Timeframe	Population	Result Type(s) ** Statistically significant ^^ Trended improvement ∅ No change
			to evaluate outcomes at follow-up.			
	Transportation					
Why Doctors Should Consider Giving Their Patients a Ride	- For every $1 invested in transportation, the hospital earned $7.68 in reimbursement. Investments include the cost of the transportation, as well as the cost to coordinate (human resources) the rides. - The return may be less for individual providers, but it still exists; $3.46 to $5.20 return in reimbursements for every $1 invested in transportation.	Used a third-party vendor to provide free transportation; the vendor, HealthTran, reached out to the patient and coordinated the best transportation option.	Return on investment analysis.	Started in 2014; data collected over 17 months	2,470 rides for patients receiving services	^^

APPENDIX B: BIBLIOGRAPHY

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APPENDIX C. INTERVIEW DISCUSSION GUIDE
MedPAC SDOH Interviews

Introduction

Welcome

- Hello and thank you for taking the time to speak with us today.
- My name is [*interviewer name*] and I work for a company called L&M Policy Research, a health services research and consulting firm in Washington, D.C.
- I'm also joined by my L&M colleagues [*names*] and [*Ledia Tabor or Geoff Gerhardt*] of MedPAC.

Background and Purpose of the Interview

- As I indicated via email and during our earlier discussion, L&M has been engaged by the Medicare Payment Advisory Commission (MedPAC) to gather information about the types of programs that health care organizations are implementing to address social needs and social determinants of health (SDOH) among the populations they serve. Specifically, we are speaking with several health systems, health plans, states, and other entities that serve Medicare patients and are actively engaged in SDOH interventions.
- This is a multi-phase project where we began with a broad literature review about SDOH interventions, and we also researched publicly available materials about specific organizations' SDOH interventions. In this next phase, we're following up directly with select organizations to fill in our knowledge gaps.
- The information we discuss today will help inform a report L&M is writing for MedPAC that will focus on SDOH interventions for Medicare populations. MedPAC will use the report as they consider whether Medicare policies can influence SDOH and social needs. So again, thank you for agreeing to talk with us, your participation in this interview is important in helping us understanding how [*organization name*] and other [*organization type*] address social needs.

Logistics

- Before we get started, I want to confirm with you that our discussion today should take approximately one hour.
- What we discuss today will be summarized in a final report for MedPAC. MedPAC knows which organizations we are speaking with, but in our report, we will not name specific organizations or individuals when we highlight key findings. We'll say things like, "we heard from a large health system in New England".

- We have a notetaker on the call but would like to record it for internal fact-checking purposes only. The recording will not be shared with anyone outside of the immediate research team. May I have your permission to record the call for notetaking purposes? Do you have any questions?

Warm Up

Interviewer: only ask this if there are new interviewees joining (we can refer to the screening call for details otherwise).

- Please take a moment to tell us about your background and your role within your organization.

Organization's Origin Story

Let's now talk more specifically about your organization's experience addressing social needs.

- We understand you are engaged in a number of interventions across your organization, and we would like to confirm our inventory (*interviewer quickly lists those identified in screening call*); have we missed any major initiatives or programs?
    - Today we would like to focus on (*insert the intervention that we will focus on and why*).
- Can you describe the organization's impetus to try to address social needs and SDOH?
- How do your efforts to address social needs and SDOH fit into the broader organization's strategic plan?
- Can you talk a bit about the specific social needs your efforts prioritize? (e.g., housing, employment/job training, education, food, transportation, neighborhood/community safety, violence intervention, literacy)

Approach and Intervention

Please tell us a bit about your organization's current approach to addressing SDOH and social needs. Specifically, we are interested in hearing about [*Interviewer: Insert language about a specific intervention based on our background research and screening processes*].

- How was the intervention selected? *Probe, if necessary:*
    - *Influencing factors:* What factors influenced the decision – did you use data; if so, what data? Stakeholder feedback?

- *Securing buy-in*: Within the organization, whose buy-in (divisions/departments) was particularly important to have at the outset? Were there external stakeholders whose buy-in was also needed?

- Can you describe the core aspects of the intervention so we can get a sense of the broad structure of how it functions?
  - *Planning:* How much time elapsed between gaining approval to move ahead and when you were ready to launch the initiative (i.e., how long did planning take)?
    - When did the intervention begin?
  - *Current state:* How would you describe the development stage of the intervention, e.g., are you at the point of design, implementation, evaluation, etc.?
  - *Oversight:* Where within the organization are SDOH interventions managed? (e.g., Quality Improvement, Population Health, Care/Transitions Management, other)
  - *Staffing:* How is the intervention staffed; meaning, what are the roles of the individuals who dedicate time to the effort?

- How do you identify individuals who would benefit from the intervention and what tools are used to identify social needs or SDOH? *Probe, if necessary:*
  - How is it determined which individuals should be screened?
  - Who conducts the screenings and where (e.g., in person at a clinic, outreach via call center)?
  - Who engages these [*patients, members, beneficiaries*] to participate in the program and how?
  - *If the organization has multiple interventions:* For individuals who could benefit from support in several areas, how do you match them to the most appropriate intervention?

- What stakeholders—internal and external—need to be engaged to make this intervention successful?
  - How do you facilitate their engagement?

- How is the intervention funded? (e.g., grants, internal budget, partner support, etc.)

Evaluation

Let's talk now a little about the data you use to monitor and evaluate your intervention. As a reminder, this is not an evaluation and there are not 'right' and 'wrong' responses – if the

intervention isn't yet at a place where you can answer some of these questions, it's fine to tell us that.

- What specific results or outcomes do you anticipate will be/are indicative of improvement? *Probe, if necessary:*
  - What are the metrics you're focused on?
  - How would you characterize the outcomes you're seeking? (e.g., clinical improvements, financial savings or costs avoided, patient experience, partnership-building)
  - Can you describe the findings thus far?
- What data are being collected to support assessment and evaluation? *Probe, if necessary:*
  - Does the organization track patients during and after the intervention?
  - To what extent do you use data to set improvement targets or change course?
    - Can you provide an example of how data has informed an improvement target or a course change?
- How would you describe the organization's ability to assess the efficacy of the intervention? *Probe, if necessary:*
  - Does the organization have prior experience with program assessment or evaluation?
  - Who/what group is responsible for monitoring and reporting on the intervention's progress?
- Can the intervention be replicated in other organizations, or by a different type of organization?
  - What would be most challenging to replicate?
- What is your perspective about whether the level (intensity, scope) of the intervention is sufficient to achieve the outcome the organization is seeking?

Sustainability and Next Steps

Before we wrap up, let's talk about what your perspective is on the future of the intervention and what you've learned from your experience thus far.

- What would you say your organization's next steps are as it relates to achieving the goals associated with the social needs and SDOH intervention?

- To what extent is the intervention sustainable?
- What lessons have you learned—related to implementing or evaluating an intervention—that you have not yet described?
    - What would you do differently next time and why?
- If you had a magic wand, what would you make happen from a policy standpoint at the federal level and state level to make your social needs and SDOH efforts sustainable?

Thank you for your time, this discussion has been extremely helpful for our team. Would it be okay if we get back in touch with you if we have some clarifying questions as we're reviewing our notes from the meeting?

APPENDIX D: DESCRIPTIVE LIST OF INTERVIEWEES

Organization Type	Geographic Presence
Health system and CMMI Accountable Health Community	Midwest
Health system	Northeast
Medicare Shared Savings Program ACO	West
Health plan*	National
Health system with Medicare Shared Savings Program ACOs	National
CMMI Accountable Health Community	West
Health plan*	Northeast
Health system	Midwest
State Medicaid agency	Southeast
Health plan* and Medicare Direct Contracting Entity	Midwest, Southwest, Southeast, Northeast

**All health plans interviewed offer Medicare Advantage products*

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