



Community Care Coordination Systems: Technology Supports

Nemours[®] Children's Health System

Community Care Coordination Systems: Technology Supports

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Executive Summary

The health care system is transforming to deliver value and maximize health across a patient's lifespan. In this new landscape, there is rapid adoption of health technology to deliver patient-centered, whole-person care. This issue brief explores elements for technology applications emerging to “close the loop” between clinical and community services and presents accelerators and challenges to their adoption.

Community Care Coordination Systems: Closing the Loop

Community care coordination systems support prevention and improve health outcomes through a community-level, system approach that connects individuals to health promotion and support services. Stakeholders voiced consensus that best practice is to build toward a community-wide and comprehensive approach to multiple health-related social needs. Moreover, the system should operate with a “no wrong door policy” so that a community organization from one sector can refer an individual to a service provider in another sector. What is also key is the ability of the community care coordination system to operate from an accurate community inventory, verify the referral and receipt of services, assess the quality of existing services, and use data to identify gaps. Technology supports assist by “closing the loop” on community-clinical referrals and providing data for analysis.

Community Care Coordination Systems: Core Elements

In addition to closed loop technology systems, listed below are other defining elements of community care coordination systems. The ideal elements and definitions are still emerging. Additional information can be found [here](#).

- Leadership
- Governance structure and agreements
- Backbone/integrator
- Navigator staff
- Identification process and tools
- Care plan
- Network of community resources/partners
- Patient communication
- Interoperability
- Quality improvement
- Funding
- Data collection and reporting



Findings

The role of technology in supporting community care coordination systems continues to evolve. Interviews with stakeholders and survey results from ten technology vendors and developers offer some insight into (1) program elements for closed-loop technology systems; and (2) major accelerators and challenges to financing community care coordination systems.

1. Closed-Loop Technology Program Elements

- a. **Inventory Community Service Resources:** Stakeholders reported incorporating resource inventories, supported by technology, to address immediate and ongoing needs, such as food banks, shelters, housing assistance and employment.
- b. **Identify Consumer Health-Related Social Needs:** All technology systems reviewed include an individual and/or population-level identification of social and environmental determinants of health to facilitate referrals.
- c. **Health Information Exchange (HIE), Multi-Directional Architecture and Interoperability:** Most technology systems surveyed electronically screen and refer consumers through a bi-directional referral process, tracking exchange between a health care provider and social service provider. However, some systems incorporate a multi-directional architecture and flow which allows information to flow across the health and social service system. In addition, it is critical that data standards foster interoperability across multiple health systems and multiple sectors.
- d. **Report and Analyze Data:** Data reporting and analysis is essential for tracking services to coordinate and resolve identified individual needs. Technology systems should also track and report population-level analytics and dashboard visuals across the system.

2. Financing Accelerators and Challenges

- a. **Accelerators**
 - i. The Center for Medicare and Medicaid Innovation (CMMI) State Innovation Models and Accountable Health Communities (AHC)
 - ii. Medicaid Managed Care Rules, Section 1115 Medicaid waivers and State Plan Amendments
 - iii. State policy incentives and shifting healthcare payment models (e.g., Accountable Care Organizations (ACOs), value-based payments, global budgets)
- b. **Challenges**
 - i. Social service capacity and infrastructure
 - ii. History of collaboration and backbone/integrator support
 - iii. Privacy, security, and data governance
 - iv. Data exchange and Interoperability
 - v. Defining value

Recommendations

A patchwork of public and private resources are braided together to advance community care coordination systems and technology. Nine recommendations are offered for policymakers, community leaders and public and private funders to accelerate adoption and sustainability of closed loop systems.

1. Align Strategic Leadership to Accelerate Spread
2. Move Federal Transformation Initiatives Farther Upstream
3. Offer Federal Guidance to Leverage Existing Flexibility and Encourage Innovation
4. Fully Utilize Medicaid Managed Care at the State Level
5. Facilitate Cross-sector Data Exchange at the State Level
6. Increase State Funding to Meet Health-Related Social Needs and Services
7. Examine and Adapt Quality Levers
8. Incorporate Health-Related Social Needs in Public and Private Procurement
9. Galvanize Staying Power and Multi-Dimensional Support from Private Funders

Introduction

The health care system is transforming to deliver value and maximize health across the lifespan. In this new landscape, there is rapid adoption of health technology and information exchange; new payment models and incentives to focus on prevention; and patient-centered, whole-person care approaches. These efforts show promise to simultaneously reduce cost and improve outcomes by moving beyond health care-centric models of coordinating care *within* the health care system to approaches that coordinate *across* physical health, behavioral health, oral health, and social and human service systems and engage consumers more actively.



This issue brief looks beyond clinical efforts to improve health outcomes to explore community-level, multisector systems and the technology applications emerging to “close the loop” on linkages of community services and clinical care. The paper proposes a set of desired elements for community care coordination systems and technology supports and offers perspectives from stakeholder interviews on challenges and accelerators to adopt these systems. The paper also reports findings from a survey of technology vendors. The final section synthesizes this input to offer recommendations for policymakers, community leaders, and public and private funders.

Literature Review: Brief Highlights

Evidence on the relevance and contribution of social determinants to overall health is well established.¹ As health care providers embrace their role in addressing social and environmental determinants of health, they are engaging beyond clinical walls to pay greater attention to the health-related social needs, such as food and shelter and to support effective communitywide collaboration.

There is a growing body of evidence about the success of cross-sectoral community health systems to improve health. In a recent study of 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.² An evaluation of Area Agencies on Aging found that in counties with partnerships across a broad range of health and other sectors, there were lower hospital readmission rates.³ Although more evidence is needed, findings such as these offer reason for optimism about multisector partnerships. The evidence is less clear about what constitutes an effective community collaborative. A review of reportedly mature partnerships found that, “most of these groups lacked certain characteristics that seem necessary to transform regional health systems. Even the more mature groups were not as well poised for transformation as their reputations implied.”⁴

Rigorous health outcomes from multisector efforts is more elusive, although research indicates some promising social and health improvements. In the first randomized control trial to evaluate health outcomes of a clinic-based pediatric navigation program, authors reported a significant decrease in reported health-related social needs and improved children’s overall health status, as reported by caregivers.⁵ An Eastern Massachusetts project of six pediatric practices engaged parents to create and use an online interactive community resources map, demonstrating 76 percent of participants were

physically active at new places, 57 percent of participant families shopped at new locations; and 71 percent reported they were very satisfied with the information they received.⁶

Some studies of community care coordination programs demonstrate impact and successful replication. Community Rx combines e-prescribing and community engagement to strengthen links between clinics and community resources and is the program underlying NowPow⁷ technology operating in several states. An RTI quasi-experimental evaluation of Community Rx, contracted by CMMI, used claims data to assess utilization and cost. This large-scale study found that during the 3 years after implementation, Medicare beneficiaries who received at least one referral had an average increase of 23 primary visits and an average decrease of 17 hospital admissions per 1000 beneficiaries.⁸ Over the same time period, Medicaid beneficiaries had an average decrease of 51 emergency department visits per 1000 beneficiaries.⁹ RTI also projected a 60 percent likelihood of cost savings due to the intervention.¹⁰ The Health Leads program demonstrated a positive impact on reducing unmet health-related social needs for low-income families and now operates in multiple locations.¹¹ In an older study and one of the few studies to include health outcomes, analysis of Pathways Community HUB provides evidence that home visitation community care coordination coupled with tracking and payment for outcomes may reduce low birth weight deliveries among high-risk women.¹²

A few studies have also looked at the role of the technology itself. Technology's efficiency is a key asset and studies indicate it also adds to the effectiveness of care coordination. A 2014 randomized control trial 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 (e.g., household violence, substance use) and marginally higher rates when used for less sensitive issues (e.g., financial insecurity, neighborhood and school safety), suggesting that technology has a role to play in solving challenges related to accurately identifying needs.¹³ A separate study of youth found the majority willing to participate in a technology-based system for social determinants of health screening and that nearly half successfully addressed their priority concern.¹⁴

Community Care Coordination Systems: Core Elements

Community care coordination systems are a promising model to support prevention and improve health outcomes through a community-level, system approach to connecting individuals to a full range of community health promotion services. Community care coordination systems develop from different starting places. Some begin with a focus on a population, such as developmentally disabled or families of young children; others begin with a focus on a priority need, such as homelessness or food insecurity; while still others have a geographic focus, such as accountable communities for health. Stakeholders interviewed for this issue brief voiced consensus that, regardless of the starting place, best practice is to build toward a community-wide and comprehensive approach to multiple health-related social needs.

The ideal elements and definitions for community care coordination systems that close the loop on clinical and community services are nascent. For this issue brief, the elements listed are adapted from a companion brief developed by *Nemours Children's Health System, Community Care Coordination System: Connecting Patients to Community Services*.¹⁵

- **Leadership** to galvanize key community members and develop shared community goals.
- **Governance structure and agreements** to oversee system-wide policies and procedures.
- **Backbone/integrator** to offer support to ongoing convening, goal-setting, measurement, reporting, community engagement and mutual accountability.

- **Navigator staff** to perform critical functions such as identifying, engaging, coaching and following up with individual patients to connect them to services.
- **Identification process and tools** to assess the health-related social needs/risk factors of patients engaged in the system.
- **Care plan** that is customized for each person's unique set of health-related social needs.
- **Network of community resources/partners** that can address a variety of social determinants of health to serve clients.
- **Patient communication** so the care coordinator can keep in touch with patient.
- **Closed loop technology systems** to facilitate identification of needs, multi-directional community-clinical referral and communication, tracking and reporting outcomes for individuals and populations.
- **Interoperability** of the technology so an individual's information can be, with permission, shared between health and community service organizations.
- **Quality improvement** to monitor and improve care coordination services and social services provided to individuals.
- **Funding** to support both start-up and ongoing costs of each program element.
- **Data collection and reporting** that allows information to be collected, analyzed and shared to track progress and measure outcomes for individuals and populations; and, aggregated population-level data to improve the system, identify gaps and highlight needed policy changes.

Technology Platforms to Support Community Care Coordination Systems

The features listed above are essential for the operation and sustainability of a community care coordination system. The next sections of this paper explore technology supports to community care coordination and offer definitions and considerations about technology gleaned from interviews (listed in Appendix A) as well as survey results from ten technology vendors and developers (Appendix B). This is a rapidly evolving field, and the findings are offered in the spirit of ongoing dialogue and exploration as we learn about effective practice in this arena.

Many of the stakeholders interviewed found that, as they began to collaborate across sectors to address social determinants of health, they naturally embraced a role for technology to “close the loop” on community-clinical referrals. Interviewees were quick to offer that they view technology supports as important, but they should not be relied upon as a singular resource for successful community care coordination systems. Individual assistance from trusted sources remains a bedrock of successful practice. Several technologies, including Community Rx, Pathways HUB and Health Leads, intentionally designed their software to integrate with community health workers, navigators and coaches.

Community systems and supporting technology continue to evolve in these early days. Therefore, it is not surprising that to date, there is no commonly accepted set of program elements or functionalities for these technology systems. Interviews for this issue brief surfaced some consensus that core capacities for closed-loop technology fall into the four components listed below, although there is variability in how each software approaches each component. Below are brief definitions followed by stakeholder and survey information for each component.

1. **Inventory Community Service Resources:** Technology supports an online database of the availability and quality of services specific to a local geography to address immediate and ongoing needs, such as food banks, child care, housing assistance and employment.

2. **Identify Consumer Health-Related Social Needs:** Individual and/or population-level identification of social and environmental determinants of health to facilitate referrals.
3. **Health Information Exchange (HIE), Multi-Directional Architecture and Interoperability:** The secure electronic exchange and storage of referrals, follow up, tracking and case notes across health care, mental health, oral health, wellness services and other community service providers. Multi-directional architecture refers to system design to allow any authorized participant in the system to generate referrals and exchange information with other participants, limited by permissions and observance of privacy and data sharing rules. Systems should be developed with interoperability across multiple health and social service systems.
4. **Report and Analyze Data:** Technology systems should include tracking and reporting of services provided and completed, as well as population-level analytics and dashboard visuals across the system to report care coordination outcomes, service quality and capacity gaps.

1. Inventory Community Service Resources

Electronic referrals rely on a database inventory of community services. Stakeholders referenced multiple sources and methods to populate and verify the community services available in a geography.

The quality, granularity and accuracy of information is essential to the operation and credibility of the community system. Stakeholders stressed the importance of frequent updates to the inventory to ensure accuracy; the ability to map service locations to where clients live; the importance of detailed information on eligibility, hours of service, and wait lists; and, a functionality that incorporates user feedback about the quality and satisfaction with the service as well as the accuracy of the referral.

If a referral includes inaccurate information, the problem doesn't get solved, and it is likely my patient disengages altogether.

Technology systems surveyed all report they incorporate existing resource inventories (100 percent). Many use local 211 databases (70 percent). Most systems (80 percent) report they include information about eligibility and hours of service, validate the accuracy of the listing, map resources to consumer's location and update the inventory on a regular schedule set by the vendor. There is greater variation on consumer input. Only 30 percent of those surveyed allow consumer feedback ratings on quality and satisfaction with referrals, and 50 percent allow consumer feedback on accuracy of information.

2. Identify Consumer Health-Related Social Needs

On geocoding data linkage: With the right programs and policies in place, person-centered care begins the moment patients provide their address, promoting improved, equitable health outcomes.

All technology systems reviewed include an individual screening function for a range of social and environmental conditions. Moreover, most systems report functionality that has some level of integration with the electronic health record. In some systems, the consumer may complete a screening tool; others are designed for a member of the care team to ask questions and record the answers, just as they do for weight or symptoms

in a medical visit. Additionally, some systems report using geo-mapping, health history records or claims information to identify and match needs to resources. Predictive analytics tools to suggest referrals (with or instead of screening) are part of some systems. For example, one system reports it incorporates algorithms in the technology to populate a personalized list of health and social referrals based on health and social conditions, neighborhood data and demographics; another generates a curated list of best-fit referral providers.

| Identifying Needs: Survey Findings | Survey (N=10) |
|---|---------------|
| Using an individual screening tool | 100% |
| Pulling information from the electronic health record and/or health care claims | 80% |
| Allowing staff to make a direct referral | 90% |
| Suggesting referral needs based on geo-mapping or hot spot data | 60% |

There was varied input from stakeholders interviewed about the frequency and methodology for screening. Some recommend universal interview approaches that are not a screening tool; some recommend individual screening as part of every visit; others screen at intake and periodically thereafter; still others use screening solely for high-risk individuals. Some felt the consumer should directly complete the screen, via tablet, portal, or paper, while others prefer to rely on staff to identify needs.

Many interviewees call for more research and learning in this sphere to determine best practices. And, there were cautions about unintended consequences that can result from screening – even with the best intentions. For example, are current screening tools age appropriate and culturally adaptable; should they be family-centered; what is the best way to categorize social determinants of health and ask questions most likely to elicit health-related social needs; can screening better incorporate an asset-based approach; in what ways and under what circumstances does referral introduce risk or create stigma; is it best practice to link the health-related social needs of a family once you identify the needs of one member, or a risky practice that breaches privacy?

3. Health Information Exchange (HIE), Multi-Directional Architecture and Interoperability

Not all community care coordination technology incorporates HIE and/or multi-directional architecture however there are advantages to a community-based HIE model with multi-directional architecture. Stakeholders raised additional cautions, citing that even when systems are integrated within a health care system or EHR, they are unlikely to be interoperable across multiple health systems. And, without data standards for sharing information, a proliferation of duplicative closed loop technologies could ensue.

- Communitywide HIE models can store information centrally, manage the secure exchange of information, and govern access of information through multiple levels of permissions. For example, a case manager might be granted full permission to view case notes while help desk staff would only have access to basic referral data.
- Communitywide HIE can function as a central data hub to aggregate data for tracking and reporting both for individual and population-level data across all providers and services. This has myriad uses, such as reporting individual referral completion rates or reporting housing referral requests in a geography to inform policy. It allows for analysis of service capacity and is more likely to facilitate quality feedback.
- Multi-directional architecture means flow of referrals is not a limited exchange from clinical to community organization. Instead, it allows social service providers to generate referrals to each other (a food bank referring to a housing authority).
- Interoperable systems developed with open source data standards will facilitate cross sector flow of information and improve the efficiency and effectiveness of systems over the long run.

Most systems electronically screen and refer consumers with bi-directional referral and tracking exchange between

We can't build interfaces to hundreds of IT systems. We need an overall picture of a person and that can't live in the health record alone nor is it achieved with bi-directional function.

a health care provider and social service provider. There are some technology platforms that operate through a community master patient index or cloud-based model with capacity to store, manage and exchange information between all participants. In addition to making the initial referral electronically, some systems send a notice back to the referring entity to communicate receipt of the referral, communicate completion of appointments, incorporate case notes, or send information about the outcome of the referral. Others include a direct portal for patients to access information.

| Electronic Information Exchange: Survey Findings | Survey (N=10) |
|---|---------------|
| Health care staff can refer electronically to community organization | 80% |
| Community organization staff can refer electronically to other organizations | 60% |
| Referral agency can respond to: | |
| <ul style="list-style-type: none"> the referring entity that the referral was received | 70% |
| <ul style="list-style-type: none"> the referring entity that a service was provided | 70% |
| <ul style="list-style-type: none"> the referring entity that a service was completed | 70% |
| <ul style="list-style-type: none"> the referring entity with case notes | 60% |
| <ul style="list-style-type: none"> the referring entity with outcome information | 70% |
| <ul style="list-style-type: none"> communicate directly with consumer | 70% |

4. Report and Analyze Data

Data reporting and analysis is essential for tracking services to coordinate and resolve identified individual needs. It is also essential at the organizational level to monitor quality and access, such as completion of a program. Communitywide data compiled across organizations provides a window into the capacity gaps, system improvements and offers population health data.

Most technology systems reviewed produce reports for the organization hosting the technology on referrals and services for individual consumers and organizations. For example, individual and aggregate reports document the kinds of health-related social needs identified, what referrals were made, and how many referrals resulted in a completed appointment. Most systems also provide a data dashboard, such as a compiled report by zip code comparing how neighborhoods use services. Finally, most systems include flexible reporting functions and customization to meet organizational needs.

| Data Collection and Analysis: Survey Findings | Survey (N=10) |
|---|---------------|
| The system provides aggregated data about referrals and other services | 90% |
| The system provides a dashboard or data from the referral entity | 90% |
| The system displays a dashboard of data from both referring and referral entities | 60% |
| Dashboard data can be adapted by local user | 80% |

A Patchwork of Financing Accelerators

Momentum is accelerating to move health care upstream to more prevention-oriented, population health approaches. This section of the report summarizes financing accelerators reported by stakeholders. What emerges is a patchwork of public and private resources, often locally layered and braided, to advance community care coordination systems and technology supports. Resources span multiple federal programs and other public dollars, as well as private foundation and investments from individual health systems. Within these public and private investments, significant resources are being directed to the enabling infrastructure for community care coordination technology systems.

This new digital platform transforms and streamlines the traditional referral process into a real time, dynamic network that reduces the time needed to match patients with critical community-based services.

The Center for Medicare and Medicaid Innovation (CMMI) [State Innovation Models](#) and [Accountable Health Communities](#) provide significant resources for community care coordination and technology supports. The adoption of technology and data-driven reporting is also advancing under [Primary Care Medical Home](#) certification and Centers for Medicare and Medicaid Services (CMS) Merit-Based Incentive Payment System (MIPS), known as Meaningful Use electronic health record incentives. Health information exchanges, also funded through a combination of public and private investment, are coming online and hold great promise as infrastructure for community care coordination.¹⁶

Due to the scale of Medicaid enrollment, interview participants emphasized the importance of momentum for community care coordination systems from Medicaid managed care to Section 1115 Medicaid waivers (especially [Delivery System Reform Incentive Payment](#) (DSRIP) Programs), to Health Homes [State Plan Amendments](#). The 2016 Medicaid Managed Care regulations¹⁷ provide a clearer financing pathway to invest in upstream interventions and structure payments to community-based organizations. By leveraging both community care coordination and value-added services (e.g., assessing the home for asthma triggers, mosquito repellent to prevent Zika transmission), states can make the case for managed care organizations to develop comprehensive strategies to pay for the social determinants of health. Additional information can be found [here](#).

Medicaid is the biggest lever because enrollment is high – one in three or one in four residents in many states.

CMS' approval of DSRIPs now requires the participation of social service or community organizations to improve population health.¹⁸ New York's DSRIP is implementing closed loop care coordination technology to support its performance measures.¹⁹ In California²⁰, Oregon²¹, New York²², Washington²³, North Carolina²⁴ and elsewhere, states are building on previous waivers and layering federal opportunities to establish more ambitious partnerships and programs addressing social determinants of health. Medicaid waivers are multi-year, but time-limited sources of innovation to test and pilot approaches for adoption by states, therefore sustainability of these efforts is uncertain. The chart below highlights some federal initiatives reported.

Medicaid Waiver, Health Home and State Innovation Models Support for Elements of Community Care Coordination Systems

| State | Initiative | Description |
|----------------|--|--|
| California | Whole Person Care Pilot | The overarching goal of the Medicaid waiver Whole Person Care Pilot is the coordination of health, behavioral health, and social services, in a patient-centered manner to improve beneficiary health and well-being through more efficient and effective use of resources. |
| Oregon | Coordinated Care Organizations (CCO) | Under the 2012-2017 waiver, Oregon committed to achieving two primary goals: Limit increases in per capita spending; Improve health care access and quality. To achieve these goals, Oregon enrolled most Medicaid members in CCOs, a new type of Medicaid managed care organization. CCOs were locally governed and accountable for health care access and quality among their members. Each CCO received a global budget covering physical, behavioral, and oral health care, and was accountable for managing all services covered by the global budget. In addition, CCOs could receive bonus payments from a state incentive pool for improving specific outcomes. |
| New York | Health Homes | Layering opportunities recommended by a Medicaid Redesign Team, the Section 2703 demonstration calls for health information technology and health information exchange to support health homes to demonstrate effective and efficient use of HIT technology between hospitals/ health care systems and community-based health organizations. The demonstration requires that a care plan offers help with housing, social services (such as food, benefits, and transportation) and other community programs. |
| Washington | Accountable Communities of Health (ACH) | The Medicaid waiver supports implementation of nine ACHs that serve as vital partners within the Healthier Washington initiative. An ACH is a regional coalition consisting of representatives from a variety of sectors, working together to improve population health. |
| North Carolina | Plan to Implement Managed Care | The proposed Medicaid Managed Care plan includes: Encourage innovation and collaboration among providers, social services, and plans, including use of technology to improve health, and to address health-related social needs and reduce health inequities; explore opportunities to: (1) develop a standardized social needs screening instrument, with a primary focus on food insecurity, housing instability, and transportation, (2) assess how best to ensure these data are integrated with physical and behavioral health services, and (3) provide training and support so that the tools are used efficiently and effectively. An effective and efficient resource database with the appropriate infrastructure and investment is needed to establish and maintain high quality resource listings. |
| Michigan | Community Health Innovation Regions (CHIR) | Michigan's CHIR are funded through a State Innovation Model grant to accelerate health system transformation. In one region, CHIR built a shared community referral platform aimed at addressing the social determinants of health. |

State policy incentives and shifting health care payment models are additional accelerators of upstream efforts and enabling technology. Accountable Care Organizations (ACOs), value-based payments, full risk, delegated models and global budgets are aligning health care financing toward improving overall health and this, in turn, is leading to strategic investments in care coordination and technology. Minnesota is one of a growing number of states to implement a Medicaid ACO model with the goal of improving the health of the population and of individual members. In their first year of participation, delivery systems can share in savings. After the first year, they also share the risk for losses.²⁵ Even where performance contracts do not currently incentivize community coordination efforts, one interviewee referenced their purchase of a closed loop technology system as a strategic step in anticipation of new payment models and value purchasing from managed care plans.

In Ohio, health plans contract with the Pathways Community HUB. The newest contracts expanded to include 22 pathways and 50 percent of the payment for completing a Pathway that is outcome oriented. The Pathways Community HUB system relies on community health workers and other care coordinators employed by multiple clinical and community sites. Organizations are paid when clients are connected to needed services and achieve improved health outcomes.

Interviews and survey information document multiple private funding sources to develop, purchase and operate technology and community care coordination systems. Private foundations and health care organizations as well as hospital community benefit programs are a key source of support through individual grants and initiatives. In addition, health care entities have dedicated internal resources to develop and operate community coordination and/or technology systems. Finally, 60 percent of the vendors surveyed indicated that venture capital investment was a primary source of financing for developing closed loop technology.

Funding Initiatives

Parkland Center for Clinical Innovation received \$12 million from W.W. Caruth, Jr. Foundation at Communities Foundation of Texas to enable seamless, secure connections for sharing relevant patient data across both health care and social service sectors.²⁶

The George Kaiser Family Foundation and Blue Meridian Partners are funding Birth Through Eight Strategy for Tulsa (BEST), a ten-year comprehensive approach that focuses on families. This strategy knits together programs and services to create a seamless continuum of support. Over the course of ten years, BEST is projected to reach 80 percent of the 40,000 children living in poverty under the age of nine in Tulsa, OK annually.²⁷

The California Endowment, Blue Shield of California Foundation, Kaiser Permanente and Sierra Health Foundation are pooling funding to support the California Accountable Communities for Health Initiative. It was established as a public/private partnership based on recommendations from the State Health Care Innovation Plan and Let's Get Healthy Task Force.²⁸

Trinity Health's strategic focus on health led to a five-year, \$80 million initiative of grants, loans, technical support, community matching funds, and other activities aimed at community health and well-being.²⁹

FINDconnect was founded at the UCSF Benioff Children's Hospital Oakland to make social screening and resource connections in a health care setting a reality for all children. To do this, UCSF provided support to shift the paradigm of traditional medical care to comprehensively manage determinants of health as a standard of care.³⁰

Challenges to Adoption

Social Service Capacity and Infrastructure: The constraints surrounding organizational and service capacity to meet identified needs tops the list of challenges in communities interviewed. Social services, affordable housing and behavioral health services are chronically underfunded. Many social services operate without being able to rely on long-term funding or consistent reimbursement streams. Moreover, funding is often restricted to direct services, leaving organizations without resources for infrastructure support and capacity improvements. As one health care provider put it, “there is no purpose to checking boxes for referrals if I know there is no help on the other side.” Community care coordination systems may bring heightened awareness and advocacy to the systemic investments required to address waiting lists, staffing, technology and data collection in the safety net.

The biggest challenge for us is that the resources are not always available that clients need.

It is best practice to share fixed costs across community stakeholders to be used by many. When a single proprietary entity finances and creates direct “pipe connections,” it continues to fragment the system. Social services will never be able to handle connections to every proprietary entity.

History of Collaboration and Backbone/Integrator Support: It can take several years of systematic effort to develop the trust, shared vision, leadership structure, measures of success and cross-sector knowledge for successful collaboration. Lack of funding support for a backbone/integrator to plan, convene, facilitate shared goals and track success is cited as a barrier to the more rapid development of community care coordination systems. 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 community service organizations. Without a community approach, social service agencies are concerned about the potential

need to connect to multiple technology systems, complicating their ability to partner. Finally, there are many competing priorities in the health care arena and investing effort in community collaborations is a more recent trend that may vie with other initiatives.

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. Interview participants suggested that capture of signed consent as far upstream as possible facilitates the greatest benefit for community coordination technology systems to exchange all relevant information; however, this requires dedicated attention and resources to implement and maintain. Security is a separate and important consideration for closed loop systems to ensure information is protected from any breach. Stakeholders cited that behavioral health information significantly increases the difficulty of sharing information given its specific privacy rules. And, when children are the client, issues of consent are even more challenging.

Legal questions, systems to obtain consent and other privacy considerations often prove a long and costly slog and can delay development and implementation. Most interview participants agree that policy change is not the barrier. Rather, what is needed is clear guidelines — broadly distributed and understood — across health and social service sectors to reduce the time, effort and expense of ensuring privacy. Templates for data security and governance could reduce the time and cost to implement HIE.

Data Exchange and Interoperability: Advancing closed loop technology and community-clinical linkages involves long-term strategy considerations for communities about how data will be shared and what constitutes useful data for quality improvement. Several interviewees recommend a communitywide approach to HIE as best practice. This ensures robust privacy alongside governance of data access permissions

(HIE) allows us to chain together different sets of identifiers, build a richer picture of patients, and move towards more accurate, complete, and correct identification of individuals.

while fostering broad participation across health and community organizations. HIEs are coming online rapidly; however, they require the continued support from policy makers and funders for full implementation and sustainability.

A related challenge of interoperability also surfaced from informants. There are closed loop technology systems emerging for child care systems and human services as well as multiple social needs databases. In some cases, these systems are interoperable with a particular EHR, but rarely with each other. A community could end up with multiple systems that are duplicative, system-specific or sector-specific, eroding the vision of a coordinated community care system across all sectors and organizations.

The biggest barriers are not money or privacy or technology. The biggest issue is whether there is a high priority in both health care and community organizations. We need to make the case for closing the loop as a value-investment.

Defining Value: There is no definitive or shared framework for what success looks like in addressing health-related social needs. Moreover, there is no unifying and generally acknowledged communication for the complex concepts surrounding community care coordination nor a well-articulated business case for addressing multiple root causes of ill health. The layered challenges make success difficult to define and communicate. This, in turn, makes galvanizing community action and support more difficult.

Recommendations

Align Strategic Leadership to Accelerate Spread: At national, state, and local levels, leaders can catapult the spread and scale of effective community care coordination by aligning efforts. Reaching consensus on a set of core elements, developing a compelling value proposition and taking action to advocate for community care coordination as the “standard of care” would accelerate best practices and increase comprehensive solutions. CMS and CMMI could play a leadership role to convene policymakers, funders, health care industry leaders and local communities to learn from each other, disseminate best practices and collaborate on strategic next steps toward sustainable community care coordination systems.

Move Federal Transformation Initiatives Farther Upstream: Medicaid waivers, State Innovation Models and other CMS initiatives offer flexibility and resources for states and local communities to innovate. However, many initiatives with return on investment requirements by necessity focus on high-cost individuals already experiencing chronic conditions. Setting longer term outcomes and prioritizing funding to implement upstream approaches could bend the curve of costs over generations. CMS should expand grant support and design initiatives to expand community care coordination systems, including support for technology and other infrastructure costs.

Offer Federal Guidance to Leverage Existing Flexibility and Encourage Innovation: CMS could offer guidance and encourage state Medicaid Directors to use existing authority and flexibility to increase and sustain community care coordination systems through all available Medicaid resources. For example:

- Encourage new waivers that incorporate community care coordination systems and pay for infrastructure;
- Significantly expand Medicaid Administrative Activities and Targeted Case Management to pay for coordination and linkage; and
- Provide best practice guidance on how Medicaid investment can expand quality incentives for community health initiatives and target value-based payments to Social Determinants of Health (SDOH).

Fully Utilize Medicaid Managed Care at the State Level: States can increase investment in community care coordination through Medicaid ACOs, expanding benefits to cover non-traditional services, establishing quality incentives, requiring and paying for SDOH efforts and encouraging plans to invest reserves in community infrastructure.

Facilitate Cross-Sector Data Exchange at the State Level: States can offer guidance and sample agreements to help local communities overcome information exchange, privacy and consent barriers. States can facilitate cross sector interoperability and drive open source data standards and structures to ensure information can be shared across vendors and sectors. Finally, states can model and provide support for cross-sector collaboration and better data systems.

Increase State Funding to Meet Health-Related Social Needs and Services: State budgets should invest in health-related social needs service expansion. Savings will accrue to education, child welfare and other sectors funded through state budgets, and states have the right incentives to solve for the “wrong pocket problem,” a disincentive for health care investment in non-health services.

Examine and Adapt Quality Levers: Healthcare Effectiveness Data and Information Set (HEDIS) measures, especially when coupled with payment mechanisms, and state innovation models (e.g. SIM, DRSIP, 1115 Waivers) function as forces of change in the health care system. The National Committee for Quality Assurance (NCQA) and other quality reporting entities should continue and expand adoption of quality measures focused on social determinants of health. CMS should adopt and deploy a common set of measures related to social determinants that SIM, DRSIP and waiver models could utilize.

Incorporate Health-Related Social Needs in Public and Private Procurement: Public and private purchasers, particularly Medicaid, public employee benefits purchasers and large employers at the state level, can use health plan procurement to incentivize or require community care coordination systems that address health-related social needs. For example, purchasers can accelerate community care coordination systems if they incentivize or require reimbursement for navigators or community health workers; facilitate value-based payment that includes health-related social needs; pay for technology infrastructure; and, reward activities with a longer time horizon for improving health outcomes.

Staying Power and Multi-Dimensional Support from Private Funders: Without a continuing range of investments from private foundations, health systems and investment capital, community care coordination systems progress may stall, and the pace of spread will lag. Recommendations include:

- Provide both start-up and ongoing funding for local community care coordination systems, including readiness assessment, backbone/integrator support, technology vendor and ongoing measurement;
- Improve social service system infrastructure and capacity as key to transforming health;
- Embed resources for technology and data infrastructure in every funding effort.
- Invest in research with communities to evaluate best practices and quantify the short and long-term benefits across sectors and across the life span.
- Communicate a shared commitment to develop the business case for community care coordination systems that focus on preventing poor health across the lifespan.
- Innovate to develop new models for sustainability that recognize the gains for multiple sectors and purchasers and moves beyond reliance on short-term funding.
- Raise the volume on privacy and security solutions. Training and ready resources are needed to remove this barrier and speed adoption of cross-sector data exchange.

Conclusion

The imperative to address social determinants of health is clear. Community innovation to test and improve a systems approach shows great promise; however, significant challenges remain. Policy, public financing, private investment and philanthropy all have important roles to play in the successful transformation to deliver health across ages, incomes and geographies.

APPENDIX A

Special appreciation to the individuals who took time to offer input to this issue brief and to their vision, wisdom and insights on improving health

List of Interview participants

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2. Claire Cain, Danielle Oryn, Teresa Tillman, Redwood Community Health Coalition
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5. Dayna Long, UCSF Benioff Childrens Hospital Oakland; Jeremy Ames and Matt Espinoza, Digable
6. Emily Parmenter, Contra Costa Health Systems
7. Janet Hamilton, Project Access NOW
8. Janet Heinrich and Marie Mongeon, School of Public Health, George Washington University
9. Jeff Quinn, Duke University
10. Jessica Block and Anna Youngerman, Children's Hospitals and Clinics of Minnesota
11. Jonathan Goldfinger, Zero to Three
12. Karen Seaver-Hill and Stacy Biddinger, Children's Hospital Association
13. Lisa Chan Sawin, Transform Health
14. Monica Basu, George Kaiser Family Foundation, Lauren Graber, MyHealth Access Network and Lisa Lazarus and Catrice Brantley
15. Rachel Kohler and Emma González Roberts, NowPow
16. Sarah Redding, Pathways Community HUB, Rockville Institute
17. Stacy Lindau, Community RX, University of Chicago
18. Steve Strauss, Unite Us
19. Enrique Martinez-Vidal and Susan Kennedy, AcademyHealth
20. Veenu Aulakh, Center for Care Innovation

APPENDIX B

Closed Loop Technology Systems: Survey Participants

Aunt Bertha: A Public Benefit Corporation, was founded in 2010 to connect all people in need and the programs that serve them (with dignity and ease). Aunt Bertha accomplishes this mission by indexing the country's health and human service programs and making that information accessible online through the web, tablets and mobile phones. The software platform allows staff to access the tools to:

- Navigate on behalf of a patient looking for help;
- Refer a patient to a Program and close the loop;
- Assist patients in applying to get into a Program; and
- Close the loop on referrals to better understand the effectiveness.

Aunt Bertha's Social Determinants Referrals & Program Search in Epic allows users to address a patient's Social Determinants of Health (SDOH) by connecting the patient with social services to positively impact patient health, reducing readmission rates and healthcare costs.

FindConnect: Founded by a pediatrician with the goal to support care teams in addressing the social and environmental factors that impact health through conducting rigorous research and implementing transformative clinical practices.

Healthify is an end-to-end software solution to manage extra-clinical care needs based on the social determinants of health. Healthify is designed to help care teams identify needs, locate resources, verify service provision, and measure outcome improvement. The Client Services team establishes baseline metrics for each client and works towards incremental improvement at each stage of a social needs-based workflow, all geared towards seeing specific outcome improvement based on the health system's top priorities. Please Note: Purple Binder is now part of Healthify and many of their unique feature sets have been either incorporated into Healthify's UI/UX or into our backend functionality. The system, moving forward, will be known as Healthify.

Health Leads Reach™ enables health systems to manage their social needs programs and improve population health. The cloud-based technology drives social needs programs, including case management, resource database, patient and provider portals, and an analytics platform. The result of over 20 years experience in providing programs addressing social needs, Health Leads Reach is uniquely rooted in patient-centered care and designed to ensure ease of use by clinical workforce and integrate into existing workflows and responsibilities. Health Leads Reach empowers and connects patients with vital community resources — such as food, heat, and housing — that help improve health outcomes.

NowPow is a women-owned and led technology company located on Chicago's South Side. The secure, web-based platform empowers care professionals to make highly matched, data-driven social referrals, communicate with patients and community service providers about those referrals, and ultimately track social need status and outcomes. NowPow is the only social determinants of health referral software whose impact and data have been reviewed by a third-party evaluator, RTI International.

Pathways HUB Connect is one of the data platforms used to support certified Pathways Community HUBs. The system provides data collection, reporting and invoicing for HUBs.

MiPathways Data System was created at Michigan Public Health Institute to meet the needs of community health workers who do home visits for adults with chronic diseases. Developed in-house, the system used input from the end-users to collect needed information while remaining user friendly. Children's assessments were added later.

Pieces Iris is a cloud-based case management software that allows health systems to share information with social service organizations, connecting clinical care givers to the community groups that look after vulnerable populations once they've left the hospital.

Unite Us is a software platform connecting health and social service providers. The Unite Us approach for addressing SDOH places emphasis on community engagement. Unite Us creates collaborative networks of health and social service providers committed to building healthier communities together. The technology equips participating organizations to facilitate patient navigation through electronic referrals, perform extensive case management, form inter-agency care teams with full visibility of external service episodes and outcomes, populate longitudinal community-wide service records for each patient, track aggregate outcomes in real-time dashboards, and pull raw data on any aspect of care.

VisionLink Community OS: The platform enables healthcare providers to assess basic needs, identify free and low-cost community-based services, connect patients with necessary resources and track outcomes.

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