REPORT 2 OF THE COUNCIL ON SCIENCE AND PUBLIC HEALTH (A-25)
Addressing Social Determinants of Health Through Closed Loop Referral Systems
(Reference Committee D)

EXECUTIVE SUMMARY

BACKGROUND. American Medical Association (AMA) Policy D-165.932 "Addressing Social Determinants of Health Through Closed Loop Referral Systems," as adopted by the House of Delegates (HOD), asked that our AMA study the effectiveness and best practices of closed loop referral systems in addressing social determinants of health.

METHODS. English language articles were selected and reviewed from searches of PubMed and Google Scholar using the search terms "closed loop referral system", "United States Core Data for Interoperability," "closed loop referral system AND social determinants of health (SDOH)" and "United States Core Data for Interoperability AND SDOH". Additional articles were identified by manual review of the reference lists of pertinent publications. Web sites managed by government agencies; applicable organizations were also reviewed for relevant information.

DISCUSSION. There is compelling evidence that links social risks—such as food, housing, transportation, or economic insecurity—to health care outcomes, which encourages health care practices to consider how to improve patients' social conditions. As a result, health care practices report screening patients for at least one health-related social need (HRSN). For many health care practices, the next step is providing patients with a referral to community-based organizations (CBOs) to address social needs. A closed loop referral platform can allow for efficient communication and coordination between health care professionals and CBOs. It helps ensure patient data and information are communicated to the right individuals at the right time, allowing for review, action, acknowledgment, and documentation. The platform facilitates referrals from health care professionals to CBOs and enables them to report back on whether the patient's HRSNs were addressed.

CONCLUSION. Studies have shown that barriers to implementing closed loop referral systems include technology (electronic referral, response and feedback), processes (effectiveness, efficiency), organizational (management, policy and planning, rules and regulations), and patient-centered individual characteristics (social capital, transportation, awareness, attitude, satisfaction, and social influence). The recommendations of the report are based on best practices to implement closed loop referral systems such as: (1) establishment of collaborative governance for shared decision-making processes, fostering trust, alignment, and transparency among organizations; (2) development of technology linkages between existing platforms to facilitate seamless referrals between organizations and ensure visibility of referral outcomes; (3) integration of regional resource directories into technology infrastructure to ensure resource accessibility/quality; and (4) evaluation of the system's impact on health equity, efficiency, and cost reduction.

REPORT OF THE COUNCIL ON SCIENCE AND PUBLIC HEALTH

CSAPH Report 2-A-25

Subject: Addressing Social Determinants of Health Through Closed Loop Referral Systems

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Referred to: Reference Committee D

INTRODUCTION

American Medical Association (AMA) Policy D-165.932 "Addressing Social Determinants of Health Through Closed Loop Referral Systems," as adopted by the House of Delegates (HOD), asked that our AMA study the effectiveness and best practices of closed loop referral systems in addressing social determinants of health.

BACKGROUND

Understanding Social Determinants of Health and Health-Related Social Needs

The way communities and individuals experience health and health care is not just based on access to medical services. It is also impacted by other factors that may support or create barriers to health and well-being. At a community level, these factors are referred to as social determinants of health (SDOH) and may also be referred to as "social drivers of health" (See APPENDIX 1 - Key Terms).[1] Examples of SDOH include economic stability, access to quality education and health care, the neighborhood, and built environment.[1] The specific factors that impact individuals directly are called health related social needs (HRSN).[2] Examples of HRSN include lack of stable or affordable housing and utilities, financial strain, lack of access to healthy food, personal safety, and lack of access to transportation.[1] While SDOH and HRSNs often coincide and overlap, the relationship between them can be complex. For example, a household with income below the federal poverty line (which could constitute an individual-level HRSN) that is living in an area with poor economic conditions (a community-level SDOH) is more likely to be exposed to housing that exacerbates health problems like asthma.[1] That household may be unable to afford living in areas with safer housing and may therefore benefit from various forms of housing assistance.[1] In this example, both the HRSN of having low income and the SDOH of living in an area with poor housing quality need to be addressed to holistically improve the household's situation and health outcomes.[1] Addressing SDOH and HRSNs requires implementing sets of policies and interventions involving community partners. Addressing both SDOH and HRSN is an important component of efforts to overcome disparities and achieve health equity for individuals and communities.[2]

A Closer Look at SDOH and HRSN in the U.S.

Action of the AMA House of Delegates 2025 Annual Meeting: CSAPH Report 2 Recommendations Adopted, and Remainder of Report Filed.

Systematic and structural inequities such as limited employment and educational opportunities, lack of affordable and safe housing, low availability of nutritious foods, high rates of exposure to environmental health hazards, and inadequate access to health care services, can jeopardize health and well-being.[3] Disparities resulting from these structural inequities often disproportionately impact historically underserved individuals such as Blacks, Latinx, members of Tribal Nations, Asian Americans and Pacific Islanders and other persons of color; members of religious minorities; lesbian, gay, bisexual, transgender, and queer (LGBTQ+) persons; persons with disabilities; persons who live in rural areas; persons who live in communities with environmental justice concerns; older persons; women and girls; and persons otherwise experiencing persistent poverty.[3] These disparities exist for many health outcomes, including infant and maternal mortality, heart disease, diabetes, hypertension, chronic illness, disability, cancer, mental illness, substance use, and overall life expectancy.[4–6] For instance, the life expectancy for Black Americans is four years shorter than White Americans.[6] People of color have higher rates of diabetes, hypertension, obesity, asthma, and premature death compared to non-Hispanic Whites, due in part to social and economic factors.[6,7] People living in rural areas are more likely than their urban counterparts to die from heart disease, cancer, unintentional injury, chronic lower respiratory disease, and stroke.[6,8] Many of these disparities stem from differences in social and economic circumstances between these demographics.

An important contributor to health disparities is the inequitable distribution of social resources in localities across the country.[6,8] For example, a history of racialized practices and policies—housing discrimination, unequal educational opportunities, disproportionate incarceration rates, inequitable employment practices—has created inequities for many communities.[9] Inadequate access to social and health care services in many areas of the country has led to widening gaps in outcomes.[10] Notably, the cumulative impacts of environmental and climate factors have significant influence on health outcomes. Inequitable access to clean water, clean air, and natural green spaces with tree cover led to disproportionate environmental burdens for many communities.[11] These environmental injustices create new and exacerbate longstanding disparities in health outcomes. People who live in communities with environmental concerns may suffer from poorer health and have shorter life expectancies than those in other communities.[6,11] It is estimated that, on average, clinical care impacts only 20 percent of county-level variation in health outcomes, while SDOH affects as much as 50 percent of health outcomes.[6,8]

METHODS

English language articles will be selected from searches of PubMed and Google Scholar using the search terms “closed loop referral system”, “United States Core Data for Interoperability (USCDI),” “closed loop referral system AND social determinants of health (SDOH)” and “United States Core Data for Interoperability AND SDOH”. Additional articles will be identified by manual review of the reference lists of pertinent publications. Web sites managed by government agencies; applicable organizations will also be reviewed for relevant information.

DISCUSSION

What Is a Closed Loop Referral System?

Closed loop referral systems provide a means for health care professionals to send patient information to a CBO to help address a patient’s needs that are typically better served outside of clinical workflows.[12] A CBO can provide an array of support programs within the community, including services that address a patient's social needs or address underlying causes of poor health outcomes with the goal of positively impacting the patient’s overall health outcome(s).[12] The CBO

can then provide feedback on the outcome of that referral to the referring individual/entity.[12] Closed loop referrals depend on an often-overlooked capability for the referral process to originate in a health care setting and progress to a CBO, and then for the CBO to further refer the patient to another CBO which may be better positioned to help that patient, with the whole care team then being able to follow the referral through that process and any other redirects that may occur.[13] At the core, a closed loop referral process represents a significant shift in the way systems, institutions, clinicians, communities, and families communicate.[13]

Lessons Learned from Early Adopters of Closed Loop Referral Systems

There is a growing body of evidence on the success of closed loop referral systems to improve health.[14] In a recent study examining 16 years of data from different communities, death due to cardiovascular disease, diabetes and influenza declined significantly among communities that expanded multisector networks supporting population health activities.[14,15] The first randomized control trial (RCT) to evaluate health outcomes of a clinic-based pediatric navigation program, demonstrated a significant decrease in reported HRSN and improved children's overall health status, as reported by caregivers.[14,16] An Eastern Massachusetts project of six pediatric practices engaged parents to create and use an online, interactive community resources map, results showed 76 percent of participants were physically active at new places, 57 percent shopped at new locations for groceries; and 71 percent reported they were very satisfied with the information they received.[14,17]

Studies have also looked at the role of the technology in screening and referrals.[14,16,18,19] A 2014 RCT comparing patient disclosure rates for unmet needs between electronic and face-to-face methods found significantly higher disclosure rates when employing electronic formats for sensitive issues (i.e., household violence, substance use) and marginally higher rates when used for less sensitive issues (i.e., financial insecurity, neighborhood and school safety), suggesting that technology has a role to play in solving challenges related to accurately identifying needs.[19] A separate study of youth found the majority willing to participate in a technology-based system for SDOH screening and that nearly half successfully addressed their priority concern.[18]

Care teams and health care organizations (HCOs) involved in implementing HRSN screening and referral programs have reported multiple challenges.[20] HCO staff reported that they were unfamiliar with the social services organizations in their communities or that the compiled lists of community resources were neither complete nor up to date.[20–23] Staff also reported having difficulty sending referrals to non–HCOs.[20,21,24] Many electronic health record (EHR) systems have historically lacked the capacity to document and track the delivery of care coordination services related to HRSN, as well as the outcomes of social services referrals.[20,25] Over the past decade a cluster of technology companies have developed software products to overcome these barriers to medical and social services coordination.[25]

The impetus to invest in closed loop referral technology systems was the result of a desire to be able to address patients' social needs more efficiently.[20,25] This included wanting to have centralized staff lists of community resources, send electronic referrals, and to receive updates on referral outcomes from community partners to improve their capacity to track patients' access to services across settings.[20] Some groups were motivated by external programs or value-based payment reforms that incentivized or required better care coordination with social services.[20] Examples included the Accountable Health Communities Model of the Centers for Medicare and Medicaid Services (CMS) Innovation Center, the CMS State Innovation Models initiative, and New York's Delivery System Reform Incentive Payment program.[20,26–28]

Implementors of closed loop referral systems described three funding sources used to cover platform licenses and implementation costs: grants and other short-term pilot funds, operational funds, and value-based health care transformation dollars.[20] Pilot funds typically originated from either foundations or demonstration projects sponsored by federal or state governments, such as the federal Accountable Health Communities Model, and State Innovation Model grants.[20,26,28]To facilitate community partners' use of the closed loop referral systems, HCOs either covered the cost of community partner organizations' software licenses or chose platforms that provided the product free of charge to affiliated CBOs.[20]

The most common challenge was recruiting CBOs to use the platforms, which was necessary for HCOs to be notified of referral outcomes.[20,29] HCOs generally attributed recruitment barriers to community partners' lack of resources and incentives.[20,29] Though community partners were almost universally provided with access to the closed loop referral system at no direct cost, implementation required indirect resources—for example, to train staff on using the closed loop referral system or to develop and maintain effective workflows for monitoring and responding to incoming referrals.[29] CBOs did not always have clear incentives for using the closed loop referral system, and the resources required for implementation prevented many organizations, especially very small ones, from adopting closed loop referral system.[20,29] As a result, many of the groups had not been able to track referral outcomes. Introducing a closed loop referral system could prove burdensome if CBOs were asked by different HCOs to use different platforms for different clients.[20,29] One solution was to use a common platform, as is the case in North Carolina.[20,30]

Among HCOs that reported success in recruiting community partners to use the closed loop referral system, three engagement strategies were cited. First, engaging CBOs in the platform selection process helped establish those partners' buy-in.[20,31] For example, one county health department established a coalition of thirty health care and community-based social services organizations.[20,31] The coalition undertook a joint assessment of platform referral functionalities, defined priority functionalities, and invited vendors to demonstrate their platforms. Once a shared platform was selected, subgroups within the larger coalition were assigned tasks such as designing the resource directory, referral system, and coalition wide release of information form.[20,31] Six months into distribution, the organizations started to exchange referrals through the platform, which was faster than most other organizations were able to implement this function.[20,31]

Second, CBOs were more accepting when HCOs clearly explored and articulated the potential benefits of the closed loop referral system during recruitment of CBOs.[20,32] Some HCOs reported that community partners became especially enthusiastic about the closed loop referral system when they learned that it could help them refer their clients to other organizations or health care professionals, in addition to increasing traffic and coordination for incoming referrals from health care systems.[20,32] Another powerful motivator for some CBOs was the potential to formally contract with and be reimbursed by health systems or payers for services rendered to referred patients, which could be more easily documented in the platform.[32]

Third, HCOs that successfully recruited CBOs as partners also described hiring staff to visit the organizations and stay in close contact to build rapport, support ongoing communication and coordination about the technology, and manage problems.[32] In one instance, a HCO had a network coordinator who published a biweekly electronic newsletter that was sent to all referral partners to answer common questions and provide updates about what kinds of programs partner organizations offered and what new organizations had joined the network.[20,32]

Within HCOs, groups described the need to convey the rationale, vision, and goals for better integrating social care and medical care to internal health care end users; to develop

workflows that matched the needs and demands of those users; and to monitor and manage staff expectations.[20,31] One health system hosted an internal planning session with designated end users and then developed a project workflow and selected a set of social risk screening questions for medical assistants to use.[20,31] Once staff started using the platform and were able to see positive effects on patients' lives, they became more enthusiastic about the technology.[20,31] It was also important to name staff champions, who tended to have experience with social interventions, to improve the internal process.[20,31,32] Staff champions could generate momentum when they endorsed the rationale for closed loop referral system adoption: having these champions helped convince other staff to stay involved as the organization worked to fold social risk screening and referral into workflows.[20,31,32]

A third set of challenges was clustered around the legal and privacy barriers to sharing data with external, non–HCOs.[20] This included the lack of clarity about what patient information could be shared, with whom, and how.[20] Overcoming these privacy concerns took longer when data were shared with multiple sectors, because each sector had different requirements for handling confidential data.[20,31–33] For example, substance use treatment programs cannot disclose any patient identities without consent.[20,31–33] One HCO used its platform only internally because the organization's legal department did not authorize sharing any data with external partners.[33] Patient consent protocols also took time to establish. In some cases, organizations have found ways to record consent over the phone or online to streamline the process.[20,32,33] Despite these important challenges, most groups reported overall satisfaction with the platform they had chosen, although implementation was slower than anticipated.[20,32,33]

Even if implementation challenges were overcome, HCOs and their community partners face the challenge of financially sustaining their platforms.[20] Promising models have emerged in places such as New York, where the Delivery System Reform Incentive Payment program financially incentivizes HCOs to establish partnerships with CBOs.[20,26,30] In California and Oregon, organizations that served Medicaid patients used health insurance benefits, bundled payment, and shared savings programs to support social services and build infrastructure to bridge the gap between medical and social care.[20,34] Continued expansion of state Medicaid social risk interventions could be a major driver of increased adoption of these technologies.[20,35] Health information exchanges, funded through a combination of public and private investment, are coming online and hold promise as infrastructure for closed loop referral systems.[14,36] In California, Oregon, New York, Washington, North Carolina and elsewhere, states are building upon previous Medicaid waivers and layering federal opportunities to establish more ambitious partnerships and programs addressing SDOH.[37–42] However, Medicaid waivers are a time-limited sources of innovation to test and pilot approaches for adoption by states, therefore sustainability of these efforts is uncertain.[26,34,39,41,42]

IMPLEMENTATION CONSIDERATIONS FOR CLOSED LOOP REFERRAL SYSTEMS

Localized Needs and Resource Availability

Historically, the U.S. has relied on CBOs to address social needs. With deep roots in the community and constrained geographical focus, CBOs are well-positioned to provide hyperlocal services that are uniquely tailored to a community's needs, yet this also means that addressing HRSN effectively requires an intimate understanding of local community resources and needs.[14,20,32] Each community is unique, with specific social challenges and available support services, which makes standardization difficult. For example, urban areas might have numerous CBOs, whereas resources in rural areas may be limited.[14,32] Service availability can also fluctuate based on state-level funding and policies, particularly under Medicaid.[26,28,39–41] CBOs may overlap

in the types of services they provide or differ in which clients they serve or how they accept clients, and their capacity for new clients may also vary greatly.[14,32] The variability in local resources and needs means that a one-size-fits-all approach is impractical. Effective closed loop referrals must be tailored to the specific context of each community, which requires robust, localized directories and a deep understanding of community assets.[14]

Technological Disparities Among Organizations

The landscape of CBOs addressing HRSN is highly varied, with significant differences in technological capabilities. While some CBOs operate advanced technology platforms capable of seamless data exchange, others rely on paper-based systems.[20,32] The variation in CBO funding means that some organizations can easily support 24/7 connectivity while others may not even be able to answer the phone consistently.[20,32] This disparity poses a fundamental challenge: the assumption that all organizations can conform to a unified standard is unrealistic. Effective patient referrals must navigate these technological gaps, which can vary dramatically across different local contexts.[20,32] For instance, a food pantry might operate on a basic, manual system, making integration with EHRs difficult.[20,32] Conversely, a large CBO might have the infrastructure to handle sophisticated digital referrals but is unable to communicate with less technologically advanced partners.[20,32] This fragmentation requires flexible expectations that can adapt to various levels of technological readiness.

Complexity and Variety of Referrals

Closed loop referrals to address HRSN are inherently complex and diverse.[20,32] Unlike medical referrals, which typically involve a single instance of care, HRSN referrals can range from short-term assistance, such as food vouchers, to long-term programs, such as job training.[20,32] The nature of these referrals varies significantly based on the needs of the individual. For example, a referral for emergency housing might involve multiple touchpoints and require ongoing support, whereas a referral for a one-time utility payment may be resolved quickly.[20,32] The ability to track and manage varied referrals necessitates a sophisticated data language that can represent different types of needs, interventions, durations, and outcomes.

Challenges of Feedback Mechanisms

Closed loop referrals rely on feedback mechanisms that inform referring clinicians about the status of the referral.[12,43] However, this feedback is not always necessary or feasible. Clinicians often express that receiving status updates on every referral can be overwhelming and counterproductive.[43] An emergency medicine clinician who refers the patient to a CBO is unlikely to have a long-term relationship with that patient that would benefit from regular updates, but if that emergency room is part of an accountable care organization, pooling data about referrals and outcomes is highly important.[43] Multiple approaches might be needed to accommodate varied use cases. For example, some use cases might benefit from a system where a clinician can check in on the fulfillment of the referral without being inundated with unnecessary information.[43] This balance requires thoughtful design of feedback systems to ensure they are informative without being burdensome.

Readiness for Standardization

Communicating the identified need, requested resources, and the status of the request requires shared standards. While USCDI v4 introduces many of the communications standards for SDOH, its implementation will take considerable time as EHRs are currently moving toward the required

adoption of USCDI v3 (January 2026).[44,45] While essential, the push towards standardization – exemplified by the USCDI v4 – is insufficient on its own. While EHRs are making strides towards adopting these standards, many health systems are not yet ready to fully integrate the social care components required for addressing HRSN.[43] The health care delivery system is still evolving in its ability to formally represent and manage social needs.[43] A hybrid approach employing both traditional and innovative methods is necessary to bridge the gap between current capabilities and future requirements.[14,43] This includes supporting standards for closed loop referrals and accommodating the existing variability in readiness and infrastructure among CBOs.[14,43]

Grant and Funding Opportunities

Medicaid funding, including utilization of Medicaid 1115 waivers that offer opportunities for SDOH reimbursement, varies significantly across states.[35,40] This leads to a lack of uniformity in funding and support for HRSN initiatives, creates challenges for standardization, and complicates efforts to develop a consistent approach to closed loop referrals.[14,35] Incentivizing the development of closed loop referral systems through grants and funding is crucial. Similar to the Certified Community Behavioral Health Clinic (CCBHC) grants in the behavioral health sector, specific grants for developing HRSN referral capabilities could accelerate progress.[46] These funds would enable CBOs to invest in the necessary technology, infrastructure, and people skills to participate in closed loop referral systems.[14,46]

History of Collaboration and Backbone Organization Support

It can take several years of systematic effort to develop trust, shared vision, leadership structure, measures of success and cross-sector knowledge for successful collaboration.[14,32,43] Lack of funding support for a backbone organization to plan, convene, facilitate shared goals and track success is cited as a barrier to the more rapid development of closed loop referral systems.[14,43] A further complication is that the funding gap for community-wide collaborations can result in individual health care entities developing or purchasing point to point technology systems between one health plan or health system and CBOs.[14,43] Without a community approach, CBOs are concerned about the potential need to connect to multiple technology systems, complicating their ability to partner.[14,43] Finally, there are many competing priorities in the health care arena and investing effort in community collaborations is a more recent trend that may compete with other initiatives.[43]

Privacy, Security and Data Governance

Consent, access to information, data use agreements and data governance are all challenging hurdles to coordinated systems of care and closed loop technology implementation.[47] Capturing signed consent as far upstream as possible facilitates the greatest benefit for closed loop referral systems to exchange all relevant information; however, this requires dedicated attention and resources to implement and maintain.[47,48] Security is a separate and important consideration for closed loop systems to ensure information is protected from any breach.[47–49] Behavioral health information significantly increases the difficulty of sharing information given its specific privacy rules, and when children are the clients, issues of consent are even more challenging.[47–49] Legal questions, systems to obtain consent and other privacy considerations often prove a long and costly barrier and can delay development and implementation.[47–49] Templates for data security and governance could reduce the time and cost to implement health information exchange (HIE).[47–49]

RELATED FEDERAL INITIATIVES

While the following federal initiatives were current as of the time this report was drafted, their continuation under the current Administration is uncertain.

U.S Playbook to Address SDOH

On November 16, 2023, the White House released the "U.S. Playbook to Address Social Determinants of Health," which outlines an initial set of actions that federal agencies are undertaking to support health by improving the social circumstances of individual and communities.[50] These actions were developed to serve as guideposts for other agencies and organizations to engage in efforts to address SDOH and HRSN. This playbook focuses on the following three pillars:

1. Expand Data Gathering and Sharing: Advance data collection and interoperability among health care, public health, social care services, and other data systems to better address SDOH with federal, state, local, tribal, and territorial support.[50]
2. Support Flexible Funding to Address Social Needs: Identify how flexible use of funds could align investments across sectors to finance community infrastructure, offer grants to empower communities to address HRSN, and encourage coordinated use of resources to improve health outcomes.[50]
3. Support Backbone Organizations: Support the development of community backbone organizations and other infrastructure to link health care systems to CBOs. Backbone organizations manage community-based partnerships formed across sectors such as health care, housing, social services care, nutrition assistance, employment training, and economic development to care for populations holistically.[50]

Centers for Medicare & Medicaid Services (CMS)

Though Medicaid rules limit spending on non-medical services, nearly all states have implemented at least some policies or initiatives to address HRSN through their Medicaid programs for various populations.[37] In January 2021, CMS issued a State Health Official letter identifying opportunities for states to better address SDOH under Medicaid and CHIP and to support states with improving outcomes and lowering costs by addressing SDOH.[51] Using a variety of mechanisms, including using section 1905(a) State Plan Authority, Home and Community Based Services (HCBS), section 1115 demonstrations, section 1945 Health, and managed care contract requirements, among others, states are addressing HRSN, including housing-related services and supports, non-medical transportation, home delivered meals, educational services, employment, community integration and social support, and case management (See APPENDIX 2).[51]

Center for Medicare and Medicaid Innovation (CMMI) established the Accountable Health Communities (AHC) Model in 28 locations to promote clinical-community collaboration to address HRSN of Medicare and Medicaid beneficiaries through screening, referral, and community navigation services.[28] The model, which focuses on five core HRSN of housing instability, food insecurity, transportation problems, utility difficulties, and interpersonal violence, found that 15 percent of the nearly 483,000 beneficiaries screened were eligible for navigation services, and more than half of these navigation-eligible beneficiaries reported more than one core HRSN.[52] CMMI is working to incorporate learnings from the AHC model into future models. As part of their Strategy Refresh, CMMI will require all new models to collect and report on data on HRSN and SDOH, as appropriate.[52] In addition, CMS will consider models that aim to address upstream, community-level SDOH.[52]

CMS has also worked to address HRSN and SDOH in the Medicare program. As of 2019, CMS expanded the definition of supplemental benefits in Medicare Advantage (MA) plans to better address SDOH.[53] As of 2019, MA plans can offer a broader array of benefits that are primarily health-related, such as transportation, meal delivery, and adult day care, and as of 2020, plans can offer non-primarily health-related benefits to the chronically ill, such as pest control.[53] In addition, Medicare ACOs provide high-quality care to Medicare beneficiaries to ensure that patients get the right care at the right time through care coordination.[53] In FY22, CMS also included a request for information in the final Hospital Inpatient Prospective Payment System (IPPS) and Long-Term Care Hospital (LTCH) rule that sought ideas to make reporting of health disparities based on social risk factors and race and ethnicity more comprehensive and actionable.[53] Inclusion of such measures in future payment rules would also build on the work of the CMMI AHC model.[54]

Administration for Community Living (ACL)

ACL funds a nationwide network of aging and disability organizations that provide access to a variety of local community-based services that address social needs.[55] Through this network, ACL provides 150 million home-delivered meals to over 883,000 individuals and 73.6 million congregate meals to more than 1.5 million seniors, funded through the OAA Nutrition Program.[55] In addition to meals, the program provides nutrition screening, assessment, education, and counseling, and provides connections to other in-home and community supports.[55] ACL also provides transportation services through their network, providing more than 20.4 million rides to doctor's offices, grocery stores, pharmacies, senior centers, meal sites, and other critical daily activities.[56]

In addition, ACL's Social Care Referrals Challenge is working to support health care systems and CBOs through health IT solutions.[57] The challenge seeks to cultivate care coordination, including the sharing of standardized data on SDOH, by developing or optimizing interoperable, scalable technology solutions that foster connections between community-based organizations and health care systems.[57] ACL is also supporting the infrastructure of 12 Network Lead Entities, or community hubs, that coordinate the activities of a broader network to efficiently contract health plans and providers to address social needs.[58] Increasingly, CBOs are organizing to form networks, allowing them to deliver a broad scope of services, expand populations served and geographic coverage, build stronger administrative functions, and offer a single point of contracting for payers.[58] As part of their support for their disability network, ACL also offers several grants to enhance the cultural and linguistic competency of the disability network to ensure that all people with disabilities can access ACL-funded programs and services.[58]

The Office of the National Coordinator for Health Information Technology (ONC)

ONC seeks to improve the health and well-being of individuals and communities using technology and health information, including SDOH information, that is accessible when and where it matters most.[59] Advancing the use and interoperability of SDOH data is important to improve the health and well-being of all individuals and communities.[59] ONC is focused on ensuring that both patients and providers understand what capabilities are possible and required by the 21st Century Cures.[59] Standardization of the way in which the data is obtained and exchanged will help providers more easily address non-clinical factors, such as food, housing, and transportation insecurities, which can have a profound impact on a person's overall health.[60] For example, as of March 2022, almost all hospitals and roughly 75 percent of physicians use EHRs certified through the ONC Health IT Certification Program, helping to enable widespread capabilities for the capture, reporting, exchange, and use of granular race and ethnicity data.[60] This functionality will extend to the widespread use of interoperable SDOH data that can be electronically captured, used, and

exchanged.[60] ONC works collaboratively with federal partners and the community to advance the electronic exchange and use of SDOH data to help improve individual and population health by guiding the development, dissemination, and adoption of health IT standards; informing the development of policies to overcome SDOH data interoperability challenges and data use; supporting states and local governments as they build the infrastructures for SDOH data; and driving innovation in care delivery by using health IT tools and standards to integrate SDOH data into workflows.[60]

STATE INITIATIVES IN IMPLEMENTING CLOSED LOOP REFERRAL SYSTEMS

North Carolina. NCCARE 360 is a statewide backbone organization that electronically connects North Carolinians who have unmet social needs to community resources.[61] It allows for feedback and follow-up through a shared technology network provided by Unite Us so that those seeking help are served.[61] The program includes a team of dedicated navigators to support referrals, as well as a community engagement team that works with community-based organizations, social service agencies, health systems, independent providers, and community members to create a statewide, coordinated care network.[61] NCCARE360 is available in all 100 counties across North Carolina and has multiple functionalities including:

- A team of dedicated Navigators with the expertise to support complex NCCARE360 referrals. Navigators support CBOs that are not able to stay with the client through the referral process, as well as self-referrals submitted by individuals through our website.[61]
- A robust statewide resource directory supported by a dedicated resource team at NC 211 who regularly verifies and updates programs and services in the NCCARE360 platform.[61]
- A shared technology platform powered by Unite Us that enables providers to assess for and identify unmet social needs, send and receive secure electronic referrals, and track outcomes.[61]
- Onboarding, training, and technical support provided by Unite Us. The NCCARE360 technology is robust and transformative so all network partners are trained and empowered to use it to better serve their patients and clients.[61]

New York. In 2024, the New York State Department of Health selected organizations to lead the Social Care Network (SCN) in their region.[62] SCN leads are accountable for maintaining a comprehensive network of CBOs that will be responsible for delivering and tracking services addressing HRSN to eligible Medicaid members.[62] Selections included five Unite Us partner organizations that serve nine regions, including Care Compass Collaborative, Health and Welfare Council of Long Island, Healthy Alliance Foundation Inc., Hudson Valley Care Coalition Inc., and Public Health Solutions.[62] Unite Us will serve as the infrastructure for collaboration in each region's network of CBOs, health care professionals, and managed care organizations, which together represent 72 percent of Medicaid members across the state.[62]

Washington. The Seattle Indian Health Board connects thousands of Seattle-area residents to health and social services across the region.[63] Funding from several foundations as well as from government is braided and blended to support the Board's programs.[63] One such program is the Gender-Based Violence programming that provides confidential services to individuals fleeing from or who are survivors of gender-based violence.[63]

New Jersey. In 2020, New Jersey established the Regional Health Hubs program to coordinate provision of person-centered health care.[64] This innovative model establishes a regional network of non-profit organizations that partner with Medicaid and State agencies to reduce health disparities and improve health outcomes by combining robust connections to social services and community

resources at both the patient and organizational levels.[64] The state began with establishing four Regional Health Hubs and plans to expand.[64]

California. The California Advancing and Innovating Medi-Cal (CalAIM) Initiative to Support Children and Families Initiative is a series of initiatives and reforms, in which California's Department of Healthcare Services (DHCS) is advancing and innovating Medi-Cal to create a more coordinated, person-centered, and equitable health system that works for all Californians.[65] The CalAIM Initiative is set to introduce a transformative requirement in 2025 around a "Closed Loop Referral" policy.[65,66] This new referral policy is important to improve care for children under Medi-Cal for Kids & Teens, reduce disparities in children's and maternity care and improve depression screening and mental health follow-up rates.[65,67] Furthermore, this new policy shows promise as a critical tool in overcoming health access challenges that children and youth in foster care disproportionately face.[65,67] There are already several opportunities underway to build out the infrastructure that will be needed to support closed loop referrals.[65] For example, specifically for the rollout of the CalAIM Enhanced Care Management (ECM) and Community Supports benefits, Medi-Cal Managed Care Plans (MCPs) can use Incentive Payment Program (IPP) payments to build out networks of providers, including community health workers, who can support opening and closing referral loops.[65,68]

For primary care providers (PCPs), the recently announced Equity and Practice Transformation (EPT) Payments present opportunities "to advance health equity and reduce COVID-19-driven care disparities by investing in up-stream care models and partnerships to address health and wellness and funding practice transformation.[69]" PCPs can use the EPT payments to build the infrastructure and staffing in their practice for closed loop referrals.[69] Further, MCPs and other interested parties can operationalize closed loop referral policies through memorandums of understanding (MOU) requirements.[70] Specifically, starting in January 2024, MCPs are required to enter MOUs with Third Parties (i.e., various programs and agencies) to facilitate care coordination and information exchange, including WIC agencies, county child welfare departments, and regional centers.[70]

BEST PRACTICES FOR IMPLEMENTATING CLOSED LOOP REFERRAL SYSTEMS

Require Clear Definitions and Standards

The term "closed loop referral" is not consistently understood or used in the same way across sectors, to the extent it is used at all.[71,72] Definitions and standards will be important for closed loop referral policies so that it is clear to all parties involved the role/responsibility of each entity/person, the information and actions that constitute a referral, and the key steps, sequences, and methodologies, that constitute the closing of a referral loop.[71,72] It is also important to identify which types of referrals are the highest priority for tracking and monitoring. These definitional standards need to be consistent statewide and will need to be incorporated into electronic interfaces, workflows, and staffing models across provider types.[71,72] HCOs and CBOs involved in referral loops will need clear directions for how to make referrals and a basic understanding of who is eligible for services that could be available to them.[71,72] Further, these definitions should consistently be codified in formal contracts and agreements, like MOUs, when developing standards and timelines, including processes for expediting closed loop referrals for urgent needs.[71,72]

Leverage Data and Integrate Technology

Data sharing is necessary for closed loop referrals, but data sharing is limited and varied. Experience suggests that "the future of resource database design should center on technology and

solutions that strengthen pathways for coordination and communication between health care, community resources and community members."[71,73] Yet, there are many concerns and challenges around data literacy and how referral and service information will be shared in a timely way across systems and referral management platforms and vendors to close referral loops.[73] The field uses many platforms and resource directories for referrals that are not standardized, cohesively linked, up-to-date, or connected, especially with EHR systems or health plan data systems.[20,71,73] As a result, health care professionals navigate multiple referral systems depending on the patient's needs and what community support services and community partners are available to the patient.[20,71,73] Further, some platforms may not be able to fully capture and/or communicate all stages of a closed loop referral, much less share patient care plans or be used for ongoing quality improvement.[20,71] Patient/family access to their own referral information varies across systems designed towards connecting agencies or institutions, but thoughtful communication modalities and technologies like apps and text-messaging can help close the information gap in some instances.[20,71]

The variation in referral systems creates an unreasonable burden on the health care professionals who are responsible for opening and closing referral loops and may have preferred EHR systems or other data systems they use for their patient/client/member care.[20,71,73] Participants in some studies reported finding referral solutions, such as communicating with external partners through their Microsoft Teams communications platform or using the clinic's EHR system to fax referrals to community mental health providers.[20,71] Interoperable data systems and workflows will require training of health care professionals and staff and providers in community-based organizations on how to use them and ensure appropriate user permissions, and ideally these systems could track all stages of the closed loop referral in as real- time as possible.[20,71] There are also significant concerns about sharing personal identifiable and protected health information with other providers or agencies.[20,71] It should be noted there are initiatives to improve data interoperability such as through Regional Health Information Organizations (RHIO). The goal of RHIO is to oversee the means of information exchange within a geographical area among various provider settings, payers and government agencies.[74] This initiative may be a potential pathway to consider in addressing data interoperability in a closed loop referral system.[74]

Rely On Trusted Partnerships and Referral Pathways

While technology and electronic data-sharing is important for referrals, it does not replace interpersonal work, relationships, and interorganizational networks that are foundational to referrals.[75] Closed loop referrals are most effective in promoting equitable health outcomes when individuals are engaged in a timely manner (i.e., no scheduling delays or geographic barriers to care) and in a meaningful way (i.e., the individual's preferred language, information provided is easy to understand, etc.).[75] Common barriers to closing the referral loop include the lack of collective and consistent use of referral platforms by the entities involved in referrals, as well as challenges finding available and qualified providers and resources (i.e., housing, food, culturally congruent providers, etc.) to refer individuals to.[75]

Health system partnerships with libraries, places of worship, laundromats, barber shops, fire departments, dollar stores, shopping malls, and other local sites offer the chance to connect with families who most need referral and navigation support in places within the community they already trust enough to meet their other basic needs.[76] Health care professionals will need to authentically engage clinics, local CBOs, county agencies, and other partners to support the establishment of effective workflows, data exchanges, legal agreements, and communication channels.[76] Work will need to be done to understand and address the needs and constraints of both the referring clinician and the receiving provider and provide ongoing training, technical assistance, monitoring, and financial resources or incentives to promote closed loop referrals.[76]

Further, it is important to remember that due to the past and ongoing impact of racism in health care, inclusive of systematic segregation, differential medical treatment based on race and ethnicity, and limited resources allocated to people and communities of color, there is wide variability in the availability of and access to local resources in communities.[75] In addition, many areas may lack reliable internet and broadband access needed for electronic referrals and data sharing.[75] Gaps in service area resources will need to be identified early to make the best use of available providers and map the places where service expansion will be needed.[75]

Training and Ongoing Support

It is critical to establish an efficient and compassionate referral network that meets the needs of individuals.[20,75,77] Best practices for this include assessing the need for initial and ongoing training for health care professionals and providers in CBOs on how to operationalize a closed loop referral system and coaching to foster a patient-centered approach to making referrals.[20,71,77] Operational training equips health care professionals and providers in CBOs with the skills to effectively navigate and utilize referrals in a digital landscape. Understanding the operational intricacies of a digital system, documentation requirements, referral initiation procedures, and tracking mechanisms is vital for ensuring that the referral process is seamless, efficient, and protective of sensitive information.[71,75,77] This training ensures health care professionals and providers in CBOs can use the system proficiently, thereby improving the accuracy, timeliness, and success of referrals they make, ultimately enhancing the quality of care.[71,75,77] Successful referrals are patient-centered, which often require cultural humility, empathetic communication, and a trauma-informed approach.[77] These skills should be integrated into closed loop referral coaching and support for all health care professionals and providers in CBOs.

To ensure referral-making is trauma-informed, health care professionals and providers in CBOs should be coached on how to prioritize creating a safe and supportive environment and respect the patient's autonomy and choices.[71,75,77]Health care professionals and providers in CBOs should understand how to consider the potential triggers and sensitivities related to the referral process, aiming to minimize retraumatization.[71,75,77] A patient-centered approach to referrals also considers the background and circumstances of the patient. Historically, patients of color and varying gender and sexual identities have been discriminated against and disrespected in health care settings.[71,75,77] It is critical that health care providers and staff and providers in community-based organizations understand the disparities that affect these communities and are culturally conscious in how they communicate during the referral process. Furthermore, the closed loop referral process should emphasize and acknowledge that health care professionals and providers in CBOs who are embedded in the community are best situated to make referrals.[71,75,77]

It is also important to note that studies have identified higher physician engagement in addressing HRSN were associated with a greater likelihood of burnout.[78] Specifically, high engagement in addressing HRSN was observed among physicians identifying as women or transgender women, those reporting Black or African American or other race and ethnicity, and those who frequently used non-English languages in patient communication.[78] This could be due to intrinsic factors, with physicians from certain racial and ethnic groups potentially feeling a stronger commitment to addressing HRSN.[78] Importantly, these findings add an additional layer to diversity, equity, and inclusion efforts in medicine by critically considering the "minority tax"—the extra responsibilities that historically marginalized physicians often experience.[78,79] Recognizing patients' ongoing, unmet HRSN without being able to fully address them could potentially lead to a sense of helplessness, contributing to burnout.[78,80] Addressing HRSN necessitates interdisciplinary teamwork, such as HRSN screening often being led by nonphysician staff (i.e., nurses, social workers, and community health workers); therefore, training and education can be incorporated to

help physicians effectively collaborate with interprofessional team members to address HRSN for patient populations.[78,81]

Resource and Monitor Referrals

The infrastructure to make closed loop referrals possible will need to be fully resourced and sustained. This goes beyond the high start-up costs of technological platforms or data integration but also applies to the ongoing needs to maintain a workforce (hiring, training, etc.) to manage referrals and ensure there are qualified providers available to receive referrals and deliver referred services.[20,32,71] This will require intentional and ongoing efforts and formalized relationships (i.e., contracts, MOUs, etc.) between health care professionals and community providers, as well as ongoing, cross-sector community reinvestment at state, local, and health system levels that are refined over time to fill in gaps and meet the changing needs of the patient population.[20,32,70,71] Furthermore, data captured on both successful and unsuccessful implementation of closed loop referrals should be used to fund and build local infrastructure to meet the needs of patients.[20,32,71]

EXISTING AMA POLICY

AMA policy H-165.822 "Health Plan Initiatives Addressing Social Determinants of Health," recognizes that social determinants of health encompass more than health care and encourages new and continued partnerships among all levels of government, the private sector, philanthropic organizations, and community- and faith-based organizations to address non-medical, yet critical health needs and the underlying social determinants of health. This policy also states that the AMA supports: continued efforts by public and private health plans to address SDOH in health insurance benefit designs; mechanisms, including the establishment of incentives, to improve the acquisition of data related to social determinants of health, while minimizing burdens on patients and physicians; and research to determine how best to integrate and finance non-medical services as part of health insurance benefit design, and the impact of covering non-medical benefits on health care and societal costs. Further, it encourages coverage pilots to test the impacts of addressing certain non-medical, yet critical health needs, for which sufficient data and evidence are not available, on health outcomes and health care costs.

The AMA has also involved in efforts aimed at improving patients' health by addressing SDOH. This includes but is not limited to being a founding member of the Gravity Project, a Robert Wood Johnson-funded initiative with more than 2,500 participants from organizations and entities representing health care, social services, payers, technology vendors, and government agencies working to develop consensus-driven data standards to support the collection, use and exchange of SDOH data.

CONCLUSION

Responding to compelling evidence that links social risks—such as food, housing, transportation, or economic insecurity—to health care outcomes, health care practices are considering how to improve patients' social conditions.[43,87] Several forces have spurred the momentum to act on evidence linking social risks and health care outcomes including the ongoing shift towards value-based care in the Affordable Care Act and beyond, campaigns advanced by clinician organizations such as the American Academy of Family Physicians, and influential reports by the National Academies of Sciences, Engineering, and Medicine and others.[43,88,89] As a result, health care

practices report screening patients for at least one HRSN.[34,43,88] Information on patients' HRSN can be used by health care professionals to gain a deeper understanding of their patients' lives, to adjust patient's care plan (i.e., changes to medications or follow-up schedule), and to improve social conditions.[43,88] For many health care practices, the next step is providing patients with a referral to CBOs to address their social needs.[43,88] Closed loop referral platforms can be used to address this next step by allowing for efficient communication and coordination between health care professionals and CBOs.[12,13] It ensures that patient data and information are communicated to the right individuals at the right time, allowing for review, action, acknowledgment, and documentation.[12,13] The platform facilitates referrals from health care professionals to CBOs and enables reporting back on whether the patient's HRSN were addressed.[12,13]

There are many factors impacting the success of a closed loop referral system, including: technology (electronic referral, response and feedback), processes (effectiveness, efficiency), organizational (management, policy and planning, rules and regulations), and patient-centered individual characteristics (social capital, transportation, awareness, attitude, satisfaction, and social influence).[14,32,65,71,88] However, efforts have been underway to address these barriers to improve the effectiveness of the closed loop referral systems in improving social and health outcomes. Successful efforts thus far have incorporated four main best practices: (1) establishment of collaborative governance for shared decision-making processes, fostering trust, alignment, and transparency among organizations; (2) development of technology linkages between existing platforms to facilitate seamless referrals between organizations and ensure visibility of referral outcomes; (3) integration of regional resource directories into technology infrastructure to ensure resource accessibility/quality; and (4) evaluation of the system's impact on health equity, efficiency, and cost reduction.[12,14,32,65,71,75] It should be noted that more states are exploring the integration of closed loop referral systems to address SDOH which will continue to shape the best practices needed for successful implementation.[34,62,66,82]

RECOMMENDATIONS

The Council on Science and Public Health recommends that the following be adopted, and the remainder of the report be filed.

1. Our AMA acknowledges closed loop referral systems are a mechanism to address social determinants of health (SDOH) through a community-level, system approach that connects clinicians and the patients they serve to health care services and social support services.
2. Our AMA supports the continued evaluation of closed loop referral systems in addressing SDOH and health-related social needs to identify best practices and improve health outcomes.
3. Our AMA supports continued research to streamline the workflow processes and ensure two-way communication for closed loop referrals between health care systems and community-based organizations to address SDOH and health-related social needs.
4. Our AMA supports: (a) using data to foster hospitals, health insurance, private sector, philanthropic organizations, and community- and faith-based organizations investment in addressing SDOH, (b) reducing barriers to using grants to address SDOH, and (c) promoting federal- and state- initiatives to expand funding for SDOH health-related social needs interventions. (New HOD Policy)

Fiscal Note: less than $1,000

APPENDIX I – Key Terms

There are a few key terms that will be used throughout this report that are important to define because they are often used interchangeably when they have different definitions. These key terms are as follows:

- **Social determinants of health** (SDOH): The conditions in the environments where people are born, live, learn, work, play, worship, and age that affect a wide range of health, functioning, and quality-of-life outcomes and risks. SDOH refers to community-level factors.[90] They are sometimes called "social drivers of health."[90]
- **Health-related social needs** (HRSN): Social and economic needs that individuals experience that affect their ability to maintain their health and well-being.[2] They put individuals at risk for worse health outcomes and increased health care use. HRSN refers to individual-level factors such as financial instability, lack of access to healthy food, lack of access to affordable and stable housing and utilities, lack of access to health care, and lack of access to transportation.[2]
- **Health disparities**: Preventable differences in the burden of disease, injury, violence, or opportunities to achieve optimal health, health quality, or health outcomes experienced by disadvantaged populations.[91]
- **Health equity**: The attainment of the highest level of health achievable for all people, where everyone has a fair and just opportunity to attain their optimal health regardless of race, ethnicity, disability, sexual orientation, gender identity, socioeconomic status, geography, preferred language, or other factors that affect access to care and health outcomes.[92]
- **Community-Based Organization** (CBO): A non-profit organization whose members represent a local community and focus on addressing the community's sociocultural conditions and lived experiences.[93] This can include improving the community members' social and health risks.[93]
- **Care Coordination Services**: A model of care approach aimed at connecting individuals to a full range of community health promotion services.[94]

APPENDIX II – CMS Waivers and Demonstration Programs for HRSN

- **Section 1905(a) State Plan Authority**: States have used Section 1905(a) to establish peer support and case management services, which are then used to link beneficiaries to HRSN supports. As of 2018, 19 states indicated that case management is a covered benefit in their program, and 36 indicated that targeted case management is a covered benefit (though this benefit may be provided under section 1915(g)*).[95,96]
- **Home and Community Based Services (HCBS)**: Several states have utilized HCBS to implement housing-related services, including 46 states with section 1915(c) waivers; † four states with section 1915(i) benefits; and eight states with section 1915(k) benefits as

of 2021.[97] For example, Minnesota is using section1915(i) state plan authority to provide housing stabilization services to certain individuals that are experiencing homelessness or are at risk of becoming homeless.[98] In their first year, the state reported that they served 7,203 individuals.[97,98]

- **Section 1115 Demonstrations**: As of 2021, 25 states have utilized the flexibility provided by section 1115 demonstrations to address HRSN, such as housing-related services, nutrition, transportation, and interpersonal violence.[97,98] For example, CMS recently approved an 1115 waiver for California's Medicaid program (Medi-Cal) to launch California Advancing and Innovating Medi-Cal (CalAIM), which seeks to integrate the Medi-Cal program with other social services through a "no wrong door" approach that couples clinical care with Medicaid reimbursable nonmedical services, including housing supports, medical respite, personal care, medically tailored meals, and peer supports.[66] However, as of February 2022, four states have also used section 1115 demonstrations to waive NEMT, a benefit that is typically required.[99]
- **Section 1945 Health Homes**: As of April 2021, there are 37 Health Home models across 21 states and the District of Columbia, all of which must include comprehensive case management, individual and family support, and referrals to community and social services, among other required services.[100]
- **Managed Care Programs**: As of 2018, 37 states have implemented requirements in their managed care contracts related to HRSN and SDOH.[101]

REFERENCES

1. Centers for Medicare & Medicaid Services. Social Drivers of Health and Health-Related Social Needs. https://www.cms.gov/priorities/innovation/key-concepts/social-drivers-health-and-health-related-social-needs
2. U.S. Department of Health and Human Services. HHS Call to Action: Addressing Health-Related Social Needs in Communities Across the Nation. Published online November 2023. chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://aspe.hhs.gov/sites/default/files/documents/3e2f6140d0087435cc6832bf8cf32618/hhs-call-to-action-health-related-social-needs.pdf
3. Singh GK, Daus GP, Allender M, et al. Social Determinants of Health in the United States: Addressing Major Health Inequality Trends for the Nation, 1935-2016. *Int J MCH AIDS*. 2017;6(2):139-164. doi:10.21106/ijma.236
4. Schopfer DW. Rural health disparities in chronic heart disease. *Prev Med*. 2021;152(Pt 2):106782. doi:10.1016/j.ypmed.2021.106782
5. Muennig P, Fiscella K, Tancredi D, Franks P. The Relative Health Burden of Selected Social and Behavioral Risk Factors in the United States: Implications for Policy. *Am J Public Health*. 2010;100(9):1758-1764. doi:10.2105/AJPH.2009.165019
6. Whitman A, De Lew N, Chappel A. Addressing social determinants of health: examples of successful evidence-based strategies and current federal efforts. *Department of Health and Human Services, Office of the Assistant Secretary for Planning and Evaluation, Office of Health Policy,*. Published online April 1, 2022.
7. World Health Organization. Health Equity. https:ljwww.who.int/health-topics/health-equity
8. Hood CM, Gennuso KP, Swain GR, Catlin BB. County Health Rankings. *American Journal of Preventive Medicine*. 2016;50(2):129-135. doi:10.1016/j.amepre.2015.08.024
9. Tsega M. Review of Evidence for Health-Related Social Needs Interventions. https ://www .com monwealthfu nd .org/sites/ defa u lt/fi les/2019-07 /ROI-EVIDENCE-REVIEW-FINAL-VERSI ON. pdf
10. Blue Cross Blue Shield of Massachusetts Foundation. Leveraging the Social Determinants of Health: What Works? Published online June 2015. https://www.bluecrossmafoundation.org/sites/g/files/csphws2101/files/2020- 10/Social Equity Report Final.pdf
11. U.S. Department of Health and Human Services. Building the Evidence Base for Social Determinants of Health Interventions. Published online September 2021. https://aspe.hhs.gov/reports/building-evidence-base-social-determinants-health-interventions
12. The HIMSS Electronic Health Record (EHR) Association. Closed-Loop Referrals for Health-Related Social Needs: Barriers and Recommendations. Published online September 2024. chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://www.ehra.org/sites/ehra.org/files/Closed-Loop%20Referrals%20for%20Health-Related%20Social%20Needs%20Barriers%20and%20Recommendations%20September%202024.pdf

13. Activate Care. Spotlight on SDOH Data: Closed-Loop Referrals for Health-Related Social Needs. https://blog.activatecare.com/sdoh-data-closed-loop-referrals
14. Nemours Children's Health System. Community Care Coordination Systems: Technology Supports. Published online 2018. chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://www.movinghealthcareupstream.org/wp-content/uploads/2018/09/FINAL_Nemours_CommCareSysTechSupp-1.pdf
15. Mays GP, Mamaril CB, Timsina LR. Preventable Death Rates Fell Where Communities Expanded Population Health Activities Through Multisector Networks. *Health Affairs*. 2016;35(11):2005-2013. doi:10.1377/hlthaff.2016.0848
16. Gottlieb LM, Hessler D, Long D, et al. Effects of Social Needs Screening and In-Person Service Navigation on Child Health: A Randomized Clinical Trial. *JAMA Pediatr*. 2016;170(11):e162521. doi:10.1001/jamapediatrics.2016.2521
17. Fiechtner L, Puente GC, Sharifi M, et al. A Community Resource Map to Support Clinical–Community Linkages in a Randomized Controlled Trial of Childhood Obesity, Eastern Massachusetts, 2014–2016. *Prev Chronic Dis*. 2017;14:160577. doi:10.5888/pcd14.160577
18. Hassan A, Scherer EA, Pikcilingis A, et al. Improving Social Determinants of Health: Effectiveness of a Web-Based Intervention. *Am J Prev Med*. 2015;49(6):822-831. doi:10.1016/j.amepre.2015.04.023
19. Gottlieb L, Hessler D, Long D, Amaya A, Adler N. A Randomized Trial on Screening for Social Determinants of Health: the iScreen Study. *Pediatrics*. 2014;134(6):e1611-e1618. doi:10.1542/peds.2014-1439
20. Cartier Y, Fichtenberg C, Gottlieb LM. Implementing Community Resource Referral Technology: Facilitators And Barriers Described By Early Adopters: A review of new technology platforms to facilitate referrals from health care organizations to social service organizations. *Health Affairs*. 2020;39(4):662-669. doi:10.1377/hlthaff.2019.01588
21. Hamity C, Jackson A, Peralta L, Bellows J. Perceptions and Experience of Patients, Staff, and Clinicians with Social Needs Assessment. *TPJ*. 2018;22(4S):18-105. doi:10.7812/TPP/18-105
22. Byhoff E, Garg A, Pellicer M, et al. Provider and Staff Feedback on Screening for Social and Behavioral Determinants of Health for Pediatric Patients. *J Am Board Fam Med*. 2019;32(3):297-306. doi:10.3122/jabfm.2019.03.180276
23. Palakshappa D, Vasan A, Khan S, Seifu L, Feudtner C, Fiks AG. Clinicians' Perceptions of Screening for Food Insecurity in Suburban Pediatric Practice. *Pediatrics*. 2017;140(1):e20170319. doi:10.1542/peds.2017-0319
24. Schickedanz A, Hamity C, Rogers A, Sharp AL, Jackson A. Clinician Experiences and Attitudes Regarding Screening for Social Determinants of Health in a Large Integrated Health System. *Medical Care*. 2019;57(Suppl 2):S197-S201. doi:10.1097/MLR.0000000000001051
25. Freij M, Dullabh P, Lewis S, Smith SR, Hovey L, Dhopeshwarkar R. Incorporating Social Determinants of Health in Electronic Health Records: Qualitative Study of Current Practices Among Top Vendors. *JMIR Med Inform*. 2019;7(2):e13849. doi:10.2196/13849
26. Mathematica. Examining New York's Delivery System Reform Incentive Payment demonstration: achievements at the demonstration's midpoint and lessons for other states. 2018. https://www .mathematica.org/our-publicationsand- findings/publications/ examining-new-yorks-deliverysystem- reform-incentive-paymentdemonstration- achievements
27. Centers for Medicare & Medicaid Services. State Innovation Models initiative: general information. https:// innovation.cms.gov/initiatives/ state-innovations/
28. Centers for Medicare, and Medicaid Services. Accountable Health Communities Model. https:// innovation.cms.gov/initiatives/ ahcm/
29. Ross J, Stevenson F, Lau R, Murray E. Factors that influence the implementation of e-health: a systematic review of systematic reviews (an update). *Implementation Sci*. 2016;11(1):146. doi:10.1186/s13012-016-0510-7

30. Wortman Z, Tilson EC, Cohen MK. Buying Health For North Carolinians: Addressing Nonmedical Drivers Of Health At Scale: This article describes initiatives the North Carolina Department of Health and Human Services is implementing to integrate medical and nonmedical drivers of health. *Health Affairs*. 2020;39(4):649-654. doi:10.1377/hlthaff.2019.01583
31. Edmondson AC, Bohmer RM, Pisano GP. Disrupted Routines: Team Learning and New Technology Implementation in Hospitals. *Administrative Science Quarterly*. 2001;46(4):685-716. doi:10.2307/3094828
32. Alley DE, Asomugha CN, Conway PH, Sanghavi DM. Accountable Health Communities — Addressing Social Needs through Medicare and Medicaid. *N Engl J Med*. 2016;374(1):8-11. doi:10.1056/NEJMp1512532
33. Ackerman SL, Sarkar U, Tieu L, et al. Meaningful use in the safety net: a rapid ethnography of patient portal implementation at five community health centers in California. *Journal of the American Medical Informatics Association*. 2017;24(5):903-912. doi:10.1093/jamia/ocx015
34. Alderwick H, Hood-Ronick CM, Gottlieb LM. Medicaid Investments To Address Social Needs In Oregon And California. *Health Affairs*. 2019;38(5):774-781. doi:10.1377/hlthaff.2018.05171
35. Center for Health Care Strategies. Addressing Social Determinants of Health via Medicaid Managed Care Contracts and Section 1115 Demonstrations. Published online December 2018. https://www.chcs.org/media/Addressing-SDOH-Medicaid-Contracts-1115-Demonstrations-121118.pdf
36. DeSalvo K, Haque H. From the ONC desk: HHS and ONC invest $28 million in health information exchange grants. HealthITBUZZ. 2015. https://www.healthit.gov/buzz-blog/from-the-onc-desk/health-information-exchange-grants/
37. Federal Register. Medicaid and Children's Health Insurance Program (CHIP); Medicaid managed care, CHIP delivered in managed care, and revisions related to third party liability: a rule by the Centers for Medicare & Medicaid Services. 2016. https://www.federalregister.gov/documents/2016/05/06/2016-09581/medicaidand-childrenshealth- insurance-program-chip-programs-medicaid-managed-care-chip-delivered.
38. Heflin K. Driving health care innovation through DRISP: state of the states. 2014. https://www.chcs.org/driving-health-care-innovation-through-dsrip/.
39. California Department of Health Care Services. Medi-Cal 2020 demonstration. http://www.dhcs.ca.gov/provgovpart/Pages/medi-cal-2020-waiver.aspx.
40. Oregon Health Authority. 2017-2022 1115 waiver renewal. http://www.oregon.gov/oha/HPA/HP-Medicaid-1115-Waiver/Pages/Waiver-Renewal.aspx.
41. Washington State Health Care Authority. Medicaid transformation. https://www.hca.wa.gov/abouthca/ healthier-washington/medicaid-transformation
42. North Carolina Department of Health and Human Services. North Carolina's proposed program design for Medicaid managed care. https://files.nc.gov/ncdhhs/documents/files/MedicaidManagedCare_ ProposedProgramDesign_REVFINAL_20170808.pdf.
43. Beidler LB, Razon N, Lang H, Fraze TK. "More than just giving them a piece of paper": Interviews with Primary Care on Social Needs Referrals to Community-Based Organizations. *J Gen Intern Med*. 2022;37(16):4160-4167. doi:10.1007/s11606-022-07531-3
44. The Office of the National Coordinator for Health Information Technology. United States Core Data for Interoperability (USCDI). chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://www.healthit.gov/sites/default/files/page2/2020-03/USCDI.pdf
45. Office of the National Coordinator for Health Information Technology. Health Data, Technology, and Interoperability (HTI-2): Patient Engagement, Information Sharing, and Public Health Interoperability PROPOSED RULE USCDI Version 4. July 2024. chrome-

extension://efaidnbmnnnibpcajpcglclefindmkaj/https://www.healthit.gov/sites/default/files/page/2024-07/HTI-2_ProposedRule_USCDI_v4_508.pdf
46. Substance Abuse and Mental Health Services Adminstration (SAMHSA). Certified Community Behavioral Health Clinics (CCBHCs). https://www.samhsa.gov/communities/certified-community-behavioral-health-clinics
47. Yan AF, Chen Z, Wang Y, et al. Effectiveness of Social Needs Screening and Interventions in Clinical Settings on Utilization, Cost, and Clinical Outcomes: A Systematic Review. *Health Equity*. 2022;6(1):454-475. doi:10.1089/heq.2022.0010
48. Chen M, Tan X, Padman R. Social determinants of health in electronic health records and their impact on analysis and risk prediction: A systematic review. *Journal of the American Medical Informatics Association*. 2020;27(11):1764-1773. doi:10.1093/jamia/ocaa143
49. Kreuter MW, Thompson T, McQueen A, Garg R. Addressing Social Needs in Health Care Settings: Evidence, Challenges, and Opportunities for Public Health. *Annu Rev Public Health*. 2021;42(1):329-344. doi:10.1146/annurev-publhealth-090419-102204
50. DOMESTIC POLICY COUNCIL OFFICE OF SCIENCE AND TECHNOLOGY POLICY. THE U.S. PLAYBOOK TO ADDRESS SOCIAL DETERMINANTS OF HEALTH. Published online November 2023. https://www.whitehouse.gov/wp-content/uploads/2023/11/SDOH-Playbook-4.pdf
51. DEPARTMENT OF HEALTH & HUMAN SERVICES Centers for Medicare & Medicaid Services. SHO# 21-001 RE: Opportunities in Medicaid and CHIP to Address Social Determinants of Health (SDOH). chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://www.medicaid.gov/federal-policy-guidance/downloads/sho21001.pdf
52. Centers for Medicare & Medicaid Services. Accountable Health Communities Evaluation of Performance Years 1-3 (2017-2020). https://innovation.cms.gov/data-and-reports/2020/ahc-firsteval-rpt-fg
53. Centers for Medicare & Medicaid Services. CMS finalizes Medicare Advantage and Part D payment and policy updates to maximize competition and coverage. April 2019. https://www.cms.gov/newsroom/press-releases/cms-finalizes-medicare-advantage-and-part-dpayment-and-policy-updates-maximize-competition-and
54. Centers for Medicare & Medicaid Services. Fiscal Year (FY) 2022 Medicare Hospital Inpatient Prospective Payment System (IPPS) and Long Term Care Hospital (LTCH) Rates Final Rule (CMS-1752F). April 2021. https://www.cms.gov/newsroom/fact-sheets/fiscal-year-fy-2022-medicare-hospitalinpatient-prospective-payment-system-ipps-and-long-term-care-0
55. Administration for Community Living. Nutrition Services. February 2022. https://acl.gov/programs/health-wellness/nutrition-services
56. Administrative for Community Living. Title III Older Americans Act (OAA) State Performance Report (SPR) and Older Americans Act Performance System (OAAPS). October 2021. https://acl.gov/newsand-events/announcements/older-americans-act-oaa-state-program-performance-report-sprredesign
57. Administration for Community Living. National Survey of OAA Participants. 2019. https://agid.acl.gov/datafiles/NPS/
58. Administration for Community Living. ACL Awards 2021 No Wrong Door Community Infrastructure Grants. September 2021. https://acl.gov/news-and-events/announcements/acl-awards-2021-nowrong-door-community-infrastructure-grants
59. Office of the National Coordinator for Health Information Technology. About ASTP/ONC. https://www.healthit.gov/topic/about-astponc
60. Office of the National Coordinator for Health Information Technology. 2024-2030 Federal Health IT Strategic Plan. chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://www.healthit.gov/sites/default/files/page/2024-09/ASTP%202024-2030%20Strategic%20Plan_508.pdf

61. About NCCARE 360. Accessed January 24, 2025. https://nccare360.org/about/
62. UniteUs.com. Majority of New York Social Care Networks will Leverage Unite Us to Align with 1115 Medicaid Waiver Goals, Serving Nearly 75% of State Medicaid Members. Accessed January 24, 2025. https://uniteus.com/press/ny-social-care-networks-unite-us-1115-medicaid-waiver-alignment/
63. About Seattle Indian Health Board. January 24, 2025. https://www.sihb.org/about/
64. Camden Health. Regional Health Hub. Accessed January 24, 2025. https://camdenhealth.org/work/regional-health-hub/
65. Children Now. Closing the Loop: Recommendations for Medi-Cal Referral Systems to Support Children and Families. Published online November 2023. https://www.childrennow.org/portfolio-posts/closing-the-loop-recommendations-for-medi-cal-referral-systems-to-support-children-and-families/
66. California Health Care Foundation. CalAIM Explained: A Five-Year Plan to Transform Medi-Cal. 2021. https://www.chcf.org/wp-content/uploads/2021/07/CalAIMExplainedFiveYearPlan.pdf
67. Department of Health Care Services. Medi-Cal for Kids & Teens. https://www.dhcs.ca.gov/services/Medi-Cal-For-Kidsand- Teens/Pages/home.aspx
68. Department of Health Care Services. Incentive Payment Program. https://www.dhcs.ca.gov/Pages/ IncentivePaymentProgram.aspx
69. Department of Health Care Services. Equity and Practice Transformation (EPT) Payment Program Guidance for Primary Care Practices and Medi-Cal Managed Care Plans. August 2023. https://www.dhcs.ca.gov/qphm/Documents/EPTGuidance- for-Primary-Care-Practices-and-Medi-Cal-Managed-Care-Plans.pdf
70. Department of Health Care Services. Memoranda of Understandings Between Medi-Cal Managed Care Plans and Third Party Entities. https://www.dhcs.ca.gov/Pages/MCPMOUS.aspx
71. Seyed-Nezhad M, Ahmadi B, Akbari-Sari A. Factors affecting the successful implementation of the referral system: A scoping review. *J Family Med Prim Care*. 2021;10(12):4364-4375. doi:10.4103/jfmpc.jfmpc_514_21
72. Transforming Clinical Practice Initiative. Closing-the-Loop. https://www.cms.gov/priorities/innovation/files/x/tcpi-san-pp-loop.pdf
73. Heath Leads. Best Practices from the Field: Using Social Determinants of Health Resource and Referral Data to Increase Equitable Access and Connection Rates to Essential Resources. 2021. https://healthleadsusa.org/wp-content/ uploads/2021/06/Best-Practices-from-the-Field-Health-Resource-and-Referral-Data.pdf
74. Rosencrance L. Regional Health Information Organization (RHIO). https://www.techtarget.com/searchhealthit/definition/Regional-Health-Information-Organization-RHIO
75. Iott BE, Eddy C, Casanova C, Veinot TC. More than a Database: Understanding Community Resource Referrals within a Socio-Technical Systems Framework. *AMIA Annu Symp Proc*. 2020;2020:583-592.
76. Hole MK, Letchuman S, Chang A, Berry LL. Community Health Partners in Unexpected Places. *Mayo Clinic Proceedings*. 2023;98(12):1833-1841. doi:10.1016/j.mayocp.2023.07.031
77. Reproductive Health National Training Center. Establishing and Providing Effective Referrals for Clients: A Toolkit for Family Planning Providers. Published online July 2022. , https://rhntc.org/resources/establishing-and-providing-effectivereferrals-clients-toolkit-family-planning-providers
78. Tabata-Kelly M, Hu X, Dill MJ, et al. Physician Engagement in Addressing Health-Related Social Needs and Burnout. *JAMA Netw Open*. 2024;7(12):e2452152. doi:10.1001/jamanetworkopen.2024.52152

79. Campbell KM, Rodríguez JE. Addressing the Minority Tax: Perspectives From Two Diversity Leaders on Building Minority Faculty Success in Academic Medicine. *Academic Medicine*. 2019;94(12):1854-1857. doi:10.1097/ACM.0000000000002839
80. Kung A, Cheung T, Knox M, et al. Capacity to Address Social Needs Affects Primary Care Clinician Burnout. *Ann Fam Med*. 2019;17(6):487-494. doi:10.1370/afm.2470
81. Sandhu S, Xu J, Eisenson H, Prvu Bettger J. Workforce Models to Screen for and Address Patients' Unmet Social Needs in the Clinic Setting: A Scoping Review. *J Prim Care Community Health*. 2021;12:21501327211021021. doi:10.1177/21501327211021021
82. McConnell KJ. Oregon's Medicaid Coordinated Care Organizations. *JAMA*. 2016;315(9):869. doi:10.1001/jama.2016.0206
83. Oregon Health Authority. Oregon's health system transformation 2014 final report. http://www.oregon.gov/oha/Metrics/Documents/2014-Final-Report-June-2015-ADA-Accessible.pdf
84. Oregon Health Authority. Social determinants of health (SDOH) incentive metric. https://www.oregon.gov/oha/hpa/dsi-tc/pages/sdoh-metric.aspx#:~:text=In%20May%202022%2C%20the%20Metrics,social%20needs%20acknowledged%20and%20addressed.
85. AMA. What is value-based care? January 12, 2025. https://www.ama-assn.org/practice-management/payment-delivery-models/what-value-based-care
86. AMA, The National Association of ACOs (NAACOS), AHIP. The Future of Sustainable Value-Based Payment: Voluntary Best Practices to Advance Data Sharing. Published online 2023. https://www.ama-assn.org/system/files/data-sharing-playbook.pdf
87. Aceves B, De Marchis E, Loomba V, Brown EM, Gottlieb LM. Stakeholder perspectives on social screening in US healthcare settings. *BMC Health Serv Res*. 2023;23(1):246. doi:10.1186/s12913-023-09214-z
88. National Academies of Sciences, Medicine Division, and Committee on Integrating Social Needs Care into the Delivery of Health Care to Improve the Nation's Health. *Integrating Social Care into the Delivery of Health Care: Moving Upstream to Improve the Nation's Health.*; 2019.
89. American Academy of Family Physicians. Social Determinants of Health (SDoH): Family Physicians' Role. 2018. https://www.aafp.org/dam/AAFP/documents/patient_care/everyone_project/sdoh-survey-results.pdf
90. U.S Department of Health and Human Services. Social Determinants of Health. https://odphp.health.gov/healthypeople/priority-areas/social-determinants-health
91. Center for Disease and Control. Health Disparities. https://www.cdc.gov/healthy-youth/health-disparities/index.html
92. Centers for Medicare & Medicaid Services. Health Equity. https://www.cms.gov/pillar/health-equity
93. Adebayo OW, Salerno JP, Francillon V, Williams JR. A systematic review of components of community-based organisation engagement. *Health Soc Care Community*. 2018;26(4):e474-e484. doi:10.1111/hsc.12533
94. Centers for Medicare & Medicaid Services. Care Coordination. https://www.cms.gov/priorities/innovation/key-concepts/care-coordination
95. Kaiser Family Foundation. State Health Facts, Medicaid Benefits: Case Management. 2018. https://www.kff.org/other/state-indicator/medicaid-benefits-casemanagement/?currentTimeframe=0&sortModel=%7B%22colId%22:%22Location%22,%22sort%22:%2 2asc%22%7D
96. Kaiser Family Foundation. State Health Facts, Medicaid Benefits: Targeted Case Management. 2018. https://www.kff.org/medicaid/state-indicator/targeted-

casemanagement/?currentTimeframe=0&sortModel=%7B%22colId%22:%22Location%22,%22sort%22:%2 2asc%22%7D
97. Medicaid and CHIP Payment and Access Commission. Medicaid's Role in Housing. https://www.macpac.gov/wp-content/uploads/2021/06/Medicaids-Role-in-Housing-1.pdf
98. Corporation for Supportive Housing. Summary of State Actions, Medicaid & Housing Services. August 2021. https://www.csh.org/wp-content/uploads/2021/08/Summary-of-State-Action_-Medicaid-andSupportive-Housing-Services-2021-08.pdf
99. Kaiser Family Foundation. Medicaid Waiver Tracker: Approved and Pending Section 1115 Waivers by State. February 2022. https://www.kff.org/medicaid/issue-brief/medicaid-waiver-tracker-approvedand-pending-section-1115-waivers-by-state/
100. Centers for Medicare & Medicaid Services. Medicaid Health Homes: An Overview. April 2021. https://www.medicaid.gov/state-resource-center/medicaid-state-technical-assistance/health-homeinformation-resource-center/downloads/hh-overview-fact-sheet.pdf
101. Rosenbaum S. How States Are Using Comprehensive Medicaid Managed Care to Strengthen and Improve Primary Health Care. https://www.commonwealthfund.org/publications/issue-briefs/2020/jul/how-states-are-usingcomprehensive-medicaid-managed-care