Clinical Interventions Addressing Nonmedical Health Determinants in Medicaid Managed Care

Laura M. Gottlieb, MD, MPH; Kim Garcia, MPH; Holly Wing, MA; and Rishi Manchanda, MD, MPH

ABSTRACT

Objectives: We aimed to examine how interventions addressing social determinants of health (SDH) have been adopted in the context of Medicaid managed care organizations (MMCOs), which serve a large proportion of patients with social and economic barriers to good health.

Study Design: We designed a systematic literature review to examine how SDH interventions have been adopted in MMCOs.

Methods: The review included published articles from PubMed, Scopus, and Business Source databases, as well as review articles published in the gray literature and articles recommended by the study's National Advisory Committee to identify interventions describing how MMCOs have invested in interventions that address patients' SDH. To be included in the review, an article had to describe an intervention that was based in the United States, be supported financially by an MMCO, focus on at least 1 SDH, and be integrated into clinical care delivery.

Results: Twenty-five programs were identified in either commercial Medicaid or Medicaid-only MCOs that involved interventions integrated into clinical care and related to SDH. Interventions varied widely in terms of target populations and target SDH, and rarely included rigorous evaluations. The majority of programs described "case management services" that did not clearly distinguish between the delivery of medical and social interventions.

Conclusions: Despite a growing interest in clinical interventions that address SDH, little information is available in the published literature about the extent to which these interventions have been adopted by MMCOs, where they are likely to have early traction based both on capitated funding structures and the low-income populations served.

Am J Manag Care. 2016;22(5):370-376

The World Health Organization's (WHO) Commission on the Social Determinants of Health has defined social determinants of health (SDH) as "the conditions in which people are born, grow, live, work, and age. These circumstances are shaped by the distribution of money, power, and resources at global, national, and local levels."[1] These conditions include social, economic, and environmental factors, such as income, education, housing, employment, transportation, and the physical layout of neighborhoods.

There is increasing evidence that SDH play a major role in the onset and progression of disease. Addressing SDH may help achieve the healthcare "Triple Aim"—improved healthcare quality for individuals and populations, and decreased healthcare costs.[2] Despite this, much of the field of social epidemiology—including that related to healthcare disparities—focuses on documenting the effects of SDH rather than on ways to change or intervene on exposures.[3]

Existing social interventions integrated into clinical settings—which range from interventions offering housing to homeless patients to on-site food pantries and legal services clinics—can expand the traditional bounds of healthcare to address "upstream" determinants of health, including social, behavioral, and environmental conditions.[4-6] Although the field of interventions related to nonmedical health determinants is growing in clinical settings around the country,[7] little is known about the operational and design characteristics that define them—particularly in the context of differing payer and provider environments. Understanding how SDH interventions are designed, implemented, funded, and scaled within distinct payer environments is key to translating the growing interest around the role and replication of SDH interventions in healthcare settings into a substantive, actionable strategy.

Based on distinct membership characteristics and financial incentives defining Medicaid managed care organizations (MMCOs), these payers may be particularly well-suited to

support integrated SDH approaches.[8] The populations served by MMCOs are disproportionately affected by poverty and associated material deprivation, including food and housing insecurity, poor habitability, unsafe drinking water, social exclusion, low education levels, and unemployment. These conditions are known to reduce opportunities, limit choices, and threaten health.[9] Additionally, over the last 15 years, there has been a nationwide increase in patients enrolled in MMCOs,[10] which already enroll about half of all Medicaid beneficiaries.[11] This combination of population needs and the shift toward risk-based care together encourage upstream intervention and prevention as one potential way to limit costly healthcare utilization.

Take-Away Points

Medicaid managed care organizations (MMCOs) have increasing incentives to support interventions addressing the social needs of the low-income patients they serve.

- MMCO investments are focused on social needs interventions for high healthcare utilizers and on members anticipated to become high utilizers based on specific health conditions like hypertension and diabetes.
- Few studies were identified to indicate that MMCOs are making organizational commitments to social screening or social interventions.
- More information is needed on MMCOs' organizational decision making around nonmedical health interventions, the funding streams supporting these interventions, and their impacts on health outcomes and health services use.

Despite the apparent alignment of these structural characteristics with low-income members' unmet social needs, there are multiple challenges limiting MMCOs from expanding social services.[12] New prevention services are not easily incorporated into MMCO-state capitation agreements, so MMCOs have to cover any additional benefits out of administrative or community benefit dollars. Coding practices and other administrative requirements for MMCOs can also make it difficult to adopt new prevention services. Furthermore, any financial return related to social service investments may take many years to realize, which can decrease the financial feasibility of adoption. Finally, MMCO care delivery models, financing contracts, and organizational structures (which may span several states) can make community collaborations and public partnerships—often critical to a comprehensive approach to social service delivery—more challenging.

A Systematic Review of Clinical Interventions Addressing Nonmedical Health Determinants

Reviews completed to-date on clinical SDH interventions have offered an important glimpse into the range of potential interventions and funding mechanisms in this emerging field, but have not answered key questions about the implementation of these interventions, their financial drivers, and other characteristics specific to the context of MMCOs.[7,13,14] We conducted a systematic review to identify published literature on clinical SDH interventions supported by MMCOs, the design and integration of these programs into healthcare delivery systems, and the determinants addressed and the target populations served by these programs. Our aim was to inform health policy decision makers around incentivizing these programs for broader dissemination.

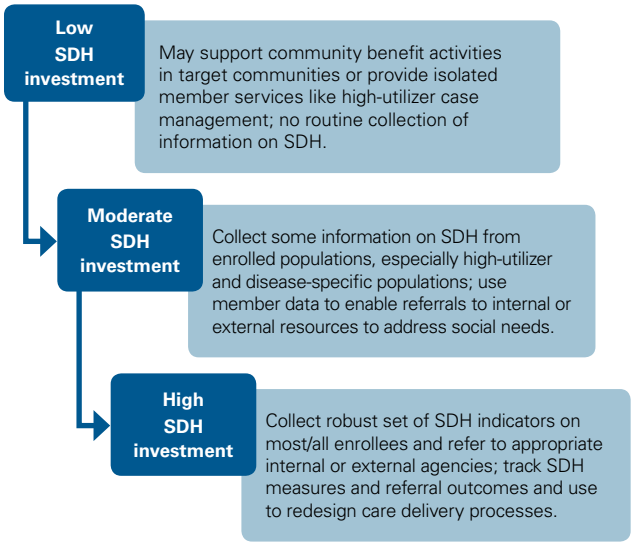
Based on previous research in the area of clinical SDH interventions, models of organizational readiness for change,[15] and an assessment of existing MMCO structural incentives and barriers to incorporating these interventions into routine activities, we developed a theoretical model outlining the range of ways that MMCOs might engage in activities related to SDH (**Figure 1**). We hypothesized that most MMCOs would be making low-SDH investments, given the relatively recent increase in SDH research.

METHODS

We conducted a literature review examining how commercial and Medicaid-only MMCOs invest in interventions that address SDH for their patients or their network clinics' patients. To be included in our review, an intervention or program had to meet our inclusion criteria: a) based in the United States, b) financially supported by an MMCO, c) address at least 1 social determinant of health (housing, employment, food, education, safety, legal services, or transportation), and d) be integrated into the healthcare services delivery system. The definition of SDH varies in different contexts, so we focused our search on SDH not typically addressed within the current healthcare delivery system. As a result, we excluded papers describing interventions related to health behaviors, including behaviors like tobacco use and physical activity. We also excluded papers describing interventions exclusively related to healthcare access. Clinical integration meant that a patient's social need was identified within the clinical setting and then either referred to an external intervention program or to a social intervention conducted in the clinical setting.

We developed an electronic search strategy to scan for references in the following databases: PubMed, Scopus, and Business Source. We limited our search to publications dated 2000 to 2014 and we combined search terms using "AND" to capture at least 1 term from each of 3 major categories: SDH, healthcare settings, and intervention studies (see **eAppendix** for more detail [eAppendices

Figure 1. Levels of MMCO Investment in SDH Programs



MMCO indicates Medicaid managed care organization; SDH, social determinants of health.

available at **www.ajmc.com**]). Funding source was added as an element of the detailed data extraction process on references meeting other review criteria. References were also collected from national experts in the field, including the study's national advisory group.

Our review methods included a hierarchical exclusion process. Titles and abstracts of references collected from the electronic search strategy and the national study advisory group were assessed initially based on whether or not they described an SDH program or other intervention. Where the title and abstract were insufficient to deduce if they referred to an intervention, the full-text article was reviewed. Those references that referred to SDH but did not describe an intervention were excluded; in other words, articles were excluded if they only described theories of SDH or studies on risk factors and disparities without describing any specific intervention or program addressing those risk factors or disparities.

Remaining references were excluded if they did not describe an intervention or program addressing at least 1 SDH. For example, references were excluded if interventions or programs focused exclusively on medical care and services, such as treatments, immunizations, or health behaviors; described quality improvement interventions without an SDH component, such as guidelines intended to improve clinical care coordination that did not address social needs; or exclusively described healthcare access interventions or outreach programs, such as mobile health services or Medicaid enrollment programs.

References describing an intervention addressing SDH underwent review of the full-text article to determine the degree of clinical integration and financial support from an MMCO. Those interventions or programs without any description of clinical integration or MMCO support were excluded from the final data set. For instance, interventions and programs that were community-based and had no integration with clinic-related work flows related to screening, intervention, referral, or tracking, were excluded. Two investigators reviewed each article included to determine if it met all inclusion criteria. A third investigator reviewed any articles where the reviewing investigators were in disagreement; in these cases, final decisions were made about inclusion after discussion between all reviewers. Interventions described in more than 1 reference were only counted once.

For those interventions and programs meeting inclusion criteria, we collected a detailed set of program data, including intervention name, organization, name/state of MMCO, HHS region, clinic setting, program start date, description of the intervention or program, target population, target SDH, level of intervention/prevention (primary, secondary, tertiary), model of intervention (social and/or medical approaches), level of clinical integration (extent to which clinical providers identify/address social need), study citation, study design, study findings, and an assessment of evidence quality based on the Community Guide to Preventive Services evidence rating guide (high, medium, low quality).

Findings

The electronic search strategy yielded 3975 unique references from PubMed, Scopus, and Business Source (**Figure 2**). References from our national experts included, but were not limited to, reports from the Association for Community Affiliated Health Plans, Alliance of Community Health Plans, Medicaid Health Plans of America, Manatt Health Solutions, and the Institute for Alternative Futures.

A total of 111 articles were identified that included SDH interventions. These 111 articles were screened to determine whether they described interventions integrated into healthcare delivery systems and whether they were funded by MMCOs. Although many described serving Medicaid populations, only 13 articles described Medicaid managed care–supported interventions addressing SDH integrated within a clinical setting. The final data set included 25 interventions and programs described within those 13 articles.[12,16-27] Seven references described 1 prima-

ry SDH-focused intervention or program[12,16-18,21,22,26] and 6 references described more than 1 intervention.[19,20,23-25,27]

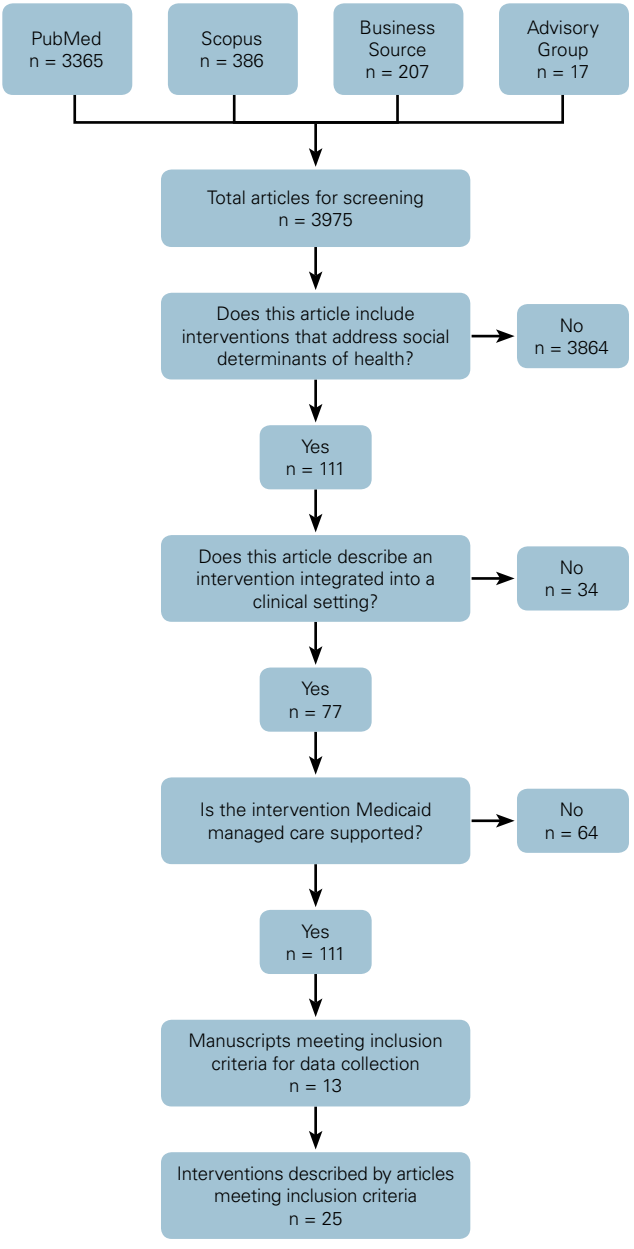
Targeted Populations, Targeted Social Determinants, and Intervention Models

Target populations included specific demographically defined groups—primarily low-income individuals, children, or families. Other population groups included seniors, minority groups (racial, ethnic), those experiencing homelessness, and those who were broadly eligible for Medicaid. Some interventions defined target populations based on healthcare utilization patterns (eg, high-cost, high-utilizer), while others focused on patients with specific health conditions (eg, asthma, hypertension, diabetes and other dietary-related chronic health issues, HIV, multiple sclerosis, mental illness).

Seven interventions specifically targeted a single social issue, such as housing (4),[12,21,23] food quality and availability (2),[23] and employment (1).[23] The remaining 18 interventions provided more comprehensive services to address multiple SDH. Interventions varied widely in how they addressed SDH within the clinical setting. Specific intervention components included variations on team-based approaches, including case managers, social workers, community health workers, and other nonprofessional staff integrated into clinical teams—although the degree of integration and communication with other clinical staff was rarely described. Intervention settings also differed across programs, including both training and education delivered on site, referrals to off-site programs, and home visits.

The majority of the programs identified were designed to address both social and medical needs of the patients being served. For example, asthma programs typically included elements focused on pharmacological management and specific housing risk factor reduction.[21] Other case management programs were designed to facilitate pharmacy and appointment access in addition to social service linkages.[17,20,27]

Figure 2. Search Results



Evaluation

Eleven program descriptions included some empirical evaluation indicating effects of the intervention on health system outcomes. Five program evaluations reported reductions in emergency department (ED) visits[16-19] and reductions in hospital admissions.[16,17,19,20] The impact of 1 home-based intervention targeting high-risk asthma patients on ED use and hospital admissions reported mixed results. Although the initial evaluation of enrollees' pre- and post-utilization patterns showed significant reductions in hospital admissions and ED visits, a subsequent, more rigorous evaluation comparing an intervention group with an untreated control group found no overall differences in utilization patterns between the 2 groups.[21] Several programs reported cost savings associated with changes in enrollee utilization patterns.[16,17,19,20,22,23] Three studies described higher levels of patient satisfaction as a result of social intervention programs,[18,22,23] and 1 study reported an increase in quality of care.[18] The majority of program descriptions included no outcomes data or other return-on-investment information. The eAppendix includes a complete list of interventions and programs included in this review (eAppendix Table 1).

DISCUSSION

This study provides an overview of ways in which MMCOs help address patients' nonmedical needs by using healthcare services as a venue for social needs screening and related social needs interventions. The 25 programs captured are geographically dispersed across the United States and across multiple MMCOs. The strong majority of programs identified target high healthcare–utilizing patients with specific chronic health conditions. Within target disease groups, programs frequently focus on specific racial or ethnic groups and low-income, homeless, or other specific sociodemographically defined populations. The existing literature provides no empirical data showing that MMCOs engage in universal social screening, needs assessments, or resource mobilization to address the social needs of all members. Based on our theoretical model, these findings suggest that MMCOs are making low, or at most, low to moderate investments in SDH interventions and are not yet systematically engaged in comprehensive SDH strategies to improve health or change healthcare utilization patterns of enrolled patients.

This review differs from previous reports examining SDH interventions in 2 important ways. First, it focuses exclusively on MMCOs because these organizations are relatively well-positioned and incentivized to address the social needs of their patient populations to improve healthcare outcomes and service utilization. Although we found many interventions and programs addressing SDH that serve Medicaid patients, this review focuses on the few that are financed or directly supported by MMCOs. Second, the review focuses on programs that have at least some degree of clinical integration, meaning that individual patients are being screened for social needs and connected with relevant services based on being patients in a clinical care delivery system. Understanding the degree to which SDH programs are clinically integrated is key for MMCOs, which must decide whether spending on SDH interventions will be linked to a plan's patient care and quality improvement activities or to its community benefit activities. Previous reports describing and examining innovations in addressing SDH have either not been specific to MMCOs or have included both clinical and community-level interventions.[7,9,13,23]

The 25 program descriptions we identified provide little detail on key program characteristics or MMCO decision-making processes that could help establish and disseminate best practices, such as the role of internal or external financial or other drivers or barriers to undertaking these interventions; any relevant community needs assessments on which interventions are based; or the role of executive sponsors, project owners, and key stakeholders in shaping the interventions. Similarly absent are descriptions of the return-on-investment calculations required to sustain these types of programs. This lack of information on organizational decision making, "readiness" assessments, and management processes, combined with the lack of rigorous evaluation of the impacts that these types of interventions have on health outcomes or health services, limits the capacity to understand and disseminate best practices in SDH-related interventions among MMCOs.

Our review revealed several reports of case management programs for high-risk patient populations that include both social and medical components. This blended approach of social and medical case management may be an important target for scaling nonmedical health interventions within MMCOs. A recent report from John Snow, Inc (JSI) suggests that these services elicit a better response from clients if initiated at the provider level rather than at the payer level, which could incentivize MMCOs to fund provider-delivered programs.[13] Both the JSI report and a related Commonwealth Fund issue brief authored by the Center for Health Care Strategies further suggest that the absence of assured flexible use of Medicaid managed care capitation rates may prevent MMCOs from transitioning from traditional case management of medical services to case management that includes behavioral and social needs coordination.[13,14]

Ensuring flexible funding for managed care capitation rates could improve MMCO case management programs that address a combination of patient medical and social needs. This funding may be accessible via the Affordable Care Act's Health Homes program, which does require both comprehensive care management and increased referrals to community and social support services[28]; the Health Homes program already supports intensive case management activities in 19 states,[28] though only 1 was identified in this systematic review.[29]

Limitations

References meeting our inclusion criteria show wide variation in associated key words and terms, which made it difficult to develop a comprehensive, practical electronic search strategy. The WHO definition of SDH is very broad, and the process of translating that broad concept into meaningful search terms that capture specific social determinants interventions is complex. Furthermore, some MMCOs may choose not to publish information regarding successful programs in order to maintain advantage in a competitive marketplace. To minimize the challenges inherent to this search strategy, we supplemented the elec-

tronic search using references provided by national experts. Nevertheless, there could be programs that meet our inclusion criteria that were not identified by these methods.

Our methods included a hierarchical exclusion process: references were initially assessed based on whether or not they described an SDH program or other intervention. Those that referred to SDH but did not describe an intervention were excluded. Remaining articles were then reviewed to determine whether there was some degree of clinical integration for the intervention. In the 25 programs captured, there was a considerable range in the extent to which clinical integration was described. For example, one program simply said that a social worker was added to care teams (article not included), while another program more clearly described the integration, including information about how the social worker addressed patients' social needs (article included). It is possible that some programs were clinically integrated, but the integration was insufficiently described in the reference article to justify inclusion. Future efforts should supplement available information via key informant interviews, organizations' annual reports, or other data sources. The lack of existing information may negatively influence dissemination or quality improvement efforts.

Additionally, many references in the original search did not include a description of the funding mechanism for the program. In other cases, funding was from a source other than Medicaid managed care entities. Interventions that met the other inclusion criteria but were not clearly funded by MMCOs are listed in **eAppendix Table 2**. To improve scaling and dissemination efforts, journals may consider requiring reporting of funding mechanisms.

CONCLUSIONS

This review is an important first step toward understanding how MMCOs are making investments in clinical nonmedical health determinants. Although risk-based capitated payment systems serving low-income populations provide incentives for incorporating models to address SDH, real and perceived local, state, and federal barriers can dis-incentivize adoption. In the context of increasing federal and state funding experimentation supporting Medicaid investments in SDH, MMCOs hoping to invest in these interventions will require detailed implementation, operations, scaling, and sustainability descriptions from other programs that have begun to make these investments.

Acknowledgments

The authors wish to thank Stephanie Chernitskiy for her editing and assistance with the paper's figures and Beena Patel for her assistance in the literature review. Support for this study was provided by the Commonwealth Fund.

Author Affiliations: Center for Health and Community (LMG, KG, HW) and Department of Family and Community Medicine (LMG), University of California, San Francisco, CA; HealthBegins (RM), Studio City, CA.

Source of Funding: Support for this study was provided by the Commonwealth Fund.

Author Disclosures: The authors report no relationship or financial interest with any entity that would pose a conflict of interest with the subject matter of this article.

Authorship Information: Concept and design (LMG, RM); acquisition of data (LMG, KG, RM); analysis and interpretation of data (LMG, KG, HW, RM); drafting of the manuscript (LMG, KG, HW); critical revision of the manuscript for important intellectual content (LMG, HW, RM); obtaining funding (LMG); administrative, technical, or logistic support (HW, RM); and supervision (LMG).

Address correspondence to: Laura M. Gottlieb, MD, MPH, Center for Health and Community, University of California, San Francisco, 3333 California St, Ste 465, San Francisco, CA 94118. E-mail: laura.gottlieb@ucsf.edu.

REFERENCES

1. World Health Organization; Commission on Social Determinants of Health. Closing the gap in a generation: health equity through action on the social determinants of health. WHO website. http://www.who.int/social_determinants/thecommission/finalreport/en/. Published 2008. Accessed April 22, 2016.

2. McCarthy D, Klein S. The Triple Aim journey: improving population health and patients' experience of care, while reducing costs. The Commonwealth Fund website. http://www.commonwealthfund.org/publications/case-studies/2010/jul/triple-aim-improving-population-health. Published July 22, 2010. Accessed November 2, 2015.

3. Nandi A, Harper S. How consequential is social epidemiology? a review of recent evidence. *Curr Epidemiol Rep.* 2015;2:61-70. doi: 10.1007/s40471-014-0031-3.

4. Manchanda R. The upstream doctors: medical innovators track sickness to its source. Presented at: TEDSalon NY2014; August 2014. https://www.ted.com/talks/rishi_manchanda_what_makes_us_get_sick_look_upstream?language=en. Accessed April 22, 2016.

5. Bachrach D, Pfister H, Wallis K, Lipson M; Manatt Health Solutions. Addressing social determinants of health: the business case for provider investment. The Commonwealth Fund website. http://www.commonwealthfund.org/~/media/files/publications/fund-report/2014/may/1749_bachrach_addressing_patients_social_needs_v2.pdf. Published May 2014. Accessed November 2, 2015.

6. Onie R, Farmer P, Behforouz H. Realigning health with care. Stanford Social Innovation Review website. http://www.ssireview.org/articles/entry/realigning_health_with_care. Published 2012. Accessed November 2, 2015.

7. Community health centers: leveraging the social determinants of health. Institute for Alternative Futures website. http://www.altfutures.org/pubs/leveragingSDH/IAF-CHCsLeveragingSDH.pdf. Published March 2012. Accessed November 2, 2015.

8. Role of Medicaid health plans in patient-centered medical homes. Medicaid Health Plans of America website. http://www.mhpa.org/_upload/MHPA Medical Home White paper FINAL4.pdf. Published September 2010. Accessed November 2, 2015.

9. Loppie Reading C, Wien F. Health inequalities and social determinants of aboriginal people's health. National Collaborating Centre for Aboriginal Health website. http://www.nccah-ccnsa.ca/docs/social determinates/NCCAH-loppie-Wien_report.pdf. Published 2009. Accessed November 2, 2015.

10. Kaiser Commission on Medicaid and the uninsured: Medicaid managed care: key data, trends, and issues. Kaiser Family Foundation website. http://kaiserfamilyfoundation.files.wordpress.com/2013/01/8046-02.pdf. Published February 2012. Accessed November 2, 2015.

11. The scope of Medicaid managed care. Medicaid Health Plans of America website. http://www.mhpa.org/_upload/Medicaid Managed Care Primer February 2013 Sec 2 Scope.pdf. Published 2013. Accessed November 2, 2015.

12. Burton A, Chang DI, Gratale D. Medicaid funding of community-based prevention: myths, state successes overcoming barriers and

the promise of integrated payment models. Nemours website. http://www.nemours.org/content/dam/nemours/wwwv2/filebox/about/Medicaid_Funding_of_Community-Based_Prevention_Final.pdf. Published 2013. Accessed November 2, 2015.

13. Tobey R, Maxwell J, Bateman C, Barron C. Opportunities for whole-person care in California. John Snow, Inc website. http://jsi.com/JSIInternet/Inc/Common/_download_pub.cfm?id=14817&lid=3. Published September 2014. Accessed November 2, 2015.

14. McGinnis T, Crawford M, Somers SA. A state policy framework for integrating health and social services. *Issue Brief (Commonw Fund).* 2014;14:1-9.

15. Weiner BJ. A theory of organizational readiness for change. *Implement Sci.* 2009;4:67. doi: 10.1186/1748-5908-4-67.

16. Bielaszka-DuVernay C. Vermont's blueprint for medical homes, community health teams, and better health at lower cost. *Health Aff (Millwood).* 2011;30(3):383-386. doi: 10.1377/hlthaff.2011.0169.

17. Johnson D, Saavedra P, Sun E, et al. Community health workers and Medicaid managed care in New Mexico. *J Community Health.* 2012;37(3):563-571. doi: 10.1007/s10900-011-9484-1.

18. Sandberg SF, Erikson C, Owen R, et al. Hennepin Health: a safety-net accountable care organization for the expanded Medicaid population. *Health Aff (Millwood).* 2014;33(11):1975-1984. doi: 10.1377/hlthaff.2014.0648.

19. Community health plan strategies for improving mental health: case studies in improving care, reducing mental illness stigma. Alliance of Community Health Plans website. http://www.achp.org/publications/community-health-plan-strategies-improving-mental-health-2/. Published November 12, 2014. Accessed November 2, 2015.

20. Meyer H. A new care paradigm slashes hospital use and nursing home stays for the elderly and the physically and mentally disabled. *Health Aff (Millwood).* 2011;30(3):412-415. doi: 10.1377/hlthaff.2011.0113.

21. Catov JM, Marsh GM, Youk AO, Huffman VY. Asthma home teaching: two evaluation approaches. *Dis Manag.* 2005;8(3):178-187.

22. Grimes KE, Mullin B. MHSPY: a children's health initiative for maintaining at-risk youth in the community. *J Behav Health Serv Res.* 2006;33(2):196-212.

23. The Menges Group. Positively impacting social determinants of health: how safety net health plans lead the way. Association for Community Affiliated Plans website. http://www.communityplans.net/Portals/0/Fact%20Sheets/ACAP_Plans_and_Social_Determinants_of_Health.pdf. Published June 2014. Accessed April 22, 2016.

24. Craig C, Eby D, Whittington J. Care coordination model: better care at lower cost for people with multiple health and social needs. Institute for Healthcare Improvement website. http://www.ihi.org/resources/pages/ihiwhitepapers/ihicarecoordinationmodelwhitepaper.aspx. Published 2011. Accessed April 22, 2016.

25. Eyster L, Bovbjerg RR. Promising approaches to integrating community health workers into health systems: four case studies. The Urban Institute website. http://www.urban.org/research/publication/promising-approaches-integrating-community-health-workers-health-systems-four-case-studies. Published March 26, 2014. Accessed April 22, 2016.

26. Burke G, Cavanaugh S. The Adirondack Medical Home Demonstration: a case study. United Hospital Fund website. http://www.uhfnyc.org/assets/888. Published 2011. Accessed November 2, 2015.

27. ACAP fact sheet: safety net health plan efforts to reduce avoidable emergency department utilization. Association for Community Affiliated Plans website. http://www.communityplans.net/Portals/0/Fact%20Sheets/ACAP-Reducing_Avoidable_ER_Utilization.pdf. Published 2014. Accessed November 2, 2015.

28. Health Homes. Medicaid.gov website http://www.medicaid.gov/Medicaid-CHIP-Program-Information/By-Topics/Long-Term-Services-and-Supports/Integrating-Care/Health-Homes/Health-Homes.html. Accessed October 21, 2015.

29. What is a Health Home program? Washington State Health Care Authority website. http://www.hca.wa.gov/medicaid/health_homes/Pages/index.aspx. Accessed January 30, 2015. ■

www.ajmc.com Full text and PDF

eAppendix

Search terms for "social determinants of health":

"social determinant*" OR "social service*" OR "socioeconomic factors*" OR "patient advocacy*" OR "social welfare*" OR "educational status" OR "employment" OR "food" OR "housing" OR "domestic violence" OR "child, preschool" OR "public assistance"

Search terms for "health care settings":

"health care" OR "primary health care" OR "primary care" OR "medical care" OR "medical home" OR "patient-centered care*" OR "health services needs and demand" OR "patient care team" OR "urban health services*" OR "delivery of health care, integrated" OR "community health services" OR "patient-centered medical home"

Search terms for "interventions":

"interventions*" OR "organizational case studies" OR "program development/methods" OR "referral and consultation/utilization" OR "pilot projects*" OR "needs assessment"

Table 1. Interventions and Programs Addressing Social Determinants of Health in Clinical Settings

Target Social Determinant(s)	Intervention Name	Intervention Description	Staff/Workforce	Target Population	Evaluation Metrics	Outcomes
Employment	Employment of Enrollees as Outreach Staff[1]	Health plan employs enrollees to serve in community-support roles (peer specialists, community health outreach workers, health navigators and Member Advisory Council participants)	Health plan staff	HIV-positive members	Not presented	N/A
Food	Diabetic Food Pack Program[1]	Care management team provides diabetic friendly food pack at quarterly visits	Patient navigators, primary case manager, diabetes disease management nurses	High-risk members with diabetes (type not specified)	Patient satisfaction	Preliminary descriptive survey data results of 80 patients were reported. 88% of participants were satisfied or extremely satisfied with diabetic food pack; 65% of participants were satisfied or extremely satisfied with education given in conjunction with food pack; 72% of participants were satisfied or extremely satisfied with variety of food provided; and 64% were satisfied or extremely satisfied with the quality of food provided.
Food	Food Rx Program[1]	Physicians provide members with food vouchers and education around shopping for and preparing nutritious food	Physicians	Food insecure members and/or members with chronic health issues related to diet	Not presented	N/A
Housing	Asthma Home Teaching[2]	Respiratory therapist conducts home environment assessments for asthma triggers, provides intensive education about asthma and self-	Respiratory therapist	Medicaid-managed care asthma patients considered high risk	Administrative data (demographic enrollment data, medical claims) were used for analysis were compared at	Two quasi-experimental studies reported mixed findings. One group pre/posttest design on enrolled members found significant reductions in ED visits and hospital admissions (P <.001). An additional treatment-control group comparison

		management and works with physician to create action plans			baseline and up to 12 months following completion of the intervention	study with pre/post tests found no overall difference in hospital admissions, ED, PCP or specialist visits between groups.
Housing	Community Asthma Initiative[3]	Nurses or community health workers assess the families' homes for asthma triggers, provide asthma remediation items (eg, HEPA vacuum, bedding encasements), and connect families to community-based services.	Nurses, community health workers	Low-income children with asthma	Not presented	N/A
Housing	Community Care Settings[1]	Community-based organization partners assist health plan members to transition to less-restrictive residential settings.	Health Plan of San Mateo, staff of skilled nursing facilities	Health plan members living in institutions, such as skilled nursing facilities, and who could live in the community with adequate supports	Not presented	N/A
Housing	Shelter Plus Care (University of Pittsburgh Medical Center - UPMC For You)[1]	Primary care practice provides care coordination and health services. Housing subsidies provided by HUD	Primary practice professionals, registered nurse, case manager	Members with a high level of need, including people who are frequently hospitalized and who meet criteria for homelessness (as defined by Community Health Services and the local Housing and Urban Development authority)	Per-member-per-month (PMPM) claims costs associated with utilization patterns.	An observational evaluation of 22 enrollees' utilization patterns for the six months prior to entering the program, the first six months in the program, and the next six-month period (7-12 months) showed a 23% reduction in PMPM claims costs. Program enrollees averaged PMPM costs of roughly $4100 prior to program participation versus PMPM costs of approximately $3200 while enrolled in the program.
Multiple SDH	Client Support Assistants[4]	Community health workers (CHW) assess	Medical director, health services	Members who are high utilizers of	ED utilization and payment, inpatient	Retrospective study of utilization and payment of 448 enrollees from

		members' needs and provide training/education, referrals and linkages to community and plan based services	director (RN), care coordinator, community health workers	emergency departments	utilization and payment, prescription counts and payment, narcotic counts and payments, PCP visits and payment, specialist (non-PCP) visits and payment	6-months before to 6-months after CHW intervention showed a reduction in costs in all categories. Additional retrospective analysis of 448 high utilizers who did not receive intervention also showed a decline in costs on these measures. While ED counts and cost reductions did not differ between the two groups, there was a larger decrease in enrolled patients' in-patient, prescription and narcotic counts and costs, and a significantly larger reduction in resource utilization in each category. Office visits to PCPs and to specialists declined in the non-CHW group by about 50%, but showed no significant change in the CHW group.
Multiple SDH	Care Coordination Model: CareOregon[5]	Case management team provides training/education, service coordination and assists with access to care	Registered nurse, behaviorist, healthcare guide (primary staff person dependent on nature of member's challenges)	High-risk Medicaid managed care and dual eligible members	Not presented	N/A
Multiple SDH	Project Connect[1]	Case managers provide outreach and assistance	Case managers	Medically needy members experiencing homelessness	Not presented	N/A
Multiple SDH	Community Health Workers in Durham[6]	Community health workers identify needs and provide training/education, referrals/linkages to community services and resources	Community health workers (nurses, social workers, educators)	High risk and high cost members with recent hospital discharge	Not presented	N/A
Multiple SDH	Complex Care	Multidisciplinary care	Wraparound clinical	Adults and child	Not presented (too	N/A

	Needs[7]	team provides medical and social support services	and support staff	members with multiple chronic illnesses, many with mental health and substance abuse needs	new to evaluate at the time of publication)	
Multiple SDH	Adirondack Medical Home Demonstration[8]	Case management team provides care coordination including social services consultations	Team of providers led by a physician with whom patient has an ongoing relationship	Members with chronic diseases who require ongoing surveillance	Not presented	N/A
Multiple SDH	Individualized Family Service Plan[1]	Care managers provide link between plan and members to ensure access to needed services	Care managers, speech therapist, physical therapist, occupational therapist	Child members with special needs and disabilities up to the age of 26 years	Not presented	N/A
Multiple SDH	Hennepin Health[9]	Interdisciplinary care coordination teams located in primary care clinics assess and provide links to nonclinical services such as housing and vocational assistance	Registered nurse care coordinators, clinical social workers, community health workers, housing or social service navigator, vocational services counselor	Low-, intermediate-, and high-risk members	ED visits; outpatient visits hospitalizations quality of care for patients with chronic conditions social services; satisfaction with care.	Comparisons of observational data of enrollees collected over the first year showed a 9.1% decrease in ED visits; 3.3% increase in outpatient visits; no change in hospitalizations; 8%-12% increase in optimal chronic care delivery; and high patient satisfaction scores.
Multiple SDH	Disability Care Program[7]	Multidisciplinary care team provides social support services based on individual patient needs	Multidisciplinary teams	Nonelderly adult members with severe physical disabilities, including congenital anomalies, neuromuscular disorders, and spinal cord injuries	Number of hospitalizations, monthly medical spending	Unpublished data show cost savings associated with the program. The total monthly costs were $3601 in 2008 for program patients, versus $5210 for Medicaid fee-for-service patients with conditions of similar severity.
Multiple SDH	Just For Us[6]	Multidisciplinary care team identifies social issues and provides referrals/linkages to	Physician, physician assistant, nurse practitioner, social worker, registered	Homebound elderly and disabled members	Not presented	N/A

		support services	dietician, occupational therapist, and community health workers			
Multiple SDH	Massachusetts Mental Health Services Program for Youth (MHSPY)[10]	Case management includes home visits, the identification of social needs and natural supports such as teachers, neighbors, state agency staff who are linked into care team	Family coordinator, care manager	Child members between the ages of 3 and 18	Service utilization: standard claims processing categories and location of service. Cost: financial data on salary, program operations expense and individual service delivery costs. Participant satisfaction.	Observational and descriptive data showed a 50% reduction in MHSPY enrollee days spent in placements not covered under the MHSPY benefit (including foster care, residential, group home, detention, jail, pre-independent living, assessment, secure treatment, or boot camp). Enrollee expenses averaged 50%-60% less than similar youth in more restrictive settings. Approximately 81% of the graduating youth and 68% of other MHSPY youth remain in their homes after leaving the MHSPY program. High levels of satisfaction were reported by parents and youth enrolled in the program.
Multiple SDH	Senior Care Options[7]	Case managers conduct home visits, assess medical, social, behavioral and support needs, and provide referrals/linkages to community or plan based services	Nurse practitioners, multidisciplinary teams	Members aged 65+, most dual eligible	Number of hospitalizations, nursing home placements	Unpublished data for Senior Care Options from 2007 found the number of hospital days per 1000 members as equal to 55% of the number hospital days for comparable patients cared for in fee-for-service payment environments. Senior Care Options also reported the rate of nursing home placements as 30% the rate of comparable seniors in Medicaid fee-for-service environments from 2005-2009. Total medical spending in Senior Care Options for seniors eligible for nursing home placements from 2004-2009, as well as ambulatory seniors from 2006-2009, grew by a much lower annual rate than fee-for-service growth rates.

Multiple SDH	Vermont Blueprint for Health[11]	Multidisciplinary community health teams assess individual social needs and provide referrals/linkage to community based support services	Community health teams vary by location, but typically include nurse coordinators, behavioral health counselors, and social workers	All Medicaid members in pilot sites	Utilization patterns and costs (hospital admission, ED visits per 1000 patients, inpatient use and associated costs)	Utilization patterns and costs from one year to the next were analyzed for the first pilot program. Hospital admissions and ED visits per 1000 patients and related PMPM costs decreased significantly. Inpatient use decreased by 21% and associated PMPM costs decreased by 22%. ED use and PMPM costs declined 31% and 36% respectively. Overall use and PMPM costs fell 8.9 % and 11.6% respectively.
Multiple SDH, including housing	Recuperative Care Program[5]	Case management team provides immediate housing and assistance overcoming social barriers associated with return ED visits	Lead case manager with a social work or emergency medical technician background, an internist, social work interns, and a full-time volunteer	Members who are medically ready to leave the hospital, but have ongoing recuperation needs and are experiencing homelessness	Not presented	N/A
Multiple SDH, including housing	CareOregon Health Resilience Program[12]	Health Resilience Specialists conduct home and community-based visits to assist members with unique set of challenges	Health Resilience Specialist = Social worker	Severely mentally ill members who are high utilizers	Hospital inpatient visits and ED visits/year	Observational analysis of participant utilization patterns showed reductions in inpatient admissions and ED visits after one year of work with a Health Resilience Specialist. Prior to enrolling in the program, participants averaged 3.1 hospital inpatient admissions and 13.1 ED visits each year. One year after the initial intervention, enrollees averaged one hospital inpatient admission and 5.8 ED visits per year.
Multiple SDH	Capital District Physicians' Health Plan (CDPHP)[12]	Case manager creates collaborative link with social service and housing agencies, mental health case management programs and family members involved in care	Behavioral health case manager	Severely mentally ill members who are high utilizers	Inpatient admissions and ED visits, cost savings, ongoing engagement in treatment	Observational analysis of participant utilization patterns showed a reduction in hospital admissions in the year following enrollment—83% of patients engaged in case management did not have another hospital admission, and 76% had a reduction in ED visits; almost half of

						whom had no ED visits. An average cost savings of $1154 per person was attributed to these reductions. More than half of referred patients in 2012 engaged in behavioral health treatment.
Multiple SDH	Community Health Plan of Washington State Health Homes Programs[13]	Comprehensive case management and care coordination, including referrals to social services	Care managers	High-cost/high-need members	N/A	N/A
Multiple SDH	Gold Coast Health Plan Health Navigator Program[13]	Care coordinators, assist ED high utilizers in accessing primary care services and other social service needs	Lay health workers	Members who are high ED, high utilizers	N/A	N/A

REFERENCES: EAPPENDIX TABLE 1

1. The Menges Group. Positively Impacting Social Determinants of Health: How Safety Net Health Plans Lead the Way. 2014. http://www.communityplans.net/Portals/0/Fact%20Sheets/ACAP_Plans_and_Social_Determinants_of_Health.pdf. Accessed April 22, 2016.
2. Catov JM, Marsh GM, Youk AO, Huffman VY. Asthma home teaching: two evaluation approaches. *Dis Manag*. 2005;8(3):178-187.
3. Burton A, Chang DI, Gratale D. Medicaid funding of community-based prevention: myths, state successes overcoming barriers and the promise of integrated payment models. Nemours website. https://www.nemours.org/content/dam/nemours/wwwv2/filebox/about/Medicaid_Funding_of_Community-Based_Prevention_Final.pdf. Published June 2013. Accessed April 22, 2016.
4. Johnson D, Saavedra P, Sun E, et al. Community health workers and Medicaid managed care in New Mexico. *J Community Health.* 2012;37(3):563-571. doi: 10.1007/s10900-011-9484-1.
5. Craig C, Eby D, Whittington J. Care Coordination Model: better care at lower cost for people with multiple health and social needs. Institute for Healthcare Improvement website. http://www.ihi.org/resources/pages/ihiwhitepapers/ihicarecoordinationmodelwhitepaper.aspx. Published 2011. Accessed April 22, 2016.
6. Eyster L, Bovbjerg RR. Promising approaches to integrating community health workers into health systems: four case studies. The Urban Institute website. http://www.urban.org/research/publication/promising-approaches-integrating-community-health-workers-health-systems-four-case-studies/view/full_report. Accessed April 22, 2016.
7. Meyer H. A new care paradigm slashes hospital use and nursing home stays for the elderly and the physically and mentally disabled. *Health Aff (Millwood).* 2011;30(3):412-415. doi: 10.1377/hlthaff.2011.0113.
8. Burke G, Cavanaugh S. The Adirondack Medical Home Demonstration: a case study. United Hospital Fund website. http://www.uhfnyc.org/assets/888. Published 2011. Accessed November 2, 2015.
9. Sandberg SF, Erikson C, Owen R, et al. Hennepin Health: A safety-net accountable care organization for the expanded Medicaid population. *Health Aff (Millwood).* 2014;33(11):1975-1984. doi: 10.1377/hlthaff.2014.0648.
10. Grimes KE, Mullin B. MHSPY: A children's health initiative for maintaining at-risk youth in the community. *J Behav Health Serv Res.* 2006;33(2):196-212.
11. Bielaszka-DuVernay C. Vermont's blueprint for medical homes, community health teams, and better health at lower cost. *Health Aff (Millwood).* 2011;30(3):383-386. doi: 10.1377/hlthaff.2011.0169.

12. Community health plan strategies for improving mental health: case studies in improving care, reducing mental illness stigma. Alliance of Community Health Plans website. http://www.achp.org/publications/community-health-plan-strategies-improving-mental-health-2/. Published November 12, 2014. Accessed November 2, 2015.
13. ACAP fact sheet: safety net health plan efforts to reduce avoidable emergency department utilization. Association for Community Affiliated Plans website. http://www.communityplans.net/Portals/0/Fact%20Sheets/ACAP-Reducing_Avoidable_ER_Utilization.pdf. Published 2014. Accessed November 2, 2015.

Table 2. Interventions and Programs Addressing Social Determinants of Health Within a Clinical Setting Without Documented MMCO Financial Support

Name of Intervention	**Citation**
Medical-Legal Partnership at Legal Aid of Western Missouri	Anderson-Carpenter KD, Collie-Akers V, Colvin JD, Cronin K. The role of advocacy in occasioning community and organizational change in a medical-legal partnership. *J Prev Interv Community.* 2013;41(3):167-175.
Health Leads	Bachrach D, Lipson M, Pfister H, Wallis K. Addressing social determinants of health: The business case for provider investment. Manatt Health Solutions for the Commonwealth Fund, The Skoll Foundation, and the Pershing Square Foundation, 2013.
Mammography screening by Quality Improvement Organization for Connecticut	Barr JK, Kelvey-Albert M, Curry M, et al. Reducing disparities in utilization of mammography: Reaching dually eligible women in Connecticut. *J Health Hum Serv Adm.* 2003;26(3):298-335.
Pilot study for referral to State Children's Health Insurance Program (S-CHIP)	Brown AM, Glazer G. Enrollment success in state children's health insurance program after free clinic referral. *J Pediatr Health Care.* 2004;18(3)L145-148.
Comprehensive Care Clinic (CCC)	Carpiac-Claver M, Guzman JS, Castle SC. The comprehensive care clinic. *Health Soc Work.* 2007;32(3):219-223.
Reclaiming Joy	Chapin RK, Sergeant JF, Landry S, et al. Reclaiming joy: Pilot evaluation of a mental health peer support program for older adults who receive Medicaid. *Gerontologist*. 2013;53(2):345-352.
Maintenance-in-Care, Access-To-Care programs	Chin JJ, Botsko M, Behar E, Finkelstein R. More than ancillary: HIV social services, intermediate outcomes and quality of life. *AIDS Care.* 2009;21(10):1289-1297.
Medical-legal partnerships	Colvin JD, Nelson B, Cronin K. Integrating social workers into medical-legal partnerships: Comprehensive problem solving for patients. *Soc Work.* 2012;57(4):333-341.

Employment Intervention Demonstration Program (EIDP)	Cook JA, Leff HS, Blyler CR, et al. Results of a multisite randomized trial of supported employment interventions for individuals with severe mental illness. *Arch Gen Psychiatry.* 2005;62(5):505-512.
Collaborative Care (CC) interventions	Cooper LA, Ghods Dinoso BK, Ford DE, et al. Comparative effectiveness of standard versus patient-centered collaborative care interventions for depression among African Americans in primary care settings: the BRIDGE Study. *Health Serv Res*. 2013;48(1):150-174.
Geriatric Resources for Assessment and Care of Elders (GRACE)	Counsell SR, Callahan CM, Clark DO, et al. Geriatric care management for low-income seniors: a randomized controlled trial. *JAMA*. 2007;298(22):2623-2633.
Raising Adolescent Families Together	Cox JE, Buman MP, Woods ER, Famakinwa O, Harris SK. Evaluation of raising adolescent families together program: a medical home for adolescent mothers and their children. *Am J Public Health.* 2012;102(10):1879-1885.
Care Coordination Model: Anchorage	Craig C, Eby D, Whittington J. *Care Coordination Model: Better Care at Lower Cost for People with Multiple Health and Social Needs*. Cambridge, MA: Institute for Healthcare Improvement; 2011.
Hospital 2 Home	Craig C, Eby D, Whittington J. *Care Coordination Model: Better Care at Lower Cost for People with Multiple Health and Social Needs*. Cambridge, MA: Institute for Healthcare Improvement; 2011.
Housing First Assertive Community Treatment	Craig C, Eby D, Whittington J. *Care Coordination Model: Better Care at Lower Cost for People with Multiple Health and Social Needs*. Cambridge, MA: Institute for Healthcare Improvement; 2011.
Community Connector Program	Felix HC, Mays GP, Stewart KM, Cottoms N, Olson M. Medicaid savings resulted when community health workers matched those with needs to home and community care. *Health Affairs.* 2011;30(7):1366-1374.

Rural Care Management Outreach Intervention	Forti EM, Koerber M. An outreach intervention for older rural African Americans. *J Rural Health.* 2002;18(3):407-415.
Family Help Desk (FHD) at the Harriet Lane Clinic	Garg A, Sarkar S, Marino M, Onie R, Solomon BS. Linking urban families to community resources in the context of pediatric primary care. *Patient Educ Couns.* 2010;79(2):251-254.
Tufts Comprehensive Community Health Action Program	Geiger, HJ. Community-Oriented Primary Care: a path to community development. *Am J Public Health.* 2002;92(11):1713-1716.
Community Health Centers	Geiger, HJ. The first community health centers: A model of enduring value. *J Ambul Care Manage*. 2005;28(4):313-320.
REACH	Giles WH, Tucker P, Brown L, et al. Racial and ethnic approaches to community health (REACH 2010): An overview. *Ethn Dis*. 2004;14(3 Suppl 1):S5-8.
Maternal Infant Health Advocate Service (MIHAS)	Hunte HE, Turner TM, Pollack HA, Lewis EY. A birth records analysis of the Maternal Infant Health Advocate Service program: a paraprofessional intervention aimed at addressing infant mortality in African Americans. *Ethn Dis.* 2004;14(3suppl1):S102-107.
North Carolina Enhanced WISEWOMAN Project	Jilcott SB, Keyserling TC, Samuel-Hodge CD, et al. Linking clinical care to community resources for cardiovascular disease prevention: the North Carolina Enhanced WISEWOMAN project. *J Womens Health (Larchmt)*. 2006;15(5):569-583.
Pediatric Asthma Intervention	Karnick P, Margellos-Anast H, Seals G, et al. The pediatric asthma intervention: a comprehensive cost-effective approach to asthma management in a disadvantaged inner-city community. *J Asthma.* 2007;44(1):39-44.

DC-HOPE intervention	Katz KS, Blake SM, Milligan RA, et al. The design, implementation and acceptability of an integrated intervention to address multiple behavioral and psychosocial risk factors among pregnant African American women. *BMC Pregnancy Childbirth.* 2008;8:22.
HIV Case management	Katz MH, Cunningham WE, Fleishman JA, et al. Effect of case management on unmet needs and utilization of medical care and medications among HIV-infected persons. *Ann Intern Med.* 2001;135(8 Pt 1):557-565.
Health Extension Rural Offices	Kaufman A, Powell W, Alfero C, et al. Health extension in New Mexico: An academic health center and the social determinants of disease. *Ann Fam Med*. 2010;8(1):73-81.
Reach Out and Read	King TM, Muzaffar S, George M. The role of clinic culture in implementation of primary care interventions: the case of Reach Out and Read. *Acad Pediatr*. 2009;9(1):40-46.
Hospital social work delivery services model	Kitchen A, Brook J. Social work at the heart of the medical team. *Soc Work Health Care*. 2005;40(4):1-18.
Augmented prenatal care	Klerman LV, Ramey SL, Goldenberg RL, Marbury S, Hou J, Cliver SP. A randomized trial of augmented prenatal care for multiple-risk, Medicaid-eligible African American women. *Am J Public Health*. 2001;91(1):105-111.
Healthy Babies Healthy Start	Kothari CL, Zielinski R, James A, Charoth RM, Sweezy Ldel C. Improved birth weight for black infants: outcomes of a Healthy Start program. *Am J Public Health*. 2014;104(suppl 1):S96-S104.
Safe Mom, Safe Baby	Kramer A, Nosbusch JM, Rice J. Safe mom, safe baby: a collaborative model of care for pregnant women experiencing intimate partner violence. *J Perinat Neonatal Nurs*. 2012;26(4):307-316.

Seattle-King County Healthy Homes Project	Krieger JK, Takaro TK, Allen C, et al. The Seattle-King County healthy homes project: implementation of a comprehensive approach to improving indoor environmental quality for low-income children with asthma. *Environ Health Perspect.* 2002;110(suppl 2):311-322.
Case management models	Kumar GS, Klein R. Effectiveness of case management strategies in reducing emergency department visits in frequent user patient populations: a systematic review. *J Emerg Med*. 2013;44(3):717-729.
HIV Case Management	Lehrman SE, Gentry D, Yurchak BB, Freedman J. Outcomes of HIV/AIDS case management in New York. *AIDS Care*. 2001;13(4):481-492.
Fenway Community Health Center	Lo W, MacGovern T, Bradford J. Association of ancillary services with primary care utilization and retention for patients with HIV/AIDS. *AIDS Care*. 2002;14(suppl 1):S45-57.
North Carolina home visiting intervention for low-income pregnant women	Margolis PA, Stevens R, Bordley C, et al. From concept to application: the impact of a community-wide intervention to improve the delivery of preventive services to children. *Pediatrics*. 2001;108(3):E42.
Northern Manhattan Community Voices	Michelen W, Martinez J, Lee A, Wheeler DP. Reducing frequent flyer emergency department visits. *J Health Care Poor Underserved*. 2006;17(suppl 1):59-69.
REACH-Futures program	Norr KF, Crittenden KS, Lehrer EL, et al. Maternal and infant outcomes at one year for a nurse-health advocate home visiting program serving African Americans and Mexican Americans. *Public Health Nurs*. 2003;20(3):190-203.
Nurse Family Partnership program	Olds DL. Prenatal and infancy home visiting by nurses: from randomized trials to community replication. *Prev Sci*. 2002;3(3):153-172.

Heart Healthy and Ethnically Relevant (HHER) Lifestyle	Parra-Medina D, Wilcox S, Wilson DK, Addy CL, Felton G, Poston MB. Heart Healthy and Ethnically Relevant (HHER) Lifestyle trial for improving diet and physical activity in underserved African American women. *Contemp Clin Trials*. 2010;31(1):92-104.
Tuscon Family Advocacy Program; Legal Assistance to Medical Patients (LAMP); Medical-Legal Partnership in Boston	Paul E, Fullerton DF, Cohen E, et al. Medical-Legal Partnerships: addressing competency needs through lawyers. *J Grad Med Educ*. 2009;1(2):304-309.
Medical-legal partnership	Pettignano R, Bliss LR, Caley SB, McLaren S. Can access to a medical-legal partnership benefit patients with asthma who live in an urban community? *J Health Care Poor Underserved*. 2013;24(2):706-717.
Community health workers for pediatric asthma	Postma J, Karr C, Kieckhefer G. Community health workers and environmental interventions for children with asthma: a systematic review. *J Asthma*. 2009;46(6):564-576.
Bellevue Hospital Center Community-Based Care Manager	Raven MC, Doran KM, Kostrowski S, Gillepsie CC, Elbel BD. An intervention to improve care and reduce costs for high-risk patients with frequent hospital admissions: a pilot study. *BMC Health Serv Res*. 2011;11:270-280.
Supported employment programs	Razzano LA, Cook JA, Burke-Miller JK, et al. Clinical factors associated with employment among people with severe mental illness: findings from the employment intervention demonstration program. *J Nerv Ment Dis*. 2005;193(11):705-713.
Guided Chronic Care and Passport to Wellness	Roberts SR, Crigler J, Lafferty WE, et al. Addressing social determinants to improve healthcare quality and reduce cost. *J Healthc Qual*. 2012;34(2):12-20.
Medical-legal partnership	Sandel M, Hansen M, Kahn R, et al. Medical-Legal Partnerships: transforming primary care by addressing the legal needs of vulnerable populations. *Health Affairs (Millwood)*. 2010;29(9):1697-1705.

Care Advocate Program	Shannon GR, Wilber KH, Allen D. Reductions in costly healthcare service utilization: findings from the Care Advocate Program. *J Am Geriatr Soc*. 2006;54(7):1102-1107.
Enhanced Discharge Planning Program	Shier G, Ginsburg M, Howell J, Volland P, Golden R. Strong social support services, such as transportation and help for caregivers, can lead to lower health care use and costs. *Health Affairs (Millwood)*. 2013;32(3):544-551.
Illinois Family Case Management Program	Silva R, Thomas M, Caetano R, Aragaki C. Preventing low birth weight in Illinois: outcomes of the family case management program. *Matern Child Health J*. 2006;10(6):481-488.
Harborview Children and Teen's Clinic	Silverstein M, Iverson L, Lozano P. An English-language clinic-based literacy program is effective for a multilingual population. *Pediatrics*. 2002;109(5):E76-76.
Health and Law Collaborative Partnership	Teufel JA, Brown SL, Thorne W, Goffinet DM, Clemons L. Process and impact evaluation of a legal assistance and health care community partnership. *Health Promot Pract*. 2009;10(3):378-385.
Community Connections Program	Vanderboom CE, Holland DE, Targonski PV, Madigan E. Developing a community care team: lessons learned from the community connections program, a health care home-community care team partnership. *Care Management Journals*. 2013;14(3):150-157.
Peninsula Family Advocacy Program	Weintraub D, Rodgers MA, Botcheva L, et al. Pilot study of medical-legal partnership to address social and legal needs of patients. *J Health Care Poor Underserved.* 2010;21(suppl 2):157-168.
Student Nurses Clinic	Wilde MH, Albanese EP, Rennells R, Bullock Q. Development of a student nurses' clinic for homeless men. *Public Health Nurs*. 2004;21(4):354-360.

Arizona Rural Frontier Women's Health Coordinating Center	Wilensky S and Proser M. Community approaches to women's health: delivering preconception care in a Community Health Center model. *Women's Health Issues.* 2008;18(suppl 6): S52-60.
Kokua Kalihi Valley Health	Wilensky S, Proser M. Community approaches to women's health: delivering preconception care in a Community Health Center model. *Women's Health Issues.* 2008;18(suppl 6):S52-60.
Mariposa Community Health Center	Wilensky S, Proser M. Community approaches to women's health: delivering preconception care in a Community Health Center model. *Women's Health Issues.* 2008;18(suppl 6):S52-60.
Review of healthcare system interventions to address social determinants of health, including Healthy Steps for Children	Williams DR, Costa MV, Odunlami O, Mohammed SA. Moving upstream: how interventions that address the social determinants of health can improve health and reduce disparities. *J Public Health Manag Pract.* 2008;(suppl 14):S8-17.
Citizen-centered health promotion	Woolf SH, Dekker MM, Byrne FR, Miller MD. Citizen-centered health promotion: building collaborations to facilitate healthy living. *Am J Prev Med.* 2011;40(1 suppl 1):S38-47.