Issue Brief

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Creating a conduit for better health:
Technology connects medical and social services

Kimber finally left when her husband tried to choke her and said he wished she was dead.

The marriage started out well, she tells her women's shelter counselor, until he started drinking too much. Then the violence began. Today, she's the mother of two young girls, without a job, a car, a home, personal security, family or social support.

Fortunately for Kimber, the shelter she found is part of Boulder County Department of Housing and Human Services' integrated system of social services providers. She will only have to tell her story once, and the shelter worker will assess all her health needs—social, emotional, physical and financial. She'll help Kimber sign up for Medicaid coverage for the family, apply for food and housing assistance, job training, mental health counseling, transportation and shelter. In Boulder County, they call this a no-wrong-door approach to serving clients.

What's more, Kimber's assessment data will be entered, real-time, into an integrated data warehouse. Dozens of organizations—serving social, mental and physical health needs—will be able to find her in this system. They can add notes to the record as services are provided, or as case managers create a care plan—with Kimber—to help her achieve her goals. And Kimber can also access her information through a client portal—so she can track her own progress.

An S-HIE brings together the many community-based organizations that meet client needs for the social determinants of health--such as housing, food, safety, transportation and employment—and links them with organizations that provide mental, behavioral and physical health services as well.

A common data warehouse for clinical and social health needs

Connecting health care providers through an electronic records platform is not a new concept; about 99 percent of U.S. hospitals had partially or completely implemented electronic health records in 2016, with many allowing at least limited access by contracted physician offices and group practices.[1] Less pervasive, but not uncommon, are health information

[1] Vaidya A. "EHRs partially or completely implemented in 99% of US hospitals: 4 survey findings." Becker's Health IT & CIO Review. Sept. 11, 2017. https://www.beckershospitalreview.com/ehrs/ehrs-partially-or-completely-implemented-in-99-of-us-hospitals-4-survey-findings.html. Accessed Sept. 28, 2017.

exchanges (HIEs) that allow health care providers and patients to access and securely share a patient's medical information electronically.

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An S-HIE brings together the many community-based organizations that meet client needs for the *social determinants of health*—such as housing, food, safety, transportation and employment—and links them with organizations that provide mental, behavioral and physical health services as well.[2] It's a bridge connecting health care delivery and the real-life circumstances in which people live, work and play—the social determinants of health that contribute to our nation's high health costs.

Experts who coined the term S-HIE note the idea itself is not new; there's broad agreement that an individual's social circumstances directly contribute to poor health.[3] A wealth of research ties unmet social needs with more frequent use of health care resources.[4,5] Coordination between health care and community-based social service organizations is necessary to adequately address these needs so patients can take the self-care steps to achieve health and to manage chronic health issues long-term.

"S-HIE is just like a health information exchange, but we're looping in a broad group of partners outside of the medical arena to share information and develop a singular record of individual and community resources, so providers really have a strong understanding of clinical and social needs," says Manik Bhat, cofounder and CEO of Healthify, a company that works with communities across the nation to coordinate care with technology and services. Healthify helps large health care organizations better address social issues that impact health. "The challenge of making sure either side—medical or social—knows what the other side is doing really influences the chance of patient success, and helps the ability of providers to prioritize the right needs at the right time."

Rocky Mountain Health Plans intends to deploy Healthify and to support broader S-HIE development across Colorado in the next phase of the Colorado Medicaid Accountable Care Collaborative.

"The bigger organizations, especially on the health care side, see this as hugely important," Bhat says. There are pockets of innovation at the community level advancing in S-HIE, but in many communities, there's an interoperability gap. While medical providers may increasingly call themselves interoperable in a given community, they typically mean they have the ability to exchange patient information electronically and communicate with other medical providers. But movement toward medical providers working and electronically communicating *with* community-based

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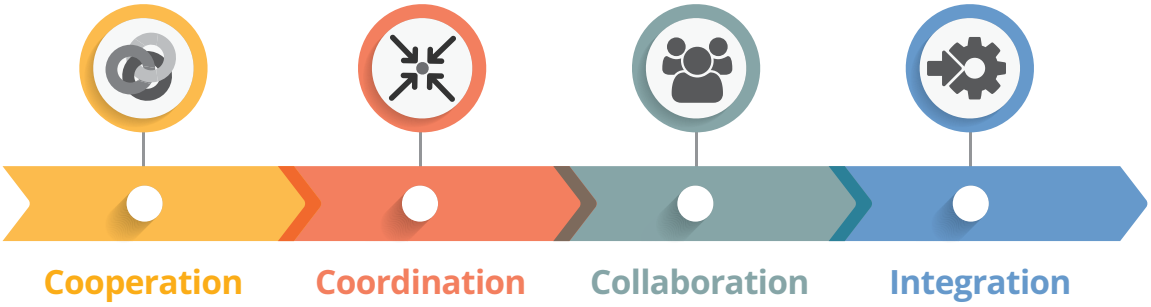
[2] Nguyen O, Chan C, Makam A, Stieglitz H; Amarasingham R. Envisioning a Social-Health Information Exchange as a Platform to Support a Patient-Centered Medical Neighborhood: A Feasibility Study. J Gen Intern Med 30(1):60–7. Aug. 5, 2014.

[3] Basemore A, Cottrell E, Gold R, Hughes L, Phillips R, Angier H, Burdick T, Carrozza M, DeVoe J. "Community vital signs": incorporating geocoded social determinants into electronic records to promote patient and population health. J Am Med Inform Assoc 2016;23:407–412. July 2015.

[4] Bharel M, Lin W, Zhang J, O'Connell E, Taube R, Clark R. "Health Care Utilization Patterns of Homeless Individuals in Boston: Preparing for Medicaid Expansion Under the Affordable Care Act", American Journal of Public Health 103, no. S2 (December 1, 2013): pp. S311-S317. http://ajph.aphapublications.org/doi/abs/10.2105/AJPH.2013.301421. Accessed Sept. 28, 2017.

[5] Tarasuk V, Cheng J, de Oliveira C, Dachner N, Gundersen C, Kurdyak P. Association between household food insecurity and annual health care costs. CMAJ. 2015 Oct 6; 187(14): E429–E436. http://www.cmaj.ca/content/early/2015/08/10/cmaj.150234.full.pdf+html. Accessed Sept. 28, 2017.



organizations that meet social health needs is another thing altogether.

"There's definitely a new quality chasm to talk about in social health terms," he says. "On a scale of one to 10 for interoperability, we're close to a three. Certain communities are closer than others, but broadly speaking, it's still very early days."

It's partly a technical problem, and partly an incentive and alignment problem, Bhat says. "We absolutely have a gap here."

Shared vision comes first, technology later

Boulder County Colorado's S-HIE is among a handful in the nation that is bridging that gap in practice. Jason McRoy, the operations and systems support division director for Boulder County Department of Housing and Human Services, has spent six years developing and implementing the IT roadmap that integrates all service delivery areas within the department (housing, food, health care, family and children services, job training, elder services and financial assistance) and with other providers in the community that provide similar services, as well as mental and behavioral health providers. Despite his IT focus, he quickly asserts that, to be successful, it's trusting relationships rather than technology that's most important.

"We had a deep, 10-year investment in human services strategic planning with community partners, the county and other local agencies," McRoy says. "Traditionally, programs like child welfare and Section 8 housing serve many of the same individuals or individuals with similar needs, but delivery of services is siloed at the state, local and national levels," he says. To strengthen its impact, Boulder County seized the opportunity to leverage funding streams and work in partnership with a range of community-based organizations, rather than working in silos.

"That takes, first, community buy-in and understanding around a shared vision," McRoy says. Over time, that shared vision was developed in partnership with both private and public organizations that serve the medical and social needs of the community. It coalesced in a single statement: *We are building a healthy, connected community that empowers people and strengthens families by confronting the root causes of crisis and instability.*

"In a shared data stewardship framework, that shared vision is really the key," he says. "If you don't have that buy-in, the technology doesn't go anywhere."

McRoy resists the temptation to start with a technology platform without relationships and a shared vision in place.

"The technology can often be presented as a shiny object, the panacea to all the problems. And it's certainly a good conduit to share information, but a lot of the work has to do with getting on the same page with one another, and determining what you want to accomplish for the people you want to serve."

Relationships need to advance on a continuum to move from simple cooperation to coordination, collaboration and, finally, reach the point of true integration. Organizations start coordinating by exchanging referrals and acknowledging one another's services. Collaboration—literally working together—is characterized with an agreed-upon process to meet agreed-upon goals.[6]

[6] Walter U, Petr C. A Template for Family-Centered Interagency Collaboration. Journal of Contemporary Human Services, Vol. 81, No. 5, 494:503. Feb. 2000.

Integration occurs when organizations agree formally to worth together as an organized whole, sharing the same goals and values.

The end goal isn't the data. It's early intervention.

Connectivity and shared data is good, but it's just the first step. The real goal for Boulder County, McRoy says, is to identify root causes of crisis and instability—and to intervene and strengthen people *before* circumstances become dire.

Colorado Opportunity Project Framework

The Colorado Opportunity Project is a collaborative among Colorado Departments of Health Care Policy and Financing, Public Health and Environment, Human Services and Labor and Employment created to align the goals and objectives of the agencies with private initiatives that integrate health, social and educational interventions. The overall goal of the project is to "remove road blocks to economic self-sufficiency by delivering evidence-based interventions in an integrated system of health, social, and educational well-being so everyone has the opportunity to reach and maintain their full potential." †

A significant output of the Colorado Opportunity Project was a framework that maps life stages to benchmark indicators that need to be met at each point to create successful outcomes, such as healthy birth weight, school readiness, social emotional health, stable housing and positive workforce development. The idea behind the framework is that, as benchmarks are met at each life stage, they become a foundation for success in the next life stage.

† The Colorado Opportunity Framework brings together the Colorado Departments of Health Care Policy and Financing, Public Health and Environment, Human Services and Labor and Employment. https://www.colorado.gov/pacific/hcpf/colorado-opportunity-project

McRoy and his team are tracking patterns of utilization and characteristics of individuals tied to community services and desired outcomes. These will go to developing predictive modeling tools to help people access upstream services. Work with the State of Colorado, in partnership with the Brookings Institution, helped formulate the Colorado Opportunity Project Framework, a cross-agency collaborative that established a shared understanding of risk factors—including child welfare, housing, child care, child support, education and community resources—for poverty-oriented challenges, so public and private agencies can work together to reach common goals. (See sidebar on this page).

"We've started to leverage and map out some of those risk factors that the Colorado Opportunity Framework called out, and we're seeing how they show up in utilization and service aspects in our community," McRoy says. "We're finding ways to start turning that into more prevention-oriented work, to create tools to screen for risks and for anticipated needs up front, which allows agency staff to serve in a more preventative-oriented way."

> ***We are building a healthy, connected community that empowers people and strengthens families by confronting the root causes of crisis and instability.***
>
> **— Boulder County Department of Housing and Human Services vision statement**

For example, when a family consistently accesses food banks toward the end of the month, this cue could point to needs beyond food instability. The family may be facing an unexpected health care cost or other crisis. To test these assumptions, Boulder County did a pilot project with IBM's Watson Health, using machine learning capabilities to identify specific risk factors drawn from combined case narratives from the data sources linked in the Boulder County data warehouse. The project tested the notion that a summary of risk level could be drawn from cues that are embedded in the larger data pool using technology. When certain cues are present, the system can alert case workers to indicated risk, so they can

intervene early with prevention resources. Early assistance with financial counseling or for utility bills or rent could avoid the situation worsening to eviction and homelessness.

Applying technology to anticipate social and medical needs holds promise.

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"The technology that's available in e-commerce and the private sector is starting to trickle into the health and nonprofit sphere," McRoy says. "The same tools that can be used to find the right pair of shoes can help individuals find the right services. It's really powerful and cutting-edge stuff."

Aligning partners, gaining consensus, creating value

In communities where Bhat's team is working, there's often one organization, such as a large health care provider, that's pushing the vision forward. But one organization can't do it alone. "You have to build the (service provider) network first. And you have to make sure the partners are in agreement with what the needs are in the community. You need buy-in from the community-based organizations, and understanding of how they are providing services together."

Buy-in can become tricky, especially among smaller organizations with limited resources—time and money—that may initially see participation as an administrative burden.

"You need alignment, consensus, among organizations to understand when and why they should communicate and why it's valuable on an ongoing basis. They're already filled to the brim with work. The larger organizations have to make the value proposition clear: This is a way to advocate for yourself, for capacity building, so you can do more. The more touch-points and information you have, the more effective you can be across the community and the better you can advocate for expanding your reach—and the better equipped you are to make the case to funders for capacity building to further your mission. That's the 'what's-in-it-for-me' for community-based organizations. Just saying, 'you're going to get access to data about your clients' isn't enough to make them participate."

Building the perfect platform

Keeping the needs of all partners in mind helps define how a shared technology platform should function and what it can do for different entities.

"You have to make sure that, from Day 1, you're all looking at the right factors to define success for the platform," Bhat says. "You need to make data integration a clear path for organizations so it has the least impact on their workflow—so they are empowered by the data, not hindered by it."

Bhat says the basic protocol for any S-HIE should include all service touchpoints. If a client accesses any service in the network, a service provider should be able to query the platform and get a history of all encounters and what service was provided along the way.

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"Providers need the full context for what has happened to the point where they become involved," he says. "The ideal technology space is a centralized record of an individual that's been shared in that network. If a screening is made and a referral is made, both parties need to be in the loop for everything else that has occurred in that beneficiary's record. Agency B, upon referral, should get all the information from Agency A, and so on down the line."

That doesn't mean every organization needs access to a full record, however. Organizations should share the information that's essential—no more, no less—and not let privacy and security rules hold them back from integration.

"Even in Boulder County, we've gotten tripped up trying to boil the ocean, between the need to share everything and the need to protect everything from being shared," McRoy says. "There really are just a handful of points of coordination to share.

Boulder County's homegrown S-HIE platform

In Boulder County, the S-HIE platform was developed internally, starting with a cloud-based, off-the-shelf system that provides the needed data security and role-based access for multiple users. Ensuring the system meets the needs of all types of organizations meant developing specific use cases to determine what each party requires to deliver the right services at the right time—taking into account vastly differing situations and organizational work flows.

"The more we're looking at getting the right level and kind of information to the right people, the better we're able to coordinate and create opportunities for best outcomes across the domains," McRoy says. "There's a line between the types of information you can share, but there's a need for all parties to know specific pieces of information so they can be coordinated: who the parties are that are working together with the families; the needs; the scale of acuity; what services are provided and accessed."

That information is gathered systematically when a client first accesses a provider's services, using a common assessment that focuses on essential data elements. It's mostly demographic and service-related information, so providers have the information they need to assist the individual.

"It's not daunting. We're not sharing a preponderance of clinical data and contact notes. It's really getting everyone on the same page of the trajectory of an individual's care plan. To do that with the least amount of data necessary, that's the step to take."

Data sharing based on client needs and access

McRoy's team found it helpful to design a data sharing framework that focuses on common social service support scenarios. These *use cases* are examples of common pathways that clients take when they are in need of services. They include chronic homelessness, new and expectant mothers, and youths with a history in and out of the criminal justice system, or who have behavioral health or traumatic episodes in their past.

"We've defined some basic use cases in talking about the social, physical and behavioral connections, defined very broadly," McRoy says. "The needs across the system generally relate to needing to understand who the players are, whether an individual is entering or exiting a system of care, what level of need is there, and a referral loop."

Data integration and contracts create environment for better accountability

Because Boulder County aggregates a variety of financial streams—federal, state and local—to fund the work of community-based organizations, it saw an opportunity to build in grantee requirements as a natural lever to encourage adoption of the integrated platform, influence alignment with the shared vision and build accountability across the board.

There are several levels of participation in the Boulder County system.

"Some agencies receive funds to provide a service, like a food bank, so they're a key piece of the infrastructure," McRoy says. "But we have another tier of organization with a more deeply defined practice role. These organizations are providing case management services, therapeutic or clinical interventions, and use government supports (grants or direct service payments) to complement that work. Participating in the shared data framework is part of their funding contract."

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>
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These organizations agree to participate more fully as integrated partners. They agree to the overall governance structure of the S-HIE and common protocols, including use of the standardized client assessment tool.

In addition to the service contract, there is a data-use agreement that includes who can use the system, reporting, and how data capture and integration are achieved. Because the organizations worked together to co-define the shared data framework and the overall vision, contracts reinforce the discrete elements and expectations on all sides.

"The contracts facilitate understanding of what we are funding, the outcomes we're expecting to see and the way they're expected to do data capture to feed into evidence and outcomes," McRoy says.

In exchange, Boulder County provides a core piece of organizational infrastructure—a client management system designed with social, mental and physical health service delivery in mind. Organizations benefit from using the customer relationship management aspects of the platform fully, as it allows them to keep track of who they serve, when and how. McRoy says the platform becomes a tool that organizations use for broader community planning, evaluation of community gaps and accountability to funders.

"The shared data platform is largely case management in a box—a client management system, referral tools, assessment tools—all in one integrated, cloud-based environment. They can pull the data out of it to fulfill reporting they need, and they don't have to pull reports for us. We're all in agreement about the data we want, and the system is set up to pull those data points."

That cuts a lot of red tape, and makes being part of the shared data framework appealing for small and large organizations alike. "It simplifies the processes and the workflows," McRoy says. "The organizations that are participating most fully are capturing all their service data in the system. It's a one-stop shop to record funds dispersed, services provided—a way to track all that they do and how those disbursements connect to individual needs and case management objectives. They're pulling down data and information about how well they're doing from this common set of data elements. They're not maintaining or managing that separately. They don't have to hire grant and report writers or administrative staff to do reporting and get ready to expand capabilities. It's integrated into their operations and workflow."

McRoy says Boulder County's system allows community-based social service organizations to focus on what they do best, and even expand their capacity to serve those in need.

"We're starting to see more of the robust team approach in this broader model of managed care and care coordination. Technology is a great conduit to do it, but you have to have agreement from everyone about why you're doing it, and have it acknowledged across the board." ■

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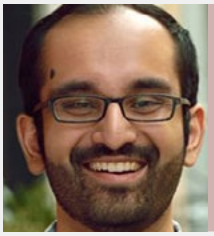
JASON MCROY
Director, Operations and Systems Support Division Boulder County Department of Housing and Human Services

JASON MCROY leads Boulder County Department of Housing and Human Services' operations and systems support division. His teams provide support for information technology, reporting and analysis, as well as content and desktop technology. For the past six years, he has overseen the development and implementation of an IT roadmap to integrate all service delivery areas within the department and with other providers in the community. Previously, he served as data operations manager for the City of Denver Human Services.



MANIK BHAT
Co-founder and CEO, Healthify

MANIK BHAT is co-founder and CEO of Healthify, a company on a mission to build a world where no one's health is hindered by their need. While still a biology and psychology undergraduate at Johns Hopkins University, he worked as a patient advocate and case manager for Health Leads, connecting patients in a clinic to resources to meet their food, housing and other social health needs. Healthify works with large health care organizations to address the social determinants of health by helping care teams find services, track referrals, and coordinate with community partners. Its platform is used across the country and has been featured by TEDMED, the Center for Healthcare Strategies, KPMG, the Robert Wood Johnson Foundation and *Forbes*.

About Rocky Mountain Health Plans

Founded in Grand Junction, Colo. in 1974, as a locally owned, not-for-profit organization, Rocky Mountain Health Plans provides access to affordable, quality health care enabling its more than 229,000 members across the Western Slope to live longer, healthier lives.

About the Community

Western Colorado is creating an accountable community that uses health IT in a meaningful way, adopts value-based payment models, coordinates care and empowers patients to take charge of their health.

We aspire to ensure the following:

- High-quality health care is affordable and accessible to all.
- Those who purchase health care are assured that care is effective, safe and appropriate.
- Patient care is a team effort, with roles that are well-defined, connected and collaborative.
- Patients have access to the support and information they need to take charge of their health and make their own decisions.
- Payment reform will foster reimbursement models that support accountability for population health and resource use.
- Information technology supports population health, helping providers predict outcomes, prioritize interventions and prevent disease.
- Health data is a community resource used in a secure way to support coordinated care at the population, practice and personal levels.
- Investments in information technology and health system transformation will improve quality of life and economic well-being across the state.
- Health is a community resource that requires leadership, stewardship, individual responsibility, community support and ongoing maintenance.

For more information:

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