Community Resource Referral Platforms: A Guide for Health Care Organizations

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Table of Contents

Note: items in the Table of Contents are hyperlinked, click on any of the above to go directly to that section of the document.

Table of Contents

Foreword

In 2017, the Episcopal Health Foundation (EHF) and St. David's Foundation (SDF) funded a pilot project to test the implementation of the standardized social determinants of health (SDH) screening protocol known as *PRAPARE* with Texas-based community health centers. In an effort to continue learning about how healthcare organizations screen their patients for SDH and the tools that are available to providers to effectively refer and link patients to appropriate community-based resources and social services, EHF invited Methodist Healthcare Ministries of South Texas and SDF to jointly support a comprehensive study of community resource referral platforms.

The three Texas funders commissioned a team of nationally-recognized researchers at Social Interventions Research & Evaluation Network (SIREN) at the University of California, San Francisco (UCSF) to answer critical questions about the referral platforms that are currently available. The scope of the study examined the unique capabilities of the tools, how the tools differ from each other, and details about the actual experiences of healthcare organizations who have invested in and used these tools.

Of particular interest was helping safety-net providers in Texas make sense of the rapidly emerging market of technology-based platforms that enable linkages between the healthcare providers and the broader ecosystem of community-based or social service organizations. Given how new these various platforms are, how many continue to emerge, and the diversity in their functionalities, little information exists in published research about these tools. Therefore, it can be difficult for healthcare organizations to make informed decisions about investing in these platforms. This study was designed to fill the research gap in this developing area.

In this report titled *Community Resource Referral Platforms: A Guide for Health Care Organizations*, SIREN researchers synthesize findings from months of research to offer a guide to safety-net healthcare providers regarding the current landscape of these community resource referral technology platforms. We are confident this guide will provide safety-net healthcare organizations in Texas and beyond with the knowledge needed to navigate the existing menu of platforms as well as offer insights into what factors to take into consideration before making decisions on implementing any community resource referral platform in a clinical setting.

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Executive Summary

Over the past several years, a dizzying array of new technology platforms have emerged with the shared aim of enabling health care organizations to more easily identify and refer patients to social service organizations. This guide was developed to help safety net health care organizations understand the landscape of these community resource referral platforms and learn from early adopters' experiences using them. The information in this guide is based on interviews with representatives from 39 organizations, nearly all in health care, that were using one of these platforms, supplemented by product information provided by nine platform vendors on the market in 2018. In this document you will find:

- Descriptions of community resource referral platform functionalities sought by 39 organizations and the ways nine products provide these functionalities. The nine platforms are:

  - Aunt Bertha
  - CharityTracker
  - CrossTx
  - Healthify
  - NowPow
  - One Degree
  - Pieces Iris
  - TAVConnect (TAVHealth)
  - Unite Us

- A side-by-side comparison table and detailed profiles of the features of these nine platforms.
- Implementation lessons learned and recommendations from user organizations.

Key functionalities

The following table summarizes the key functionalities and vendor characteristics that user organizations most often looked for in these platforms (see side-by-side comparison table on page 16 and product profiles on pages 52-96 for details).

Functionality	Description
Primary Functionalities	
Resource directory	A searchable, regularly-updated directory of community-based organizations and agencies providing services that can help address patients' social needs
Referral management	The ability to send referrals to community organizations and to track referral outcomes (i.e., close the loop)
Other Functionalities & Characteristics	
Privacy protection	Compliance with HIPAA and other privacy regulations
Systems integration	The ability to seamlessly move from the referral platform to the electronic health record (EHR) and vice versa, and to automatically transfer data between the two systems

Executive Summary

Care coordination/case management	Longitudinal needs and care tracking, ability to define care goals and see referrals, services and other activities
Reporting and analytics	The capacity to analyze social needs screening and referral activities and outcomes
Social needs screening	The capacity to record patients' responses to a questionnaire and identify social needs
Auto-suggested resources	The ability to tailor resource lists to the patients' social needs screening results and/or other data
Vendor responsiveness and capacity	The vendor's willingness and ability to tailor the product to users' needs The perceived capacity of the vendor to provide the desired level of product support

Note that the product functionality information presented in this report is primarily based on information provided by vendors themselves, not on independent product testing. In addition, this document represents a snapshot in time of a sector that is changing rapidly. We therefore recommend verifying the information before making decisions. Further, since the vendors and products are all relatively new to the health care market, little information currently exists in the public domain about product effectiveness. Lastly, **this report does not constitute a product endorsement or recommendation by the University of California, San Francisco (UCSF), Social Interventions Research and Evaluation Network (SIREN), Episcopal Health Foundation, Methodist Healthcare Ministries of South Texas, or St. David's Foundation**.

User experiences

Nearly all users expressed satisfaction with the platforms they selected, even though very few had yet been able to fully implement the closed-loop referrals and systems integration functionalities. Nearly all users found that implementation was taking longer than expected, likely due to the fact that both the users and the vendors are still learning about how best to implement and use these kinds of products.

Regardless of the platform used, platform implementation challenges centered on the following issues:

- Ensuring information in the community resource directory was complete, relevant, and up to date;
- Establishing effective workflows, including protocols about who would use the platform and when, and getting staff and patients to use the platform;
- Developing privacy policies and procedures to govern data sharing with social service organizations;
- Convincing social service organizations to use the platform for referral tracking

Executive Summary

(barriers included lack of capacity and lack of incentives); and
- Setting up seamless use and EHR integration.

Recommendations

Based on users' experiences, the following are platform selection and implementation recommendations:

1. **Engage community partners from the beginning**. Successful implementation of closed-loop referrals and a coordinated referral network depends on successful engagement of the organizations that will be part of the system. Buy-in and collaboration are easiest to establish if health care organizations reach out to community-based partners prior to selecting a platform and work closely with partners to understand how the platform can help them achieve shared objectives.
2. **Examine what already exists in the community to avoid duplication and proliferation of redundant platforms**. If the ultimate goal is to create a more coordinated health care and social services delivery system, all organizations in a community, including all health care organizations, have an incentive to use the same platform, or at least to use platforms that can easily share information.
3. **Have a clear understanding of your goals and needs**. Consider the kinds of assistance that will help patients the most; what staff will be needed to provide that assistance; the information system requirements to support the care team; and the external partners necessary for the system to work.
4. **Don't assume that if you build it they will use it**. Involve desired end users in clarifying your goals and needs and identify champions who will lead end users through what will likely be a bumpy implementation process.
5. **Compare costs and user experiences**. Although the products we examined provided very similar functionalities, they sometimes varied substantially in cost. Talk to other organizations that have implemented these products to better understand strengths of different products and vendors.
6. **Know that this work takes time**. Nearly all informants found that the process of implementing a community referral platform took longer than anticipated. These are new products that require developing and implementing new workflows. Build learning time into the product implementation plan.
7. **Evaluate the impact**. Relatively little information exists to date about the impact of implementing one of these platforms. Measure the impact of platform use on patient health, patient and care team satisfaction with care, and health care costs and share that information publicly so that the sector as a whole can learn.

Executive Summary

Introduction

Spurred by value-based care incentives, the health care sector's interest in addressing patients' social and economic needs has grown dramatically over the past few years. Every week brings new reports or news articles highlighting the importance of addressing social risk factors in order to improve care quality and reduce costs, particularly for low-income patients. For example, health care organizations are actively experimenting with initiatives to diminish food insecurity in order to improve outcomes for patients with diabetes and other nutrition-related chronic diseases; reduce housing insecurity and homelessness in order to lower health care utilization among high-frequency users of emergency health care services; and improve access to transportation as a way to reduce no-show rates and to improve specialty care access.

As part of many of these initiatives, health care organizations commonly seek to refer their patients to local community-based social service organizations that can assist with non-medical needs. For example, health care staff may want to refer patients to food banks, benefits enrollment programs, emergency housing services, or multi-need social service agencies, depending on the patients' social risks. Health care organizations have traditionally relied on informal approaches such as hard-copy or electronic lists of local service providers or the experiential knowledge of social and/or community health workers to know where to refer patients for non-medical needs. As health care organizations' interest in addressing patients' social risks has grown however, many have found these informal approaches insufficient and inefficient to effectively facilitate systematic social risk referrals. Social service listings are rarely kept up-to-date and are not always available organization-wide. Furthermore, ad hoc approaches do not enable efficient tracking of referral outcomes, which is increasingly a need as health care organizations seek to systematically address patients' social risk factors and document the impacts of these activities.

To meet the health care sector's need for accurate, accessible, and up-to-date information about local social services organizations and the ability to make electronic referrals, a number of new companies have developed Software-as-a-Service (SaaS) technology platforms that provide electronic community resource directories and facilitate referrals to social service agencies. Simultaneously, some care coordination and e-referral software companies have begun marketing their platforms as a way to coordinate care between health care organizations and social services agencies. A number of platforms now exist in this space, with little information available to help interested users understand how platforms differ from each other and how to best use them.

We developed this guide to help health care organizations understand the options available in this emerging technology space and learn from the experiences of early adopters. Based on a scan of the platforms on the market in 2018 and on interviews with informants from 39 organizations in various stages of selecting and using a

platform, the guide provides detailed descriptions of the functionalities provided by these platforms and recommendations on how to select and implement a platform. The guide is primarily written for leaders and staff at health care organizations (hospitals, health centers, and others) who are considering investing in a technology-based platform that will help their staff identify community resources to assist patients with their unmet social needs and manage referrals to these resources. Though our focus is on health care organizations, other organizations – like social service agencies and community collaboratives – may also find this guide useful.

How we developed this guide

The information in this guide is based on two sets of data:

1. Platform information obtained from nine community resource directory and referral vendors that were active on the market in 2018.
2. Interviews with informants from 39 organizations using or selecting a community resource directory and referral platform in 2018.

Platform review

To identify platforms to include in this review, we conducted web searches and contacted experts looking for platforms that fit the following criteria:

*   They were being used by health care organizations to find and connect patients with social service organizations.
*   They were an actual technology platform (rather than services, e.g., care coordination services).
*   They were available in any location in the country (as opposed to platforms like HelpSteps in Boston and FINDConnect in Oakland that were only available in a single city or region in 2018).
*   They did not focus on only one intervention model.

We initially heard about over 40 vendors. After applying the criteria above, the list was narrowed down to 11 platforms, nine of which responded to our inquiries, provided the information we asked for, and were willing to be included in this report.[1]

The nine platforms we examined for this guide are:

*   Aunt Bertha
*   CharityTracker
*   CrossTx
*   Healthify
*   NowPow
*   One Degree
*   Pieces Iris
*   TAVConnect (TAVHealth)
*   Unite Us

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1 The two other platforms that we had initially identified were LivWell and Reach. LivWell is not included in this report because it did not respond to our requests to verify the information about their platform. Reach is not included because it is not actively seeking new customers.

Introduction

Platforms that came to our attention too late to be included in this review but may have met our inclusion criteria if we had heard about them earlier are listed in Appendix B.

We collected detailed platform functionality information from platform vendors through a questionnaire (Appendix C) and a virtual hour-long platform demonstration, both focused on the following topics:
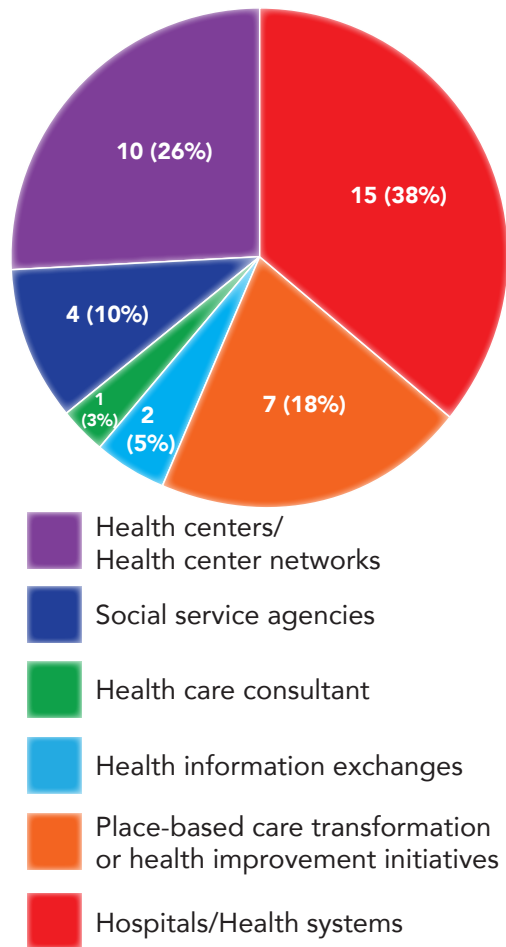
- Platform functionalities
- Integration capabilities
- Target audience
- Implementation timeline
- Cost
- Return on investment (ROI)

Based on the information collected we developed a side-by-side comparison table of key platform features (pages 16-18) and platform profiles (see Appendix F) that provide detailed descriptions of the features and functionalities of each platform. All vendors had the opportunity to review the information about their platform to ensure accuracy, although given the pace of change in this field, platforms details are likely to become out-of-date quickly.

User experience

To better understand user experiences with these platforms and identify lessons learned that would be helpful to others, we interviewed individuals from 39 different organizations who had experience with a technology-based community resource platform. We identified informants through the vendors themselves, through web searches, and through expert recommendations.

We were primarily interested in speaking with staff from health care organizations; however, we also sought to interview a few social service organizations to understand their experiences with using one of these platforms in collaboration with a health care organization. Among the 39 organizations we spoke with, which are listed in Appendix A, 35 were health care sector organizations and four were social services organizations (see Figure: Informant Organizations).

Informant Organizations

- 10 (26%)
- 15 (38%)
- 4 (10%)
- 1 (3%)
- 2 (5%)
- 7 (18%)

Legend:
- Health centers/Health center networks
- Social service agencies
- Health care consultant
- Health information exchanges
- Place-based care transformation or health improvement initiatives
- Hospitals/Health systems

Introduction

Eleven informants (28%) were based in the Midwest region of the US, 11 (28%) in the Northeast, 9 (23%) in the West, and 8 (21%) in the South (including 6 (15%) in Texas). Seventeen (44%) of the 39 informant organizations were in the early stages of full platform implementation; 15 (38%) in a pilot phase; and four (10%) were preparing to pilot the platform. One user worked as a consultant and was implementing a platform in multiple sites.

Among the 39 organizations we spoke with were the following number of users:

Aunt Bertha	5	LivWell[1]	1	Purple Binder[2]	3
CharityTracker	3	NowPow	6	Reach[3]	4
CrossTx	2	One Degree	1	TAVConnect	3
Healthify	2	Pieces Iris	3	Unite Us	2

Most informants were senior managers responsible for selecting and implementing the platform in their organization; in a few cases, we spoke with staff who actually used the platform. Most interviews were one hour in length. Interviews were recorded, transcribed, and analyzed for common themes by the report's two primary authors.

Limitations

Readers should be aware of a few limitations. First, this technology sector is new and changing rapidly. Most of the platforms highlighted in this report were launched within the last six years. Not only are new platforms still entering the market, existing platforms are continuing to evolve as companies merge and products are updated. The information provided in this guide is up to date as of April 2019, unless indicated otherwise. Readers interested in one or more of these platforms should contact vendors directly to learn about current features and functionalities.

A second important limitation is that the platform functionality information presented here is based on vendor-provided information. When possible, we confirmed vendor claims with user experiences. However, we did not conduct independent platform tests, nor were we able to obtain independently verified information about the effectiveness of these platforms, whether in terms of efficiency gains or improved patient outcomes. Furthermore, although we interviewed users at 39 different organizations, their perspectives are not necessarily representative of all organizations or individuals using a given platform. As we only interviewed a small number of users at social service organizations, we only have a limited view into the perspectives of these users.

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1 LivWell did not respond to our requests to verify the information about their platform.
2 Purple Binder was acquired by Healthify in December of 2017.
3 As of spring 2019, Reach is not actively seeking new customers.

Introduction

Despite these limitations, we believe this guide provides helpful information about the functionalities and features provided by some of the most commonly used platforms on the market currently. Organizations interested in implementing one of these platforms will also benefit from the recommendations and lessons learned based on the experiences of early adopters.

Lastly, this report does not constitute a product endorsement or recommendation by UCSF, SIREN, Episcopal Health Foundation, Methodist Healthcare Ministries of South Texas, or St. David's Foundation.

Introduction

Overview of user-desired functionalities and platforms

The two principal functionalities sought by the health care organizations we spoke with were:

1. **A searchable, regularly-updated community resource directory with**:

   - **Up-to-date, accurate information**: it was crucial to all interviewees that the community resource information be accurate and kept up to date as that was one of the key issues interviewees faced.
   - **An easy to use and effective search function**: this included having search criteria that allowed interviewees to quickly find useful and appropriate resources.

   Other prioritized functions of the community resource directory included:

   - A public-facing website. Several interviewees were interested in having a publicly accessible resource directory so that patients and members of the public could search for resources without having a user account.
   - Screening integration. A few informants were interested in having screening integrated with the search function so that once screening was completed, suggested resource lists would automatically be generated.

2. **Technology to send referrals to community resources and track referral outcomes**, including:

   - **Outgoing referral capability**: the ability to send patient referrals to social service organizations electronically.
   - **Closed-loop referral**: the ability to receive information back from the social service organization (or in some cases the patients) about the outcomes of the referrals.

   A related prioritized feature was the ability to automatically prompt patients to follow up with social service organizations they were referred to and display the history of patient interactions to better measure engagement.

Other prioritized features included:

- **Systems integration** and single sign-on with EHRs to facilitate seamless access, limit double entry of information, and facilitate clinical and social needs data integration. Some interviewees also sought integration with Health Information Exchange (HIE) software or with social services client management software.
- **Integrated social needs screening** so results would be stored with the patient record.
- **Care coordination and comprehensive case management** capabilities so that staff could maintain visibility on patients' needs, referrals, and other social care activities over time.

Overview of Functionalities

- **Privacy protection** was a key feature, especially for interviewees who wanted to share information about clinical conditions with or make referrals to substance abuse or mental health services.
- **Reporting/analytics** that provide the ability to track referral outcomes for individuals and across populations.

Besides functionalities, the two other factors that influenced organizations' choice of vendor were **cost** and **vendor responsiveness and capacity**.

Essential Functionalities

Resource Directory	Referral Management

Other Desired Functionalities

Systems Integration	Integrated social needs screening	Care coordination & comprehensive care management
Privacy Protection	Auto-suggested Resources	Reporting & Analytics

Other Desired Characteristics

Cost	Vendor Responsiveness
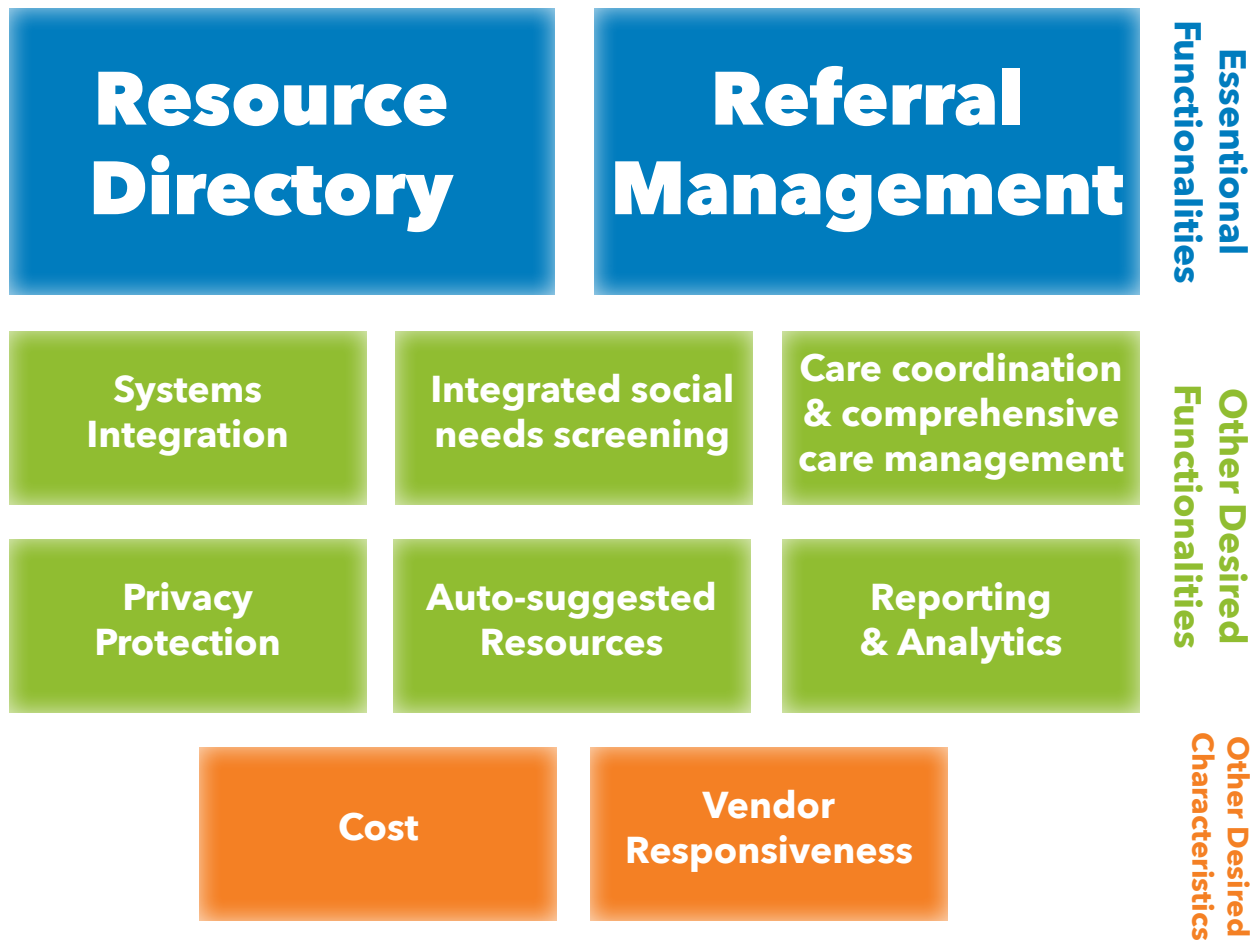
Overview of Functionalities

Overview of community resource referral platforms

Each of the nine technology platforms we researched for this guide—Aunt Bertha, CharityTracker, CrossTx, Healthify, NowPow, One Degree, Pieces Iris, TAVConnect, and Unite Us—takes a slightly different approach to providing the functionalities outlined above, often reflecting the platform's original customer base and intended use, even if those customers and uses have changed over time.

Three platform origin characteristics can help users distinguish between them and understand their functionalities:

Platform origin characteristic	Implications for functionalities
Whether they were developed primarily for a health care audience.	Functionalities will have been developed with a health care user in mind; the platforms may include more features specific to a health care audience.
Whether they focus primarily on referral management rather than on a resource directory.	These platforms are not solely designed for social needs referrals but instead for comprehensive referral management; they tend to have focused directories for referrals to a smaller group of strong partners and may have more care management functionalities.
Whether they were designed for people seeking help for themselves versus professionals seeking help for others.	These platforms include a community resource directory that is accessible to any member of the public without logging in.

Based on these three characteristics the nine platforms we examined can be divided into four groups (see table on next page). Healthify, NowPow, and Pieces Iris were developed specifically for health care sector users for the purpose of fostering referrals to social services organizations as part of efforts to improve health by addressing patients' social needs. As a result, they have a strong focus on providing comprehensive community-wide resource directories and referral management. CrossTx and TAVConnect were also originally developed specifically for health care users but with a greater focus on care coordination and less on the resource directory, though TAV-Connect has recently shifted its focus to become a tool primarily for social service organizations.

In contrast, Aunt Bertha, CharityTracker, One Degree, and Unite Us were not originally developed for health care users. Therefore, they tend to emphasize a community collaboration or patient-focused model of platform implementation rather than a health-care centric approach. Aunt Bertha and One Degree are the only platforms developed to be used by individuals seeking help for themselves; they are the only two that offer a free public-facing online community resource directory that is accessible without logging in. CharityTracker and Unite Us were both originally developed for use by social service organizations and approach referral management more from a community perspective than from a health-care organization perspective. For instance, CharityTracker is the only platform that provides the ability to have un-structured back-and-forth conversations with a number of organizations through its

Overview of Functionalities

bulletin board feature. Unite Us stresses in its pitch to users that it approaches implementation from a community wide perspective, rather than only from a health care organization perspective.

Developed specifically for the health care sector	Not originally developed for the health care sector
Originally developed for health care to connect to social service organizations: • Healthify • NowPow • Pieces Iris Common characteristics: Comprehensive resource directory and referral management	Originally developed for use by individuals seeking help for themselves: • Aunt Bertha • One Degree Common characteristics: Comprehensive resource directory available publicly without logging in
Originally developed for care coordination (with health care or community partners): • CrossTx • TAVConnect Common characteristics: More focus on referral management, case management, and care coordination	Originally developed for use by social service organizations: • CharityTracker • Unite Us Common characteristics: Focused resource directory, more focus on coordination within a smaller network of organizations

Several vendors have created multiple versions of their platforms to meet the needs of different types of customers. For example, several offer a full-feature platform targeted at larger organizations that want complex referral management, in addition to a minimal-feature lower-cost platform aimed at smaller organizations or organizations that do not need as many functionalities.

In the overview table on the following pages, we crosswalk the full-feature version of these nine platforms and their key features, functionalities, and characteristics. In the section that follows, we delve in more detail into the ways the nine platforms we reviewed provide the functionalities described above.

Overview of Functionalities

Side by Side Comparison Table

Features	Aunt Bertha	CharityTracker	CrossTx	Healthify	NowPow	One Degree	Pieces Iris	TAVConnect	Unite Us
Version	Enterprise Platform	CharityTracker	CrossTx	Coordinate	PowRx	One Degree Premium	Pieces Iris	TAVConnect	Unite Us
Resource Directory									
Type	Comprehensive	Focused	Focused	Comprehensive	Comprehensive	Comprehensive	Comprehensive	Focused	Focused
Vetting	Vendor, with input on additional resources by customer, CBO, or end users	Customer	Customer	Vendor, with additional inclusion criteria suggested by customer	Vendor and customer	Vendor and customer	Customer and vendor	Customer and vendor	Customer and vendor
Maintenance	By vendor; every 180 days	By participating organizations and by network administrator, as needed	By participating organizations, as needed	By vendor; every 90 - 180 days.	By vendor; every 180 days	By vendor every 180 days for most	By participating organizations as needed and by vendor every 180 days	By vendor every 180 days	Ongoing by participating organizations or coordination center
User flagging	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes
Screening									
Built-in social needs screening tools	PRAPARE, AHC, and more	No	Yes	PRAPARE, AHC, WE CARE, Healthify proprietary tool, and more	PRAPARE, AHC, and more	4 domain-specific tools	Question bank by domain	Vendor-designed screening tool; PRAPARE; library of 120+ assessments	PRAPARE, AHC, Health Leads, DPP, proprietary tool; others supported
Customization	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Responsive recommendations	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Search Options									
Categories	10 major categories 300+ service types Created and uses Open Eligibility taxonomy	Custom categories and service types	Custom categories and service types	13 major categories 326 service types 121 eligibility types Open Referral interoperable	23 major categories 250 service types	9 service areas, categories 200+ granular tags Created and uses Social Services Data Standards	25 customizable categories - also by service types	Uses AIRS taxonomy	20 major categories 150+ service types Mapped to AIRS taxonomy, ICD-10 Z codes, and Open Referral Interoperable.
Search fields	Coverage area, Service Category, Free-text search, including service description, service name, provider name, etc. Additional search tool configuration.	Service category, Service provider name, Service description	Location, Service provider name, Service description	Location, Search radius, Service Category, Eligibility Category, Regional Results, Preferred Status, Network Status	Location, Search radius, Service Category, Condition algorithms	Location, Service provider name, Need, Service description, Service category, Program eligibility, Hours of operation. Additional custom search fields where relevant.	Program name, Need, Service category	Social category, Location, Service area, Eligibility criteria, and others	Service Category, Location, Search Radius, Program Eligibility, Hours of operation. Additional custom search fields where relevant.
Filters	200+ filters	2 filters	10+ filters	6 filters	11 filters	5 filters	3 filters	10 filters	10 filters
User favorites	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
End users	Staff Public	Staff Public (add-on fee)	Staff	Staff Patients (through API integration with Patient/Member portal) Public (white-labeled site)	Staff Patients	Public Patients Staff	Staff	Staff Patients (in app, web portal, and/or API integration with patient/member portal)	Staff Patients Public

Features	Aunt Bertha	CharityTracker	CrossTx	Healthify	NowPow	One Degree	Pieces Iris	TAVConnect	Unite Us
Version	Enterprise Platform	CharityTracker	CrossTx	Coordinate	PowRx	One Degree Premium	Pieces Iris	TAVConnect	Unite Us
Referral									
Referral-sharing modes	Print, Email	Print	Provider-facing	Print, Email, Text	Print, Email, Text	Print, Email, Text	Print, Email	Email, App	Print, Email, Text
Benefit enrollment	No	No	No	No	No	Yes	No	Yes	No
Social service referral notification	Email, Text	Email, In-application	Email	Email, In-application	In-application	Email, Text	Email, In-application	Email, In-application	Email, In-application
Referral tracking	Referral-sending staff Receiving agency	Receiving agency	Referral-sending staff Receiving agency	Referral-sending staff Receiving agency	Referral-sending staff Receiving agency	Referral-sending staff Patient Receiving agency	Receiving agency	Receiving agency Patient (in MyTAV app)	Senders, recipients, patients, and other patient care teams in the network.
Longitudinal case management	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Reporting/analytics									
Built-in reporting	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Custom reports	On request	On request	Directly via Tableau	On request	On request	On request	On request	Directly via Looker	Via BI Tool and on request
Data export formats	CSV, data warehouse API	CSV	CSV, HL7, JSON	HL7, API, CSV to SFTP	On request	On request	CSV, XLS	CSV, SFTP, secure email	CSV
Languages	Built-in Google Translate with enhanced native Spanish translation; Non-machine translations for screening tools upon request	No translation at this time	Available upon request	Built-in Google Translate. Non-machine translation for screening tools upon request.	Arabic, Mandarin, Polish, Somali, Spanish included for resources. Screening tool translation upon request.	Spanish	Spanish	Spanish (available in MyTAV patient app only)	Available upon request
EHR integration									
Direction	Bidirectional Module	Not currently	Bidirectional Module	Bidirectional Module (directory)	Bidirectional Module	Bidirectional; EHR integration available but not implemented	Bidirectional Module	Bidirectional	Bidirectional Module
Supported integration standards & interface	APIs, HL7, SMART on FHIR, web services, others upon request	API in development	HL7, APIs, FHIR	HL7, APIs	HL7, vendor APIs, web services	APIs	HL7, FHIR, APIs	HL7, FHIR, X12, vendor APIs, others upon request	APIs, SMART on FHIR
SSO	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time to deploy	0-3 months	1-2 months	0-3 months	Directory: 1 month Closed-loop: 4 - 6 months	2-3 months	0-1 months	1-3 months	3 months	1-3 months

Side by Side Comparison Table

Features	Aunt Bertha	CharityTracker	CrossTx	Healthify	NowPow	One Degree	Pieces Iris	TAVConnect	Unite Us
Version	Enterprise Platform	CharityTracker	CrossTx	Coordinate	PowRx	One Degree Premium	Pieces Iris	TAVConnect	Unite Us
Cost structure	One-time build fee Monthly fee for unlimited number of users Add-ons: custom insights, EHR integration, live-chat search help	One-time build fee Per seat license Add-ons: customizations at hourly rate	One-time Integration Fees Per seat license with volume discounts	One-time fees Enterprise and network licensing	One-time fees Per seat license Other pricing: contact vendor	One-time fees Monthly fee for unlimited users	One-time implementation Annual enterprise SaaS fees	Enterprise: One-time build fee, unlimited licenses, ongoing PMPM CBOs: Low to no monthly subscription	Licensing Included: implementation costs, ongoing account management and tech support, and network growth
Estimated cost for the full feature version	$3500/month for unlimited users, plus one-time onboarding fee of $8000	$324/user/year; volume discounts available	$45/user/month; volume discounts available	Pricing will range based on client requirements and size; contact vendor	$95/user/month; volume discounts available	Contact vendor	For a CBO or clinic: $2500-5000/year For a health system + partner CBOs: $50-125,000/year	Contact vendor	Varies based on size and license seats.
Vendor profile									
Status	For-profit	For-profit	For-profit	For-profit	For-profit	Non-profit	For-profit	For-profit	For-profit
Founded	2010	2006	2010	2013	2015	2012	2015	2011	2013
Geographic reach	50 states	46 states	31 states	50 states	7 states	2 states	4 states	10 states	20 states

Side by Side Comparison Table

Feature Descriptions:

Version	The name of the version that is described in this table. When several product lines exist, the full feature version is described.	Search options *User favorites*	Can users keep a preferred list of favorite resources? Can users make comments on listings that other users can see? Can users 'send' a resource listing to another user?	SSO	Do they support single sign-on?
Resource directory *Type*	Comprehensive: the directory is intended to include all available resources in a geographical area, often drawing upon web-scraping, partnerships with existing resource directories and any lists kept by the customer's staff. Can contain one or more focused networks of active referral partners. Focused: the directory consists of the customer's partners	*End users*	Who can search for resources? Is it just the staff users, or is there a patient-facing portal that can be used via kiosk or tablet without creating an account? Is there a public portal?	EHR integration *Direction*	Can patient data and/or screening results be pulled into the platform from the EHR? Can referral data be pulled into the EHR from the platform? Is the platform available as a module inside the EHR?
Vetting process	Who determines if a resource is appropriate for inclusion? Possible answers: the vendor, the customer. The vendor may offer it as an optional service.	Referral *Referral modes*	How can patients see the list of referrals?	*Supported integration standards & interface*	Includes data standards e.g. HL7, FHIR and interfaces e.g. APIs
Maintenance	Who scans resource listings to ensure they are up-to-date? How is information updated: web searching, calling or even visiting the agency? If the vendor does it, how often is the resource verified? Can users flag resources in need of update or removal to the vendor in real time?	Benefit *enrollment*	Can patients apply for public benefits within the platform?	Time to deploy	How long would it take them to set up with a new client?
Screening *Built-in Social Needs Screening Tools*	e.g., PRAPARE, AHC, Health Leads, WE CARE	Referral *Social service referral notification*	How does the social service provider receive notification of a patient referral?	Cost structure	Do any one-time fees apply? What is the ongoing fee structure? Options: PMPM: Per member (beneficiary) per month; License: Per seat (user); Enterprise: Per entity, may encompass CBO users; Network/Region: For an entire network of entities
Customization	The ability to add custom screening tools/assessments.	*Closed-loop process*	Who can signal that the patient has connected with the resource?	*Estimated cost for the shown version*	See vendor profile for complete price list.
Responsive recommendations	Recommends resources based on responses to screening questions	Longitudinal case management	Is there a way to view the history of a patient's screening results/recorded needs, assistance received and interactions? Can members of the care team communicate with each other?	Vendor profile *Status*	Is the vendor a for-profit or non-profit corporation?
Search options *Categories*	How comprehensive of social needs categories? Are resources categorized by the needs addressed and services provided? How granular are the needs? Can they be customized?	Reporting/analytics	Does the platform have a set of reports the customer can generate? Can the customer build their own reports? What data export methods are available?	*Founded*	What year was the vendor founded?
Filters	How can you restrict what results are shown? We only show the number of filters; for list, see vendor profile	Languages	What is translated and into which languages? Note: Google Translate contains > 100 languages	*Geographic reach*	How many states does the vendor have customers in? Note that some platforms have multi-state or national customers.

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Detailed functionality descriptions and recommendations

This section provides detailed information on the ways in which the nine platforms provide the functionalities health care organizations are seeking, as well as recommendations about these functionalities from the early adopters we interviewed.

Primary features: Resource identification and referral tracking

Resource directory

As described above, a searchable up-to-date research directory is one of the two key functionalities sought by health care organizations.

Comprehensive vs. focused directory

Resource directories in the nine platforms we reviewed can be divided into two general categories, which we named comprehensive and focused:

- **Comprehensive directories** provide a complete listing of all resources available in a geographic area. Aunt Bertha, Healthify, NowPow, One Degree, and Pieces Iris all provide comprehensive directories. For these kinds of directories, vendors, more than users, are responsible for directory development and updates.
- **Focused directories** are limited to a specific list of organizations identified by the client organization. Platforms with a stronger focus on care coordination tend to have focused directories (e.g., CharityTracker, CrossTx, TAVConnect, and Unite Us). Client organizations are generally responsible for keeping focused directories updated.

CharityTracker, Pieces Iris, TAVConnect, and Unite Us also provide the ability to have both a focused and a comprehensive directory.

The following table summarizes the advantages and disadvantages of each directory category:

	Advantages	Disadvantages
Comprehensive	All resources in the community are (supposed to be) included; vendor responsible for vetting and updates.	May be harder to find a specific resource due to the large number of resources; higher likelihood of inaccurate information due to data volume and the methods used to identify resources (which may not involve direct communication with organizations).
Focused	Easier to develop because resources are known to the health care organization; smaller number of partners makes convincing them to use the platform less resource intensive.	Smaller pool of resources; identification of resources and upkeep burden more likely to fall on platform users.

Detailed Descriptions & Recommendations

Resource identification, vetting, and updating

The utility of a resource directory is largely dependent on the completeness and accuracy of the information in the directory. Vendors' processes for identifying included resources—as well as for information verification and updating—are therefore critical features.

Vendors offering comprehensive directories typically identify community resources by making use of existing resource databases (e.g., 2-1-1), pulling data from the web, and leveraging clients' resource lists. Two vendors, Aunt Bertha and Healthify, have developed a nationwide directory, giving them the ability to quickly deploy their platform in a new geographic location, while other vendors develop directories client by client.

Focused directories are generally developed by vendors based on resource lists provided by the client organization. This places a larger burden on the client but offers more control over the quality of the directory content. Even for comprehensive directories, however, users highlighted the importance of using existing knowledge (see box below).

Platform vendors vary in the intensity of resource vetting conducted before data are included in directories. Most vendors with comprehensive directories have an in-house team that emails and/or calls each resource to verify the resource's existence and information. All comprehensive directory vendors said they review resource data at least every 6 months. In focused directories, participating organizations themselves update their own listings as needed. All vendors offer a mechanism allowing users to flag resources that need to be updated or that are missing from the directory, with the goal of responding within one to two business days.

It is worth noting that it is challenging and time consuming to verify and keep community resource data up to date on an ongoing basis. As an increasing number of vendors and health care organizations create and maintain directories in the same geographical areas, some social service organizations have reported being called several times by different vendors to verify the same data, leading to response fatigue. One social services professional we spoke with pointed out that solving this very problem was one of the initial goals of the 2-1-1 system, and thought that chronic underinvestment in many 2-1-1s across the country had created a vacuum that led to the development of these alternative platforms. Although these largely for-profit platform vendors may be better resourced, ultimately it is neither desirable nor sustainable for multiple companies and organizations to each seek the same information from the same social service organizations in the same geographic areas. Some kind of centralized information infrastructure should be available for all to draw from. In the Conclusion section, we discuss some alternative approaches to address this challenge.

Detailed Descriptions & Recommendations

Publicly accessible directory

The other main difference in approach to directories among vendors we reviewed was whether the directory was available publicly (without logging in). Although several informants prioritized this feature, only two vendors, Aunt Bertha and One Degree, currently provide publicly accessible directories. These are both comprehensive directories, although One Degree is currently limited to certain regions of California and Florida. Aunt Bertha, CharityTracker, and Healthify sell customer-branded directories, which can be national or localized.

Building a resource directory: User experiences and recommendations

Informants noted that special attention needs to be paid during the planning process to ensure that the directory is correctly built, populated, and tested. If key resources are missing or the information about them is incorrect when the platform launches, this can erode staff trust in the platform. The following are their recommendations for developing an accurate directory:

- **Make use of existing knowledge**. Many staff have lists and information about community resources that should be included in the resource directory. For comprehensive directories, internal staff time will likely be required to help populate and verify the resource directory. Even when a vendor verifies information directly with the community agency, inaccuracies are possible and local staff may be the only ones who can detect issues.
- **Do not depend on community-based organizations to populate directory information**. Due to lack of staff and resources, community organizations are unlikely to populate or update their own information unless they have a strong relationship with the organization implementing the directory or will directly benefit from using the platform.
- **Evaluate the tradeoffs between completeness of information and ease of maintenance of the directory**. The more information in the directory, the more likely something will become outdated. This applies both to the number of organizations in the directory and the amount of information provided about each organization.
- **Ensure there is a clear and easy process for updating or adding resources**. You will want this process to happen as easily and quickly as possible, i.e., not require leaving the platform or signing into any other system. Look for a vendor that will commit to making changes quickly, e.g., within one business day. Another useful feature is the ability to set reminders to verify resources at regular intervals.
- **Look off the beaten path for less familiar resources**. Although staff may think they know resources in the community, several informants found that staff learned about new resources: *"I think it's easy when you're a human services professional or a health care professional to think that you know all the resources in your region.... But as I've gone through this process, I've discovered lots of organizations that I didn't know existed."*
- **Manage expectations**. When launching the resource directory, let staff know that some information may be missing initially but that the directory will become more comprehensive over time as users identify gaps. This will help avoid staff using it once, noticing something missing, and concluding that the platform is not worth using.

Detailed Descriptions & Recommendations

Resource taxonomy and content

The way content is organized in these directories affects the ease with which users can identify relevant resources. Platforms that use a recognized taxonomy standard can more easily share content with other resource directories. In the absence of a widely accepted standard, several vendors have developed their own. These include Social Service Data Standards (developed by One Degree) and Open Eligibility (developed by Aunt Bertha). Taxonomies can vary widely in their structure and the number of terms they use. The Open Referral project provides a list of existing taxonomies.

The content and format of resource listings also vary across platforms and customers. Sometimes an entire organization is considered one resource—and the listing will describe multiple offered services. In other cases, each service provided by an organization is considered a separate resource. Interviewees described the tradeoff between a listing that was less specific but more likely to be stable over time versus a more granular listing that could go out of date quickly. Regardless of the format, interviewees strongly recommended that listings include information on program eligibility as well as the last time the resource information was updated.

Search function

In most platforms, users can either browse for services or search based on keywords, usually based on a program, organization, service, need, or geographic area. Note that not all platforms allow users to search for multiple needs simultaneously.

Search functions: User recommendations
- **Ensure the search function can filter by geography, patient characteristics (e.g., language or age), and program eligibility**. Also make sure the you can sort results based on characteristics such as distance from a patients' home.
- **Test out the search function before you commit to a platform**. Make sure you can easily identify the resources that will be most helpful to your patients.
- **Make sure there is a process to flag, annotate, and/or save favorite or highly trusted resources**. One organization found that their end-users wanted to be able curate and share information with each other about resources they could trust because they knew *"which of these [organizations] treat our patients with dignity and respect"* or *"at least I know it's quality and don't have to do the extra research and leg work to call and see that they'll connect."* All platforms except CharityTracker have this functionality; some also allow team members to create shared favorite lists.

Referral management

The second core functionality prioritized by users and provided by these platforms is management of referrals to community resources. This functionality involves two

Detailed Descriptions & Recommendations

primary components:

1. **Referral initiation**: the process of making a referral. All platforms provide this functionality, although with some slight differences.

2. **Closed-loop referral tracking**: the process of tracking the outcomes of a referral, including whether the patient received help through the referral and whether the needs that triggered the referral were addressed. This is the functionality that the organizations we spoke with struggled with the most due to the fact that it requires information from either the social service organization or the patient. While all platforms provide some version of this functionality, approaches differ.

> Closed-loop referral tracking was the most challenging part of platform implementation for the organizations we spoke with because it requires information from either the social services organization or the patient.

Referral initiation

All platforms, except CrossTx, offer two ways to initiate a referral: directly to the community resource and/or through the patient. With CrossTx, users cannot provide referrals to the patient, instead all referrals are made directly to the community resource.

All the platforms we examined enable referral information to be sent directly to a social service organization. Some platforms require referral receiving organizations to log into the platform to view and act on referrals, while others provide referral information, and in some cases the ability to accept or decline a referral, via email.

For the platforms that share referral information with patients, vendors differ in terms of how this information is provided. CharityTracker only provides printed information, while the other seven platforms offer a combination of print, email, and/or texting.

Referral initiation: User preferences

Look for a platform that provides:

- The **ability to provide referrals directly to patients**, and preferably by text with well-formatted content that is accessible to populations with low literacy.
- **Built-in translation** for organizations serving large populations for whom English is a second language.
- **Ways for referral sending and receiving organizations to easily communicate about referral details**. For example, CharityTracker users highlighted the utility of the platform's bulletin board feature, which allows a single referral to be sent to several organizations simultaneously. Receiving organizations can then see and respond to a message without logging into the platform. The bulletin board feature also enables informants to post agency announcements, upcoming events, and questions about how to address client needs (e.g., "Does anyone know who I can call to get help for a client who needs transportation to detox ASAP?"). CrossTx also has a texting feature that enables the referral sender to communicate with the referral receiver(s) about patient needs to determine if the referral is appropriate.

Detailed Descriptions & Recommendations

Closed-loop referral tracking

The goal of closed-loop referral tracking is for the referral sending organization to find out what happened after a referral is made, including:

- **Referral acceptance**: whether the receiving organization accepted the referral, or if not, why not.
- **Patient contact**: whether the receiving organization and the patient interacted, or if not, why not.
- **Receipt of services**: whether the patient received help from the organization; if yes, what kind; or if not, why not.
- **Need resolution**: whether the need that triggered the referral was resolved (or is in the process of being resolved), or if not, why not.

Closed-loop referral tracking usually refers to a process whereby staff at the referral receiving organization enter information in the platform to indicate the outcomes above. All platforms we reviewed enable some aspect of closed-loop referral tracking but they differ in what information they collect along this spectrum and how. For example, with CharityTracker, CrossTx, and Pieces Iris, referral outcomes need to be entered by the organization that received the referral, while for other platforms, it can also be done by staff at the organization that sent the referral. This is not a true closed-loop functionality per se, as it does not involve the referral receiving organization, but it can still be a useful feature to ensure referral outcomes are captured and tracked. One Degree and TAVConnect also enable patients to provide referral outcome information, a feature that a number of users we interviewed found helpful because many patients responded to the prompts. Another feature informants found useful was having a free text field to share details about referral status and outcomes; both CharityTracker and NowPow offer this.

Notifications about referrals are an important part of referral tracking. For example, when information about referral status is entered by a social service organization, it should ideally trigger a notification to the health care staff user who initiated the referral. Similarly, a notification would ideally be sent to the referral sender if no action is taken by the referral receiver within a designated timeframe.

Other useful features to facilitate referrals included appointment scheduling and built-in web forms that enable patients to apply for specific services at the time of the referral.

Detailed Descriptions & Recommendations

Closed-loop referrals: User experiences and recommendations

Although closed-loop referral functionality was a priority for most of the organizations we spoke with, few successfully implemented it, mostly due to challenges convincing community-based organizations to use the platform. Users made the following suggestions to facilitate a functional closed-loop referral system:

- **Engage social service organizations from the start so that the platform meets their needs as well as yours**. (Find more details in the Engaging Community Partners section on .)
- Look for a platform that allows **tracking of the referral outcomes your organization and its partners are most interested in, in the ways that will be most meaningful and feasible for all organizations**. Consider outcomes ranging from referral receipt, patient contact, receipt of services, and need resolution, as defined above.
- **Develop consensus on what defines a "successful referral" before platform implementation**. Does success mean that the referral receiving organizations has accepted the referral or does success require the patient to receive a service? Also, how long should a referral be left open before labeling it as unsuccessful?
- To fully capture hard-to-predict referral outcome scenarios, look for a platform that provides **both structured data and free text options**.
- Look for a platform that **is easy to use and requires the fewest clicks to record referral outcome information** to maximize the likelihood that that information will be recorded.
- **Look for a platform that allows staff in different organizations to communicate directly with each other** as CharityTracker's bulletin board feature and CrossTx's texting functionality do. This is helpful both for communicating referral outcomes and facilitating better care coordination.
- To lessen referral tracking burden, **consider limiting referral tracking to the highest risk patients and/or those with the highest acuity referrals**.

Other characteristics

Systems integration

All platforms we reviewed allowed some kind of integration with EHR systems, HIE software, or other client tracking software to facilitate seamless platform use and to allow medical and social data to be combined, a feature appreciated by a number of informants. We are calling these two aspects of systems integration seamless use and data exchange.

Seamless use

Seamless use refers to the ability to move from the EHR to the platform and back without having to log in again, thereby increasing the likelihood that staff will use the platform. Seamless use is usually facilitated by single sign-on (SSO), which allows access to several applications through one log-in. All platforms except CharityTracker support one or more SSO standards.

An even more seamless transition from the user perspective entails having the referral platform appear as a module inside the EHR; that is, the user moves from the EHR to the platform and back without ever having the impression they "left" the EHR.

Detailed Descriptions & Recommendations

For example, the Epic App Orchard allows third parties including the vendors in this guide to build these modules, often called frames. As of March 2019, Aunt Bertha, NowPow, and Unite Us are in the Epic App Orchard.

Data exchange

At a practical level, data exchange involves automatically populating patient data from the EHR in the community resource platform and/or vice versa, avoiding the need for double data entry and facilitating the use of social needs assessment and referral data in clinical decision-making and the use of EHR data in social needs referrals. Data can also be transferred to/from case management software, HIE platforms, and business intelligence tools.

All platform vendors offer some kind of systems integration that can be tailored to customer needs and preferences. See the platform profiles in this guide (pages 52-96) for details about each vendor's integration experience.

Systems integration: User experiences and recommendations

Systems integration was a pain point for many of the organizations we spoke with. Only a few had succeeded in establishing an integration, despite a number wanting to. EHR integration challenges increase when the platform is being integrated with different organizations using different EHR products.

- **Look for a platform that can provide single-sign on**. Interviewees noted that single sign-on can be the difference between a platform being used and being a waste. *"For a long time, our own staff were not using the system, not because they disliked it, but just because even remembering the password took up too much time when there were so many things to do in their day."*
- **Closely examine how integration will happen and involve IT staff in conversations with vendors to most accurately estimate integration costs and anticipate technical challenges**. *"If you want EHR integration, go into details with the vendor on how it will work, and how many clicks will be needed to go from one to the other."* A vendor's lack of familiarity with technical specifications may be a red flag that integration will take a long time and/or be costly.

Integrated social needs screening

Although all platforms we reviewed offer some form of integrated needs assessment functionality, only a few informants highlighted this feature, either because they carried out screening on paper or because they preferred to capture the screening data in their EHR. (Note that if systems integration is successful, the data could be captured either in the EHR or in the platform and then be available in both systems.) All platforms, except CharityTracker, have built-in screening tools, including in some cases popular tools such as the Center for Medicare and Medicaid Services' Accountable Health Communities (AHC) screening tool, the Protocol for Responding to and Assessing Patients' Assets, Risks, and Experiences (PRAPARE), and Health Leads' Screening Toolkit. See the side-by-side comparison table for a list of tools that are

Detailed Descriptions & Recommendations

already built into each platform and the SIREN screening tools comparison table[1] on the SIREN website for more details on frequently used social needs screening tools. A few of the platforms with roots in care coordination also provide other biomedical or behavioral assessment instruments. Every vendor offers the option of building a customized screening tool, though this may incur additional fees. Since assessments may be repeated for the same patient, platforms should have the ability to store past screening tool results.

Automated resource recommendations based on screening results

In some cases, screening results automatically trigger platform actions, for example, opening a page with directory search results for resources that address identified needs filtered to within a 10-mile radius of the patient's zip code. NowPow and TAV-Connect have proprietary algorithms that combine screening tool results, patient demographic information, and clinical data to produce a curated resource list. For some other platforms, such as Pieces Iris and CrossTx, positive results can trigger a care plan and care team instructions. Most platforms in this guide provide the option to customize the design of these triggers to match workflows.

Automated resource identification: User recommendations

Although auto-generated resource lists seem like a helpful feature, our informants did not highlight them as particularly important. One informant felt it was necessary to have *"a person, such as a community health worker, a social worker, who's fairly knowledgeable in local resources and, most importantly, has the time to review the results that generate on the referral summary and make tweaks to further tailor it for the patient."* For example, the closest food bank to a patient may not be culturally appropriate or easily accessible to a patient due to transportation barriers.

Care coordination and comprehensive case management

In addition to tracking referral outcomes, some platform users we spoke with were interested in being able to use the platform for care coordination and longitudinal patient case management, i.e., tracking needs, care plans, patient goals, referrals, and services received over time in one place, and in some cases, doing so in coordination with other organizations. All the platforms we reviewed provide some kind of ability to track patient information over time, although access can be restricted by the customer for privacy concerns or other reasons. They may also have different features to support coordination; for example, CharityTracker, CrossTx, Healthify, NowPow, and Pieces Iris incorporate messaging between members of a care management team to facilitate coordination. Organizations where navigators contact other organizations on their behalf of their patients also wanted to be able to document these activities. Lastly, some interviewees mentioned wanting to be able to have patient referral information available to different staff accounts so that a staff member could follow up on a referral initiated by another staff member.

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1 Visit http://sirenetwork.ucsf.edu/tools-resources/mmi/screening-tools-comparison

Detailed Descriptions & Recommendations

Care coordination: User experiences and recommendations

Look for a platform that provides the ability:

- **To create a network of organizations within the larger network** to facilitate sharing patient information and care coordination within a trusted set of partners.
- For **patients and staff from health care and social service organizations to comment on the status and outcomes of a referral** to facilitate care coordination and learn about what works for addressing needs.

Privacy protection

Safeguarding patient data is a central concern for clients and vendors alike, especially given that the goal of the platforms is to allow communication about sensitive needs between different organizations. All the platforms we reviewed follow HIPAA standards. They also all have the ability to tailor access to patient information depending on user roles. Only one of the platforms, Healthify, is HITRUST certified, which is considered the gold standard for HIPAA compliance and risk management. However, since HITRUST certification is difficult to obtain, its absence is not indicative of a sub-optimal platform. Furthermore, some platforms, like Aunt Bertha and TAVConnect, implement the HITRUST CSF® framework even though they do not have formal certification. One of the challenges for developing appropriate privacy protection processes is that standards about data sharing between health care and other types of organizations are difficult to interpret and can vary across states. In the absence of clear and well understood standards, organizations tend to err on the side of caution, possibly impeding data sharing.

Another important privacy feature is the ability to easily obtain and record patient consent to share health information with other organizations, for example through a digital or over-the-phone consent process.

Privacy protection: User experiences and recommendations

- **Give your organization enough time to think through privacy and confidentiality issues and train staff about privacy rules**. Developing appropriate confidentiality and privacy protections can be a time-consuming aspect of setting up any referral platform, especially if multiple organizations and sensitive data, such as mental health or substance abuse data, are involved. Some informant organizations needed more than 12 months to establish rules and processes governing what and how patient information could be shared. For one organization that was coordinating the use of the platform for three different initiatives, patient consent protocols and data sharing requirements were the issues that most impacted roll-out. One informant emphasized that staff may be reluctant to trust that newer technologies comply with confidentiality requirements and will need training to overcome privacy concerns.
- **Consider ways to limit confidentiality concerns by limiting data included in the platform and by using role-based security features**. Some organizations reduced confidentiality challenges by limiting the medical information that was included in the platform and/or shared between organizations. For example, one organization shares only minimal demographic information and no medical information when making referrals. In some cases, informant organizations intentionally did not connect the platform to their EHR to avoid privacy concerns.

Detailed Descriptions & Recommendations

Reporting and analytics

All the platforms in this guide provide at least basic reporting functions through one of three mechanisms: directly through the platform user interface, through an integrated third-party business intelligence tool, or through vendor-generated custom reports. In addition, all of the platforms allow at least some data to be exported via flat formats (e.g., CSV) for import into an analytics tool or analysis in combination with other clinical or administrative data.

Reporting and analytics: User experiences and recommendations

Reporting and analytics functions stood out as one of the areas that was poorly rated by a number of informants across platforms. Frustrations centered on the inability to generate the customized reports their organization needed and export data from the platform for further analysis. The categories of data that informants sought included:

- Types of services platform users searched for
- Number and types of referrals made
- Who made referrals
- Whether patients reached referral agencies
- Referral status

In addition to these categories, a few people we spoke with wanted their platform to analyze and provide a ranking of the acuity or complexity of their patients.

Vendor responsiveness and capacity

Perceived vendor responsiveness and capacity played a significant role in vendor selection for the organizations we spoke with. Most of these platforms are still quite new, and there are many unanswered questions about what approaches for social needs referrals work best. Therefore, it is important to work with a vendor who has the capacity to quickly implement platform improvements.

Vendor responsiveness and capacity: User experiences and recommendations

- **Talk to other organizations** that have worked with the vendors you are considering to assess the vendor's capacity to respond to your needs in a timely manner, knowing that implementation will require significant back and forth with the vendor and on-going platform support.
- **Look for platforms** that provide direct communications channels to the vendor. For example, one platform provided a chat function in the platform that enabled staff to quickly and easily submit resource directory update requests.

Cost

Cost varies between platforms, sometimes substantially. One organization received cost estimates from six vendors ranging from $20,000 to $100,000/year for imple-

Detailed Descriptions & Recommendations

mentation of a single platform in 17 community health centers across four counties. Costs vary by platform but also depend on the complexity of the implementation, including the kind of systems integrations required and how many different organizations will be using the platform. To help provide comparative cost information we asked vendors to provide their pricing structures and ranges. The information we received is shown in the side-by-side comparison table and in the platform profiles in Appendix F.

Weighing costs: User recommendations

- **Get estimates from several vendors**. Prices can vary substantially across platforms. It is also worth exploring different cost plans (e.g., per user license vs. site license).
- **Consider different platform versions for different users**. Even within a single institution not all users may need the same functionality. A large university medical center is using a standard version of a platform within a strategic group of programs, projects and community-based organizations. The pediatrics division of the same center is using a custom build of the tool that includes medical equipment vendors, medical providers, and physical therapy groups that their inpatient teams can provide as resources to families prior to discharge.
- **Consider both technology and staff costs** to support platform implementation internally and with any external partners.
- **Work with the vendor to develop a cost structure that lowers cost for social service organizations** to maximize community-wide uptake.

Detailed Descriptions & Recommendations

How did organizations fund these platforms?

Health care organizations reported funding their community resource platforms using one or more of three sources: grants (including both private and government grants), value-based health care transformation dollars, and operational funds. In general, the smaller organizations used grant funding with the hopes that they would either continue to find grants to support the work or transition to another more sustainable funding source over time. Grant sources included local, state, and national foundations (mostly health care-related) and state and federal grants (including CMMI State Innovation Model and Accountable Health Communities Model grants).

Value-based funding sources included Medicaid Delivery System Reform Incentive Payment (DSRIP) waivers and Accountable Care Organizations. In these cases, organizations expressed some concerns about sustainability since value-based program dollars are not guaranteed in the future. Health care reimbursement for care management activities (e.g., Medicare Chronic Care Management) may be an alternative sustainable funding stream. One health care organization was funding their platform using a grant from a state health insurance program for low-income uninsured adults but hoped the local Medicaid managed care organization might institute a social determinants focused quality improvement incentive program that could cover ongoing platform costs.

A number of larger health systems funded this work through operational dollars. Community benefit dollars were used in some cases to pay for local community-based organizations to use the platform. Several informants were part of collaborations where the platform costs were shared across organizations. In one case, 20 organizations jointly funded the platform. One collaborative established a network preferred pricing arrangement with the platform vendor so that collaborative members could receive negotiated pricing. In this arrangement each organization holds their own license and contracts separately with the collaborative for use of the integrated interface for their EHR.

Funding Sources

Implementation lessons learned and recommendations

This section summarizes common lessons learned from informants from 39 organizations. Overall, informants reported that implementation was slower and more challenging than expected. The following recommendations summarize ways informants thought the process and outcomes might have been improved.

1. Engage community partners from the beginning

As mentioned earlier, successful implementation of closed-loop referrals or a coordinated referral network depends on the successful engagement of the organizations that will be part of the system. Buy-in and collaboration are easiest to establish if health care organizations reach out to community-based partners prior to platform selection.

> "Engage your partners early on and ask them what their concerns are before telling them what you want to do."

Key recommendations for engaging community partners include:

- **Look for a platform that offers substantial functionality for social service organizations as a way to increase use of the platform by these organizations**. Without a strong perceived benefit, social service organizations – which are often under-resourced and understaffed with low technology capacity – could not justify the time and resources needed to fit these platforms into their busy workflows. Platforms' resource directory, care coordination, and case management functionalities can provide potentially important benefits for social service organizations, enabling them to more efficiently make and manage referrals to other social service agencies, track outcomes, document the organization's value to health care organizations and other stakeholders, and, for small organizations that do not have client-management software, track clients electronically. Learning how partner organizations can benefit from using the platform will help ensure platform selection and implementation meets the needs of all involved parties.

- **Involve social service partners in platform selection**. Partners are more likely to use a platform that they have had a role in selecting both because the platform is more likely to meet their needs and they will be more invested in the platform's success.

- **Provide the platform at low or no cost to social service partners**. If the platform is not free to use, the perceived benefit must be even larger to offset platform cost. A number of the health care informants we spoke with funded platform use costs for community-based partners to eliminate this barrier.

- **Compensate social service organizations for serving your patients**. If referrals

Lessons Learned & Recommendations

from your health care organization increase social service organization case-loads, it may be helpful to compensate them for serving your patients, especially if you may be receiving a financial benefit, as for example, under a value-based payment agreement.

- **Simpler may be better**. Time- and resource-strapped social service organizations may be more likely to use a platform that is simple and easy to use.

- **Build in time to support partners in implementing the platform**. As with implementation in health care settings, platform implementation in social service organizations required time to gain leadership and staff buy-in, develop the appropriate MOUs and business associate agreements, design appropriate workflows, and train staff. One interviewee warned us, *"When you don't have a designated process workflow or individual on the other side in the community-based organization, these emails just get lost in space. One time we even got a 'can you please remove us from your mailing list?' email back."*

- **Make sure that you're not just getting the organizational leadership buy-in**, but also buy-in of end users. *"That is where we could have done a better job, is really making sure that the direct support staff, the ones that are going to be asked to integrate it into their daily life, understood why we were asking them to do it and understood how they needed to do it."*

2. Examine what already exists in your community to avoid duplication and proliferation of redundant platforms

If the ultimate goal is to create a more coordinated health care and social service delivery system, all organizations in a community, including all health care organizations, have an incentive to use the same platform, or at least use platforms that can easily interact. If organizations in a community implement different referral platforms, this will further reduce the likelihood that social service organizations will use the platforms.

> "Now we're creating a world where community organizations are going to have five different websites that they're clicking on for referrals. If I were to do this all over again, I think I would bring key stakeholders from all hospitals across the state to the table, with our community stakeholders, and together figure out what collectively would be the best one, 'go slow to go fast' so that everybody is using that same thing, to avoid adding unnecessary administrative burden."

The proliferation of different platforms is not just a problem for social service organizations. A community health center that was already using one platform was about to be required to use another for their patients who were covered by an accountable care organization. Therefore, before committing organization funds and staff time toward a new resource locator and referral system, organizations should examine what already exists within their organization and in the broader community to avoid duplication and limit proliferation of multiple platforms.

Lessons Learned & Recommendations

Ideally, any organization seeking to implement this kind of platform would do so through a community-wide collaborative process so that what is deployed can become the sole system through which health care and social services organizations coordinate care for common patients/clients. Community information exchanges like the one developed in San Diego () are an example for how to do this.

3. Have a clear understanding of your goals and needs

Multiple informants highlighted the importance of spending the time upfront to be clear about goals and desired outcomes and determine the details about how the platform will be used both internally and with partners before selecting a platform. Key details that should be considered include the kinds of assistance that will help patients the most and what staff, technology, and partners will be needed to effectively provide that assistance.

> "The health centers that have really thought about their care model, and who on the care team is allocated to addressing social and economic factors, have a better time adopting the tool, because they've thought through some of the larger system and workforce issues."

In developing your goals and needs:

- **Find out what assistance patients need to access community resources**. Without talking to patients, it is difficult to know what kind of assistance patients really need to better access existing resources. This information is invaluable for determining what you want a platform to be able to do.

- **Think about which patients will benefit the most**. The platforms can be used differently depending on patient needs, staff capacity, and community resource availability. One health center pediatric clinic had two social needs workflows: a low-touch workflow in which part-time volunteers provided a list of resources for simple needs, and, for patients with more complex needs, a full-time community health worker used the platform for the resource directory, patient navigation, and goal setting activities.

- **Think about how staff members may use the technology differently**. Resource directories may be most useful for staff who do not yet have a lot of knowledge about community resources and work with patients with a variety of needs. For example, at one large health system, medical assistants and navigators really liked having the ability to find resources that could help patients. *"They have been just astounded, […] they find it so fulfilling to be able to have one place to go, look something up, and provide something to a patient."* In contrast, social workers found it easier to keep relying on their customized lists of resources. Further, in most of the organizations we connected with, the platform was being used by non-clinical staff (i.e., community health workers, social workers, care managers, navigators, volunteers), even when providers had access to it.

Lessons Learned & Recommendations

In some organizations, providers were not given access so they would not feel overwhelmed.

- **Plan ahead**. One organization initially envisioned that they would use the platform primarily to locate community resources. Since implementation, however, the purpose has shifted to tracking where they are sending patients, what is being searched for, and key domains with which patients need help.

4. Don't assume that if you build it they will use it

Nearly all informants mentioned that they experienced challenges with getting end-users, both staff and patients, to use the platform.

- **Engage internal staff from the beginning**. Many informants commented on the importance of gaining staff buy-in to ensure successful implementation. Some recommendations for achieving this included:
  - **Communicate the vision and purpose of the platform**.
  - **Identify staff champions and engage naysayers**. *"We didn't push our provider who was not excited about it to start. We listened to her, kept her concerns in mind, and communicated back to her. Then she saw other people using it and was able to look at the resources herself. She could see that it was being updated, and the information was accurate, and was really getting out to patients in a meaningful way, and more patients than we were reaching with our former paper binder system."*
  - **Train staff and put a plan in place both to keep skills updated and to ensure new staff are trained when they are brought on board**. One informant uses a biweekly newsletter to share tips about how to use the technology, news related to community referrals (e.g., if a partner organization has changed names or a new partner has come on board), links to training videos and resources, and information about the services offered by partner organizations.
  - **Ask staff to keep an open mind and think of implementation as a learning process**. Implementation will likely be bumpy. Let staff know that there will be kinks along the way so that their expectations are appropriately set.
  - **Find ways for staff to share success stories**. At one organization, clinical assistants were concerned about fitting the additional screening and referral work into their workflows, but once staff began using it and were able to witness the positive impacts on their patients, they became more excited about the project and didn't want to stop using the platform.

In addition to engaging and training end-users, the following are additional recommendations for increasing platform use among staff and patients:

- **Pair platform implementation with a routine social needs screening workflow**. One community health center was surprised at the low number of referrals

Lessons Learned & Recommendations

being generated through the platform because they knew a large number of their patients had social needs. Once they implemented a systematic screening process the numbers of referrals increased substantially.

- **Don't assume that patients are using the referrals**. Several informants found patients were not using the referrals to the extent they expected. One informant attributed this to patients being unaccustomed to being asked about social needs. The organization was planning on training staff on patient engagement and motivational interviewing to increase staff's ability to build rapport with patients. Another organization started a "community warmline" staffed by a care navigator for patients who needed more help with referrals.

Example of a collaborative platform selection process

One health care organization looking to improve care for complex patients started with two to three hour visits with 32 very complex patients, asking them about their wants and needs. They followed this with interviews of frontline staff (including community health and social workers) to ask about current practices and tools to meet those needs. The main problem identified during that phase was that existing resource directories included data that were often incorrect and required a lot of clicks to get to relevant data. The organization heard a neighboring health system was also looking at platforms, so they put out a joint request for proposals. The two systems then brought together a group of stakeholders – including the grant funder, community partners, and frontline staff – to decide on the platform.

5. Know that this work takes time

Nearly everyone we spoke with mentioned that the process of selecting and implementing a platform was time- and resource-intensive, in some cases more so than they expected. Organizations should carefully consider the resources needed to plan for and implement a community resource directory and referral platform and manage expectations accordingly. In addition, it will likely be tempting to implement a platform internally first and then reach out to engage partners, but ultimately, this is less likely to be successful, as setting up an effective referral system requires engagement and participation from the referral receivers.

Lessons Learned & Recommendations

Other possible approaches

In identifying platforms and organizations for this guide, we came across several alternative approaches for coordination between health care and social services to improve patient health and well-being. While reviewing these approaches in depth was outside the scope of this guide, we want to highlight some promising alternative and complimentary approaches as they may help solve some of the challenges experienced by the organizations we interviewed for this project.

Electronic health record vendors

Spurred by the health care sector's interest in social determinants of health, EHR vendors are increasingly incorporating social risk screening and referral management into their systems. For example, Epic has recently expanded its health record into a comprehensive health record that includes social care data and a social risk screening module; it has also launched an integrated portal ("Coordinated Care Management") that allows users to make and track referrals to social service organizations. Other EHR vendors such as Cerner, Meditech, and NextGen, are developing similar functionalities. The extent to which EHR vendors will continue to expand work around social care is currently unclear, but is likely to influence the evolution of dedicated community resource referral platforms.

Community information exchanges

A community information exchange (CIE) is a technology and collaboration infrastructure that facilitates care coordination between social service, health care, and other organizations by enabling sharing of patient-level information. 2-1-1 San Diego's CIE is the most well developed; however, other communities around the country are in the process of exploring similar models.

2-1-1 San Diego CIE

Initially developed in 2011 as a collaboration between Emergency Medical Services, a homeless shelter, and 2-1-1 San Diego, the 2-1-1 San Diego CIE has three main components: 1) a multi-disciplinary partner network, 2) a shared language, and 3) an integrated technology platform. The technology platform is centered on a resource directory, bidirectional referrals, and shared longitudinal patient records. Like an HIE, the CIE allows the sharing and exchange of data in real time from the network partners' native IT systems (e.g., case management software, EHRs), but unlike most HIEs, the CIE includes community, social service, and health care organizations. The CIE also uses a comprehensive social assessment tool developed by 2-1-1 San Diego called the Risk Rating Scale that determines the immediacy of a client's needs along 14 health and wellness domains, the client's knowledge and utilization of services, and what social supports and barriers are influencing whether those services are accessed.

Other Possible Approaches

Inspired by the San Diego prototype, others are developing similar exchanges, including NorthWell Health (New York), Chatham County (Georgia), and Franklin County Public Health (Ohio). 2-1-1 San Diego has identified six strategies to consider when building a CIE:

1. Identify the CIE vision and governance
2. Mobilize the community network
3. Prepare a legally compliant framework
4. Adopt interoperable and scalable technology
5. Cultivate sustainability
6. Transform the movement

More information on the six strategies and real-world examples of how the San Diego CIE network tackled different steps is available at https://ciesandiego.org/toolkit/.

Jackson Care Hub

The Jackson, MI community drew upon a long history of stakeholder collaboration in its effort to develop its own version of a community information exchange without knowledge of the San Diego model. On the medical side, the Jackson Health Network (JHN) brought medical practices and providers together as a clinically integrated network organized around a common EHR (Epic). On the community side, the Jackson Collaborative Network (JCN) was created to convene community stakeholders to work together on an educational opportunity (Cradle 2 Career Network), financial stability (Financial Stability Network), and community and public health (Jackson Health Improvement Organization). These groups shared a collective vision of integrated care to serve all community members.

Early stakeholder conversations identified information exchange as a core problem. Over 200 social service agencies provided overlapping and duplicative services, the community 2-1-1 service was underutilized, most agencies worked from their own incomplete 'catalogs' of local services, and coordination between medical, behavioral, and social service providers was informal and infrequent.

Over 40 social services agencies and stakeholders entered into a participatory design process to co-create a local Community Information Exchange as part of a CMS-funded State Innovation Model demonstration in Jackson. The outcome of the design process, the Jackson Care Hub, provides a shared community platform that incorporates an SDH screening tool, supplemented by short additional assessment modules for domains with positive screens; a 2-1-1 resource directory; electronic social service referral management, including status tracking; and an interface that supports SSO and simple data exchange with Epic.[1]

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1 For more information, contact Michael Klinkman, MD, University of Michigan Department of Family Medicine and Jackson Health Network: mklinkma@umich.edu.

Other Possible Approaches

Pathways HUB

The Pathways Community HUB model is an approach to identifying and addressing health, social, and behavioral risk factors that was first developed in the early 2000s and is implemented in communities in eight states as of 2018. In this approach, community-based care coordination organizations employ community health workers to assess patients' health, social, and behavioral health risk factors. Working with a team of social workers and medical personnel, they then develop a risk reduction plan of care with the patient that includes assigning "Pathways," checklists that define which actions need to be taken to resolve each risk factor. There is a national certification that HUBs can earn, administered by the developers of the approach. Certified programs delivering HUB services are paid when each Pathway is completed.

The Pathways Community HUB Institute has published a guide that describes the model, infrastructure needed, and implementation strategies through a step-by-step approach. The guide can be downloaded at https://innovations.ahrq.gov/sites/default/files/Guides/CommunityHubManual.pdf.[1]

Increasing interoperability

There has been some progress in the effort to increase interoperability between players in this space. In the social service information and referral sector, the Open Referral Initiative has developed the Human Services Data Specification, an open source resource directory exchange format. The specification and its accompanying Human Service Data API were endorsed in late 2018 by the Alliance of Information and Referral Systems as an industry standard. To date two of the vendors in this guide have announced they will follow these standards, and we believe there will be pressure from the larger 2-1-1s to adopt a common standard and move away from proprietary resource directory protocols.

Other Possible Approaches

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[1] For more information, visit the Pathways Community HUB Institute website: https://pchi-hub.com/.

Conclusions

Community resource referral platforms promise to efficiently link health care organizations to social service organizations to help address patients' social needs and enable better outcomes tracking. Among the 39 organizations we spoke with, regardless of the platform being used, implementation routinely took longer than anticipated and the promised efficiency gains remained largely unfulfilled, especially when it came to closed-loop referrals. The major obstacles to successful implementation were engaging end-users and fitting platform use into busy workflows, particularly with social service organizations. Those interested in implementing these platforms are encouraged to engage eventual end-users – internally and externally – in both selecting and implementing a platform to ensure the technology will meet end-users' needs. Further more, if the goal is to create a community-wide care coordination infrastructure, approaching implementation as a collaborative effort with other community stakeholders is highly recommended.

Three key information gaps in the field emerged from our interviews:

1. **Information about the most effective ways to set up referrals and closed-loop systems.**

   Since this market is new, both vendors and clients are still learning how best to implement these technologies and processes. Organizations implementing platforms are encouraged to share their experiences with others to accelerate field learning so that understanding of common pitfalls and successful strategies can quickly grow.

2. **Information about the impacts of these platforms on social services organizations.**

   This guide focused primarily on the experiences of health care organizations. We spoke with 35 informants from health care organizations but only four from social service organizations. However, it was clear from our interviews with both that better understanding social service organizations' perspectives is crucial to ensuring these platforms deliver on the promise of facilitating closed-loop referrals and coordinated social care.

3. **Data about platform performance and effectiveness.**

   Although informants shared anecdotal information about whether staff and patients found the platform useful, it did not appear that any were evaluating whether the platform was making referrals more efficient or effective. Similarly, although vendors often claimed that their products had reduced avoidable health care utilization, few formal studies had yet been published (see p. 50 for list of published studies). **For the field to advance, it is crucial for these platforms to be rigorously evaluated to assess whether they truly improve the efficiency and/or effectiveness of social needs referrals and care coordination.**

Despite these challenges, and the fact that few of the organizations we spoke with had implemented all of their platform's functionalities, nearly all users were satisfied with the platform they had chosen and were optimistic that it would eventually facilitate the coordinated social needs care they were seeking to implement.

We expect that as more organizations use these platforms and experiment with other ways to facilitate community-wide coordinated care, evidence-based best practices will start emerging to better inform the way forward. In the meantime, we hope that this report provides health care organizations and others interested in understanding these new technologies helpful information about what these platforms can provide and some considerations for how to implement these and similar coordinated care technologies to improve outcomes for patients with social needs.

Conclusions

Appendices

Appendix A: Acknowledgements

We would like to recognize the following people and organizations for their contributions to the development of this guide.

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Appendices

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Appendices

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Appendices

Appendix B: Other platforms

During the course of developing this guide, we encountered many other platforms that we were ultimately not able to incorporate. We list them here so that interested readers may find out more about them:

- ACT.md
- Altruista GuidingCare
- Care Coordination Systems
- Clara
- Curandi (intervention-focused)
- Eccovia
- FINDConnect
- GSI Health
- HealthBridge
- HelpSteps
- Heudia
- LivWell Navigate
- Open City Labs
- PCIC Unified Care Continuum Platform
- Prounitas
- SESConnects
- Trilogy Integrated Resources
- Welnity

Appendices

Appendix C: Vendor features and functionalities questionnaire

Thank you for agreeing to share information about your product with us. Please fill in the questions below to help us understand its features and functionalities:

1. Social needs assessment (if applicable)
   a. What kind of social needs assessment functionality is available?
   b. Are you using an existing screening questionnaire? If so which one(s)?
   c. Can users customize screening questions?
   d. Is screening self-administered or interviewer administered?
   e. Can screening results drive automatic referrals?

2. Community resource identification
   a. How do you identify community resources?
   b. How do you assess the quality of community resources (both before you include them in the resource directory and on an on-going basis)?
   c. How is the list of community resources updated and how often?
   d. Can product users contribute information about resources and keep a list of preferred resources? Can they share those preferences with other users (inside or outside organization)?

3. Community resource search
   a. How does the search function?
   b. Can you do the search without logging in?
   c. What social needs can be searched for? Can that be customized?
   d. Can multiple needs be searched at once?

4. Referrals
   a. How are referrals made? Is the information given to the patients or can referrals be sent to the community organization directly? (If given to the patient, how is that done (e.g., printed out, emailed or texted to patient, other?)
   b. How are referrals tracked? Do you have a closed-loop referrals system (i.e., a way to get information back from the community organization saying a connection was made with the patient)? If so, how is that done?

5. What kind of case management or longitudinal patient needs tracking is possible?

6. EHR/system integration
   a. Does your product integrate with EHR systems? If so, how and to what extent?
   b. What systems are supported for integration?
   c. Is it possible to import patient flat files?
   d. Does your product have FHIR or Open Referral compatibility?
   e. Do you have SSO (single sign-on) capability?

Appendices

7. Data analytics
   a. What kind of data analytics and reporting are possible? For example, can users look at rates of closed-loop referrals by community resource or by need? Can users track outcomes for patients by need, geographic area or demographics? Can the data be combined with other patient data to do predictive modeling?
   b. How much customization is possible for reports?
   c. How can data be exported?

8. In which states is your product currently used?

9. How long would it take you to deploy it in a community where it hasn't been deployed before?

10. Who is your typical client (in terms of type of user, e.g., hospital system, county health department, county social service agency, community-based organization, etc.)? What percentage of your clients are in the healthcare sector (including health care organizations insurance plans, county health agencies, etc.)?

11. What kind of data do you have about the benefits or ROI of using your product?

12. What is the cost structure for your product? What might be the cost for a community health center user? What are costs for CBOs?

13. What other features/functionality do health care clients particularly like about your product?

Appendices

Appendix D: Links and resources

Toolkits and learning collaboratives

National Association of Community Health Centers' (NACHC) PRAPARE Implementation and Action Toolkit
http://www.nachc.org/research-and-data/prapare/toolkit/
The PRAPARE Implementation and Action Toolkit is freely available online and contains resources, best practices, and lessons learned to help guide interested users in each step of the implementation process, ranging from implementation strategies and workflow diagrams to EHR templates and sample reports to examples of interventions to address the social determinants of health.

Data Across Sectors for Health (DASH) and The Network for Public Health Law's Legal Resource Bibliography
http://legalbib.communitycommons.org/
The Legal Bibliography is collection of 100+ papers, toolkits and other materials focused on privacy, consent and policy documentation.

Center for Care Innovations' Raven
https://raven.careinnovations.org/
A learning laboratory to research, test, and connect digital health solutions. Raven combines a directory of tech solutions with a sandbox to demo apps and test integrations with several EHRs.

Center for Health Care Strategies' Digital Health Products for Complex Populations
https://www.chcs.org/digital-health-products-complex-populations/
An online database, updated periodically, of digital health products intended to help health care providers, payers, and other stakeholders identify tools designed to improve care, engage patients, and address the health and social needs of complex, high-cost patients.

National Interoperability Collaborative Resource Center
https://nic-us.org/resource-center/ (registration required)
This is a curated collection of academic and non-academic articles about interoperability and information-sharing between sectors, including, but not limited to, health information technology and social and human services.

SIREN Screening Tool Comparison Tables
http://sirenetwork.ucsf.edu/tools-resources/mmi/screening-tools-comparison
SIREN has compiled information from several of the most widely used social health screening tools.

Reports

Center for Care Innovations Case Study: Digitizing Social Service Navigation & Closing the Referral Loop
https://www.careinnovations.org/resources/case-study-digitizing-social-service-naviga-

Appendices

tion-closing-the-referral-loop/
This is a case study of West County Health Centers' piloting of Purple Binder in 2016.

Center for Health Care Strategies: Screening for Social Determinants of Health in Populations with Complex Needs: Implementation Considerations
https://www.chcs.org/media/SDOH-Complex-Care-Screening-Brief-102617.pdf
This brief reviews key considerations for organizations seeking to use SDH data to improve patient care and includes ways to identify social service resources and track referrals.

Children's Hospital Association: Screening for Social Determinants for Health: Children's Hospitals Respond
https://www.childrenshospitals.org/Issues-and-Advocacy/Population-Health/Reports/Screening-for-Social-Determinants-of-Health
This report outlines how children's hospitals are implementing social determinant screening and includes a section on referring to community resources.

DASH and The Network for Public Health Law: Data Sharing and the Law. Deep Dive on Consent.
http://dashconnect.org/wp-content/uploads/2018/11/Data-Sharing-and-the-Law-Deep-Dive-on-Consent.pdf
This workshop proceedings report from the 2018 All In: Data for Community Health National Meeting shares key considerations for building consent forms and data sharing agreements.

NACHC: Assessing and Addressing Social Risk: Piloting PRAPARE in Texas
https://www.episcopalhealth.org/files/9415/2520/6783/PRAPARE_in_Texas_Final_Report_Designed_4_12_18.pdf
This report documents successes and lessons learned by NACHC and three Texas community health centers implementing a year-long pilot of the PRAPARE screening tool.

Nemours Children's Health System: Community Care Coordination Systems: Technology Supports
http://www.movinghealthcareupstream.org/wp-content/uploads/2018/09/FINAL_Nemours_CommCareSysTechSupp.pdf
This brief defines core elements of community coordinated care systems and describes the evolving role of technology in supporting such systems.

Patchwise Labs: 2018 Buyer's Guide Report: Social Innovation Technology for Healthcare
https://www.patchwiselabs.com/sdoh
This is a buyer's guide for community resource referral platforms that offers a deep analysis of market forces and a number of the platforms. The executive summary is available on the website free, but purchase is required for the full report.

Case studies on included platforms

Simon Solutions Case Study: Hospitals as Community Collaborators
http://simonsolutions.com/case-studies/hospitals-as-community-collaborators
This is a case study of St. Joseph Health and Brazos Health Resource Center's use of Charity-Tracker to facilitate a community network of over 60 organizations.

Appendices

American Hospital Association: Members in Action: Managing Risk & New Payment Models
https://www.aha.org/system/files/2018-05/the-value-initiative-osf-healthcare-peoria.pdf
This is a case study of OSF HealthCare in Streator, IL, including adoption of Pieces Iris technology.

Research articles and report

To search SIREN's Evidence Library of research articles, reports, and issue briefs on addressing social risks in clinical settings, visit https://sirenetwork.ucsf.edu/tools/evidence-library.

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Appendices

Appendix E: Abbreviations used in this guide

ADT: Admission, Discharge, and Transfer
AHC: Accountable Health Communities
API: Application Programming Interface
AWS: Amazon Web Services
BAA: Business Associate Agreement
BPCI: Bundled Payments for Care Improvement
CBO: Community-Based Organization
CCD/CCDA: Continuity of Care Document/Consolidated Clinical Document Architecture
CFR: Code of Federal Regulations (e.g., 42 CFR Part 2)
CSV: Comma-Separated Values
EHR/EMR: Electronic Health Record/Electronic Medical Record
FERPA: Family Educational Rights and Privacy Act
FHIR: Fast Healthcare Interoperability Resources
FIPS: Federal Information Processing Standards
HAP: Health Action Plan
HHS: Department of Health and Human Services
HIE: Health Information Exchange
HIPAA: Health Insurance Portability and Accountability Act
HITRUST CSF: A certifiable data security framework for health care organizations, administered by the HITRUST Alliance.
HL7: Health Level-7 standards for transfer of clinical and administrative data between software applications used in health care
HMIS: Homeless Management Information System
HUD: Department of Housing and Urban Development
MPI: Master Provider Index
NIST 800-53: National Institute of Standards and Technology catalog of security controls for all U.S. federal information systems
OAuth2: Not an abbreviation, but an open standard authentication protocol
Open ID: Not an abbreviation, but an open standard authentication protocol
PCI: Payment Card Industry
PHI: Protected Health Information
PHQ-9: Patient Health Questionnaire 9
PII: Personally Identifiable Information
PMPM: Per Member Per Month
PRAPARE: Protocol for Responding to and Assessing Patients' Assets, Risks, and Experiences
RESTful API: A web services application programming interface that uses the Representational State Transfer software architecture style
ROI: Return on Investment or Release of Information
SAML: Security Assertion Markup Language, a standard single sign-on protocol
SAS-70: Statement on Auditing Standards 70 (for service organizations)
SMART: Not an abbreviation but a set of open health care data standards that build on FHIR
SQL: Structured Query Language
SSO: Single Sign-On
WSO2: Not an abbreviation, but the name of an open-source technology integration provider

Appendices

Appendix F: Platform profiles

The following pages summarize vendor-supplied information on features and functionalities of the nine platforms included in our review. Features and functionalities tend to evolve very quickly, so we recommend you contact vendors for up-to-date information on platform offerings.

Platform Profiles

Aunt Bertha
www.auntbertha.com

Company Overview

Aunt Bertha was founded in 2010 and is a for-profit company based in Austin, TX with 65 employees. Its mission is to "connect all people in need and the programs that serve them (with dignity and ease)". Aunt Bertha's focus is on making human services information accessible both to people in need and to social service programs.

Platform Overview

Aunt Bertha is one of the only platforms we reviewed that provides a comprehensive and freely available directory covering the entire country. In addition to the directory, it provides a suite of referral management, team collaboration, reporting, screening, and appointment scheduling functionalities.

Product Lines

- **AuntBertha.com**: A free, publicly-accessible directory that anyone can use to identify resources by zip code or need.
- **Provider Package**: A free platform designed for social service providers that includes the resource directory and referral management, team collaboration, reporting, screening, and appointment scheduling tools.
- **Standard**: Allows users to search the Aunt Bertha resource directory and manage referrals (including closed-loop). Includes basic reporting analytics.
- **Professional**: Includes Standard functions, plus advanced reporting analytics, a branded ("private label") search portal, SSO, Google Analytics, and live online training.
- **Enterprise**: Includes Professional functions, plus in-person training, third party integrations, Application Programming Interface (API) access, configurable navigation, guided search, screening tools, and ongoing account management.

Platform Features

Resource Directory

Aunt Bertha maintains a comprehensive, public-facing national directory of resources.

Build: Aunt Bertha uses web searching and customers' existing lists to identify resources. Its staff verify these resources through call center follow-up. Resources are tagged using an open source taxonomy and a quality assurance team checks the listing before publishing it on the platform. Customers have the option: 1) to use the comprehensive directory; 2) to build a focused directory that only includes their partners; or 3) to feature partner organizations within the comprehensive directory.

Update: Ninety-five percent of resources are re-verified at least once every 180 days. In addition, every user of the platform can use a built-in "suggest a program" feature. Once submitted, Aunt Bertha's data team will verify and publish that resource within two business days.

Screening

Screening functionality is available in the *Enterprise* version. PRAPARE and the Accountable Health Communities (AHC) social screening tools are both built in; customers can provide custom screening tools to be added. Screening results automatically generate a list of resources to meet identified needs.

Resource Searching

Service categories: Follows the Open Eligibility taxonomy: Education, Food, Goods, Health, Housing, Legal, Money, Transportation, and Work. A tenth category, Urgent, lists resources to meet urgent needs across categories.

Search modes: When the functionality is active, screening results automatically generate a list of resources to meet identified needs. Users can also run searches manually. An additional feature, "Guided Search", is active in the *Enterprise* version of Aunt Bertha and allows users to look at specific social needs domains, identify other factors related to their patient's situation (Drivers), and then choose from potential interventions. Once the intervention has been decided, the user can type in the patient's zip code to retrieve available resources that fit their specific needs. This feature was co-developed with the Camden Coalition.

Filters: There are three categories of filters: personal filters (e.g., age group, health issue, gender), program filters (e.g., open hours, cost, language), and income eligibility.

Favorites: Users can identify their favorite resources, leave reviews and notes about resources, and create curated lists that can be shared with other team members.

Referrals

Lists of referrals can be printed out or sent to patients via text message or email. Users of the public-facing portal can connect with individual resources for themselves or someone else.

Referrals can be shared among team members in a folder in the patient's record on the platform. When a referral is sent via Aunt Bertha to a social service provider, it includes the patient/help-seeker's name, contact information, and best method of contact (email, phone, or text). Service providers can also have an online application be completed and sent along with the referral for review and approval prior to arriving for services. If approved, clients are notified via email that they have been approved for services.

Platform Profiles

The outcome of a referral can be updated by three parties: the referral sender, the referral receiver, and the patient. Possible status update options are Not Updated, Needs Client Action, Pending, Referred Elsewhere, Got Help, Couldn't Get Help, and No Longer Interested. Additionally, customers can opt to have a post-assessment configured if additional information needs to be captured. There is a notes field that is a standard feature.

Number of sites with functional closed-loop referrals: Not shared.

EHR Integration

Aunt Bertha can integrate bidirectionally with EHRs and care management platforms. It is also available as a module in the Epic App Orchard. As of September 2018, it has integrated with Epic, Cerner, Athenahealth, Altruista Health, and VirtualHealth. It uses APIs for data transfer and supports the Fast Healthcare Interoperability Resources (FHIR) standard.

Other integrations: Salesforce.

Patient flat files can be imported if integration is not desired.

Number of sites with an integration: 107

Single Sign-On

Supports Open ID, Security Assertion Mark-Up Language (SAML) 2.0, OAuth2, and legacy sign-on protocols.

Data Analytics and Reporting

The *Standard* version contains a basic package of 5 reports.

Professional and *Enterprise* versions offer a more advanced reporting package that encompasses 12 reporting suites, daily updated data, a dashboard that allows users to customize reports via filters and data ranges, SQL database access, and reporting by user type.

Custom insights, which combine analytics and recommendations into custom monthly reports, can be requested for an additional fee.

Data can be exported as a CSV file. Additionally, *Enterprise* customers have direct access to the Aunt Bertha data warehouse.

Data Security and Confidentiality

Aunt Bertha follows the HITRUST CSF® for its policies and procedures, which incorporates HIPAA and NIST 800-53 security controls. Protected information under HIPAA is

Platform Profiles

not shared with community-based organizations or other providers of social services. Customers follow their own policies when choosing to share protected information with community-based organizations as part of care coordination permitted by HIPAA and may opt to share protected information within the Aunt Bertha Platform. The vendor conducts risk analyses annually, as well as when there are significant system changes. They have also completed a HITRUST self-assessment in preparation for formal external assessment.

Other Services or Functionalities

Aunt Bertha provides appointment scheduling to social service organizations as part of its free *Provider Package*. The platform also offers social service organizations the option of building web-based forms that patients and other help-seekers can fill out to apply for services.

Data Ownership and Sharing

Patient data are owned by the customer and are provided to them if agreement is terminated. Aunt Bertha does not share any data with or sell any data to third parties.

Pricing[1]

Aunt Bertha's pricing model includes the following components:

- One-Time onboarding fees (*Professional* and above)
- Ongoing fees (*Standard* and above)
- Add-ons: Custom Insights, Epic Integration, Live Search Help

Aunt Bertha posts pricing information on its website: https://about.auntbertha.com/pricing/organizations

Below are prices as of April 2019; please visit the link above to verify current pricing.

	Enterprise Pricing (unlimited users)
Standard	$450/month; no one-time fee
Professional	$1450/month plus $3500 one-time fee
Enterprise	$3500/month plus $8000 one-time fee
Health Plans	Varies by size
Provider Package	Free

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1 Per seat license: A licensing agreement based on the number of staff user accounts.
Enterprise pricing: A fixed fee for either a high or unlimited number of staff user accounts for one organization.

Platform Profiles

Time to Deploy in a New Community

Aunt Bertha's customers are able to launch the platform within zero to three months of signing.

Aunt Bertha has provided the following details of their implementation strategy once a contract is signed:

1. *Preparation & Kickoff: Aunt Bertha ensures security, compliance, staff assignments, integration requirements, and overall project planning are underway with a kickoff to communicate the plan and ownership.*
2. *Establish Detailed Project Plan: Aunt Bertha validates key stakeholders, key metrics, reporting measures, the detailed project plan, integration plan, and overall workflow for implementation.*
3. *Plan & Configure: Aunt Bertha completes the branding and site/workflow configuration; may include SSO and other workflow configuration for users.*
4. *Go Live: Aunt Bertha completes training, launches campaigns to educate, train and complete program outreach, adjusts any program information, and goes live.*

States with Aunt Bertha Customers (as of April 2019)
50[1]

Examples of Current Customers
- Anthem (multi-state)
- Centene (multi-state)
- Sutter Health, CA
- Ochsner Health System, LA
- Camden Coalition, NJ

Customer Feedback

Below is what users we talked with in 2018 liked and disliked about Aunt Bertha.

- *What do clients like?* Easy to navigate; publicly accessible directory that doesn't require an account; public interface has an accessible literacy level; powerful search capability with many useful filters; ability to save favorites; easy to flag needed updates; capacity to send resources to patient by print, text, or email; analytics available on both search trends and percent of completed referrals.
- *What do clients dislike?* Directory tends to miss smaller resources or those for non-English speaking help seekers; difficult to distinguish most relevant local resource among exhaustive search results; can't selectively turn on tracked referrals for trusted partner organizations.

Except for customer feedback, this profile is based on vendor-provided information as of April 2019 and has not been independently verified.

1 Aunt Bertha's customers include a number of multi-state and national-level organizations.

Platform Profiles

CharityTracker
www.charitytracker.com

Company Overview

CharityTracker is a platform of Simon Solutions, Inc., an 8-employee for-profit company founded in 2006 and based in Florence, Alabama. Its mission is to "advance a more networked, collaborative, and comprehensive approach to transforming lives and communities." It has two platforms: CharityTracker, which we describe here, and Oasis Insight, which is a client intake and reporting tool designed specifically for food banks.

Platform Overview

This platform, launched in 2007 and traditionally used among networks of community-based organizations, combines a focused directory of active partners with a referral system and a bulletin feature that allows multiple organizations to collaborate on meeting a patient's need(s).

Product Lines

- **CharityTracker**: The company's core platform includes a resource directory, referral system, and bulletin board.
- **CharityTracker HMIS**: A version of CharityTracker for agencies with Homeless Management Information System (HMIS) reporting requirements. This version contains all CharityTracker functionalities **plus** a system to manage Department of Housing and Urban Development (HUD)-funded project enrollments.
- **Community Resources Directory**: A localized, white-label public resource directory that allows anyone to search for resources.

Platform Features

Resource Directory

CharityTracker creates focused directories for each of its "networks", which are defined as the customer (who serves as the network administrator) and their community partners.

Build: CharityTracker builds a network directory. Each partner organization provides the information that constitutes its own resource listing.

Update: Each partner organization is responsible for keeping its own information up to date. Users can also advise the network administrator of any changes, so he or she can edit/update information on behalf of the partner agency or notify the agency to make the update.

The *Public Resource Directory* is a localized, public-facing version of a CharityTracker network's resource directory. Anyone in the network's geographic area can search for local resources without logging in. The directory may include additional organizations that are not active participants in the network.

Screening

There are no standardized social needs screening tools integrated into CharityTracker as of September 2018. CharityTracker commonly creates custom assessment and screening tools for customers.

Resource Searching

Service categories: Abuse & Neglect, Addiction, Children & Youth, Churches, Clothing, Community Events, Counseling, Crisis Hotlines & Helplines, Disabilities, Education, Elderly, Emergency, Employment Assistance, Food, Health Care, Health & Wellness, Home & Family, Household, Housing & Shelter, Legal Matters, Mental Health, Parole & Probation, Personal Items, Recreation, Seasonal, Substance Abuse, Support Group, Transportation, Utilities, Veteran, Volunteer.

Service categories are customizable.

Search criteria: Service categories, organization name, and service description.

Filters: By county, by category.

Referrals

Referrals can be printed for patients and sent through CharityTracker to partners in the network. A release of information form (ROI) or client consent form must be signed before identifying information is shared. The ROI process is handled within the system with a digital signature and the process is in place for three years from the date of signature.

When a user makes a referral through CharityTracker, he or she shares the patient's name, contact information, and the nature of the specific need. The receiving organization (configurable to be all staff accounts or only certain staff) is notified by email that a new referral has arrived in CharityTracker. The receiving agency can change the status to "Approved/Completed", "Denied", or an additional custom status. There is a "Description" area for any additional information the receiving agency wishes to include when changing the status.

Number of sites with functional closed-loop referrals: Not shared.

EHR Integration

As of September 2018, CharityTracker has not yet integrated with an EHR. A vendor API is in development.

Platform Profiles

Other integrations: Salesforce, iCarol.

Single Sign-On

CharityTracker does not currently support SSO; however, the vendor has indicated the possibility of a custom implementation.

Data Analytics and Reporting

CharityTracker provides built-in reports in the following categories:

- Referrals
- Cases
- Households
- Demographics
- Service Cateogries

- Assistance
- Outcomes
- Assessments
- HMIS (optional)

Custom reporting is also available for a one-time fee.
Exports: Data can be exported into a CSV file.

Data Security and Confidentiality

Simon Solutions, Inc., adheres to the standards set forth by HIPAA and follows industry standard practices that ensure data are encrypted in transit and at rest. Contact the vendor for more details.

Other Services or Functionalities

"Bulletin board": On CharityTracker, in addition to making an agency-to-agency referral, a referral sender can also broadcast a request to help meet a patient's need(s) to the entire local network. One or several organizations can respond to meet needs in part or in full.

Data Ownership and Sharing

The Network Administrator owns all data entered into the database if it is the fiscal billing agent for the network or subscription. Should a Network Administrator decide to stop using CharityTracker, its data can be exported to a CSV or SQL file. Simon Solutions, Inc., does not own any of the information, nor does it sell data to or share data with any third parties.

Pricing[1]

CharityTracker's pricing model includes the following components:
- One-time fee: N/A

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1 Per seat: A licensing agreement based on the number of staff user accounts; Enterprise: A fixed fee for either a high or unlimited number of staff user accounts for one organization; Network: A fixed fee for a group of organizations, often for an unlimited number of users.

Platform Profiles

- Ongoing fees: Subscription cost
- Included: Free customer support and online training/help center
- Add-ons: Customizations available at the rate of $150/hr (quote provided upon request).

Below are prices made available by Simon Solutions, Inc., in September 2018. Actual pricing may differ from displayed amounts. A 14-day free trial is also offered for CharityTracker.

	Per seat license	Enterprise	Network
CharityTracker	$20/mo. or $216/yr. per user for CBOs Health care: per user fee of $30/mo. or $324/yr.; if 5+ users $306/yr. per user	Available	Available
CharityTracker HMIS	$40/mo. or $432/yr. per user for HUD funded agencies	Available	Available
Public Resource Directory	N/A	One-time: $2500 Ongoing: $2000/yr. for unlimited users.	N/A

Time to Deploy in a New Community

The time it takes to engage/train a network is subject to the network size and additional customizations.

Simon Solutions, Inc., provided us with the following details about the CharityTracker implementation strategy once a contract is signed:

> *A resource network implementation guide is available upon request. The guide outlines 7 steps to a successful implementation and sustainable use:*
>
> 1. *Prepare and equip*
> 2. *Engage partners*
> 3. *Create guiding coalition*
> 4. *Develop vision and ownership*
> 5. *Clear the way for transformation*
> 6. *Establish milestones and checkpoints*
> 7. *Create culture to support innovation*

Platform Profiles

States with CharityTracker Customers (as of April 2019)
46

Examples of Current Customers

- Catholic Health Initiatives St. Joseph Health - Bryan, TX
- East Texas Human Needs Network - Tyler, TX
- OSF Sacred Heart Medical Center - Danville, IL
- Mission Health System – Asheville, NC
- Carilion Franklin Memorial Hospital - Rocky Mount, VA

Customer Feedback

Here is what users we spoke with in early 2018 liked about CharityTracker:

Easy to use, especially for less tech-savvy organizations; bulletin board feature enables multiple organizations to contribute to meeting a need; case management functionality; ability to create small networks within the larger network.

Platform Profiles

Except for customer feedback, this profile is based on vendor-provided information as of April 2019 and has not been independently verified.

CrossTx
www.crosstx.com

Company Overview

CrossTx was founded in 2010 and is a for-profit company based in Bozeman, MT. Its mission is to "provide premier whole-person care coordination by bridging the gap between clinical and community care". It focuses on streamlining health care communication and simplifying workflows related to closed-loop referral management, behavioral health care assessments, non-emergency medical transportation, and community engagement.

Platform Overview

This platform allows users to screen patients for social needs, find resources within a focused network of referral receivers, manage care, and communicate with all involved parties.

Product Lines

CrossTx is the only platform available from this company.

Platform Features

Resource Directory

CrossTx combines clinical and community resource directories focused on active partners.

Clinical Resource Directory

CrossTx works closely with partners to determine a plan for implementation and network rollout, this includes developing the network's Master Provider Index (MPI). Partners are identified, added to the system, and trained as needed.

Community Resource Directory

Build: To build the directory in CrossTx, an in-house team works with the customer to identify community resource partners that they already work with and trust. Once identified, CrossTx will grant community organizations a network affiliation. This then allows members of the clinical team to refer directly to community organizations and vice versa.

Update: Community organizations update their services and resources as necessary. Client organizations can update community resource partners by adding or removing them at any time.

Screening

- Built-in social needs screening tools: PRAPARE. Other related built-in tools include: Health Action Plan (HAP), Patient Health Questionnaire (PHQ)-9, and others.
- Custom screening tools can be built upon request
- Screening results can trigger a referral, a care team to be invited, and/or program enrollment depending on guidelines set by the customer.

Resource Searching

Service categories: None.

Search criteria: Organization name and location. A search by social need may be built upon request.

Filters: Content Type (clinical, behavioral health, housing, etc.) and Activity (note, intervention, etc.).

Favorites: Users can keep a list of favorite resources.

Referrals

When a referral is initiated, the receiving provider or community organization is notified via email that they have an action required within CrossTx. The referral receiver can then "View," "Decline," or "Accept" the referral. All parties of a referral have status visibility (e.g., unaccepted, viewed on/at, appointment scheduled, etc.). If a referral sits idle, the referral sender is notified (based on customizable settings) that there has been no action on the referral. This notification then prompts the referral sender to reach out to the receiving provider/organization to check on status and/or send the referral to another provider/organization. When the referral receiving agency wants to conclude the referral, they "Conclude," but because they are not the "Owner" of the referral, the referral-sending provider/organization must "Accept," "Accept and Conclude," or "Decline." For example, a provider may send a referral to a community housing organization. The housing organization might find housing for the individual and conclude the referral. The provider may then decline the referral conclusion because the community housing organization neglected to provide an updated patient address.

EHR Integration

CrossTx supports integration with EHRs and health information exchanges (HIEs) using HL7, FHIR, and APIs. Thus far they have integrated with:

- **Cerner CommunityWorks**: CrossTx has been integrated with Cerner via health information exchange interfaces for data and SSO, using typical HL7 messaging, Continuity of Care Document/Consolidated Clinical Document Arhitecture

Platform Profiles

(CCD/CCDA) exchange, and SAML.

- **NextGen**: Module within the NextGen environment for a large-scale hospital network; additional integrations with NextGen via various HIE-based interfaces.
- **eClinicalWorks**: Integration via traditional HIE interfaces by way of HL7 messaging, CCD/CCDA exchange, and SAML for SSO. Currently developing eClinical-Works integrations to bridge with Epic.
- **Other integrations**: Mirth Connect and IMAT Solutions. Integrated with two HIEs using Mirth.

Flat file imports and exports are also possible if not EHR-integrated.

Number of sites with an integration: 15-20 direct integration sites, many indirect integrations through third party or pre-existing interfaces, tools, and APIs.

Single Sign-On

CrossTx fully supports SSO into EHRs, HIEs, and other systems via SAML.

Data Analytics and Reporting

CrossTx provides a basic reporting suite that covers the following categories: referrals sent, referrals received, all activity, patient intervention, patient encounter, patient admission data, chronic condition management (CCM) time tracking, staff coordination, regional utilization, and others.

In addition, custom reports through a third party, Tableau, can be built upon request. CrossTx will work with clients to define reporting requirements and build reports as necessary.

Exports: Data can be exported as a CSV file, HL7, or JSON.

Data Security and Confidentiality

CrossTx adheres to encryption standards that exceed HIPAA requirements. The platform is also payment card industry compliant, and complies with substance abuse confidentiality regulations 42 CFR part 2.

Other Services or Functionalities

Seamless Messaging: CrossTx users (whether they are clinical or community-based) can securely exchange group messages with other parties involved in their patient's care in a streamlined way from within their email without logging into the platform.

Non-emergency Medical Transportation: In partnership with Uber Health, CrossTx delivers non-emergency medical transportation within the platform, enabling users to schedule immediate or future rides for patients.

Platform Profiles

Care Team/Care Planning: Users can engage clinical, community, and non-traditional health resources for a tailored care plan in a shared, HIPAA compliant environment. Community care team members can use existing infrastructure such as Admissions, Discharge, Transfer (ADT) data feeds.

Custom Program Enrollment and Management: Participating organizations can customize program enrollments.

Data Ownership and Sharing

All CrossTx partners own their own network and patient data. CrossTx does not share data with or sell data to third parties.

Pricing[1]

CrossTx's pricing model includes the following components:
- One-time fee: Integration fees apply (i.e., EHRs, HIEs, etc.)
- Ongoing fees: Annual licensing based upon per user model. Optional custom reporting capabilities, annual training, and maintenance fees apply
- Included: Users at community-based partner organizations
- Add-ons: Additional scoped services

Below are platform prices made available by CrossTx in September 2018. Actual pricing may differ from displayed amounts.

	Per seat license
CrossTx	$45 per user per month (volume discounts available)

Time to Deploy in a New Community

CrossTx is a Platform as a Service (PaaS)-based solution which allows partners to launch the platform immediately. If deep integrations are requested, roll out will be six to eight weeks after signing.

CrossTx has provided us with the following details of their implementation strategy once a contract is signed:

Implementation and support methodologies are not unlike the framework and baseline that CrossTx uses in its approach to partner relations. Utilizing a myriad of methodologies depending on exact client needs, CrossTx engages partners in

1 Per seat: A licensing agreement based on the number of staff user accounts; PMPM: Per member per month; pricing that varies depending on the number of patients or beneficiaries served; Enterprise: A fixed fee for either a high or unlimited number of staff user accounts for one organization; Network: A fixed fee for a group of organizations, often for an unlimited number of users

Platform Profiles

bi-weekly or monthly conversations to update them on new features and function-alities and to garner feedback from current partner usage. From QuickStart guides, live online training, and in-person site visits, CrossTx continuously collaborates with partners to best implement and support the platform. An example implementation is as follows:

CrossTx Implementation Methodology Overview

- *Plan: Collaborate to establish project plan and direction*
- *Design: Document and validate requirements and design*
- *Train: Enable users to manage the system and grow the program*
- *Deploy: Prepare site for go-live and launch*
- *Launch: Go-live and public announcement*
- *Evolve: Evolving your program to achieve long-term success*

States with CrossTx Customers (as of April 2019)
31 states

Examples of Current Customers

- Methodist Healthcare Ministries - San Antonio, TX
- Health Access San Antonio - San Antonio, TX
- Santa Cruz Health Information Exchange - Santa Cruz, CA
- Mountain Pacific Quality Health, Helena, MT
- PeakLogic (multi-state)

This profile is based on vendor-provided information as of April 2019 and has not been independently verified.

Platform Profiles

Healthify
www.healthify.us

Company Overview

Healthify is a New York-based company founded in 2013. Healthify's mission is to "build a world where no one's health is hindered by their need." Healthify describes itself as being focused on improving the health of underserved communities by building the infrastructure that integrates the social determinants of health into the health care ecosystem.

Platform Overview

This platform combines social needs screening, a comprehensive resource directory, a referral system that enables closed-loop networks, and a reporting suite.

Product Lines

- **Healthify Search** provides access to the resource database where users can search, edit, share, compare, comment on, and favorite resources. *Healthify Search* can be deployed within staff, patient, and public-facing workflows.
- **Healthify Track** includes *Healthify Search* **plus** social needs screening and basic (non-closed-loop) referrals. Includes bidirectional integration with an EHR or care management platform that pulls patient demographic information and optional assessments into the platform and returns data on identified resources and referrals. *Healthify Track* also enables delivery of referrals via text.
- **Healthify Coordinate** includes all the functionality of *Healthify Track* **plus** the ability to exchange closed-loop referrals with a Network of Community Partners that also have *Healthify Coordinate* enabled and bidirectional integration between Healthify and the client's system of record (EHR, HIE, or care management platform).

Platform Features

Resource Directory

Healthify deploys an in-house team to maintain and expand its national Resource Directory, which as of September 2018 covers all 50 states.

Build: Healthify uses data aggregation, automated crowd-sourcing, and both telephone and in-person follow up to identify resources for inclusion in the directory.

Update: Resources in the directory are reviewed based on their websites and/or through follow-up calls and updated as necessary, every 90-180 days. Users can sub-

mit new resources they have identified in their area, edit resource information, and alert Healthify to changes in resource profiles. In addition, community partners can update their own listing if they are part of a *Healthify Coordinate Network* or are users of either *Healthify Search* or *Healthify Track*.

Screening

Healthify offers its own social needs assessment. Clients can also use either their own custom tool or another standardized tool, such as PRAPARE or the AHC Social Needs screening tool.

Healthify supports four screening modalities:
1. Staff-led screenings (conducted by staff either in-person or telephonically)
2. In-person patient self-screenings (conducted by the patient on a kiosk or tablet in a clinical setting)
3. Remote patient self-screenings (conducted by the patient from a link sent by e-mail)
4. Integrated screenings (conducted in a third party system, such as an EHR, Case Management System, or Patient/Member portal and then automatically fed into Healthify for resource matching and referral coordination)

Screenings, once completed, are stored on the patient's record in Healthify with an automatically-generated summary of community resources based on the identified needs. Staff members can view and add or remove resources before saving and sharing with their client.

Resource Searching

Service categories: Healthify has adopted the Open Referral standards for structuring and categorizing social service resources. Service categories include: Behavioral Health, Education, Emergency, Family & Youth, Financial Support, Food, Goods, Health, Housing, Legal, Social Supports, Transportation, and Work. There are sub-categories under each of these categories.

Search modes: Screening tool results will automatically suggest resource service options. The user may select from the subset of resources listed to match the individual to the most appropriate resources. Users can also manually search by location, search radius, and service(s).

Filters: Include preferred providers (customizable per organization), wheelchair accessibility, eligibility criteria, service offerings, and distance. Additionally, Healthify Coordinate allows users to filter results to show only community partners with whom they can process referrals in a closed loop within the platform.

Resource content: A short description of the resource, languages, eligibility criteria,

Platform Profiles

location, hours of operation, additional services offered, capacity, wheelchair accessibility, and price range.

Favorites and sharing: Users can save frequently used resources and access them from a list of favorites as well as share a resource with another user on their team.

Referrals

In all versions of Healthify, lists of referrals can be shared with the patient through printing or email, while Track and Coordinate also offer referrals via text messages.

Healthify Coordinate enables health organizations to send referrals electronically in a secure environment to the community partners who have agreed to share data through Healthify. In these cases, an email alert is sent to the community partner's main contact notifying them of a new referral and prompting them to log in to see the results. Once logged in, the partner updates the status of the referral to "Reviewed", "In Progress", "Complete", or "Canceled" with a free-text box for comments.

Users assigned to referral intake can then assign team members to the referral, add attachments, and communicate with the organization that initiated the referral. This information is then shared amongst network partners who have access to the patient record.

Number of sites with functional closed-loop referrals: Healthify has deployed Coordinate Networks in Arizona, California, Illinois, Maryland, New York, Ohio, and Pennsylvania.

EHR Integration

Healthify can integrate bidirectionally:
- Patient demographic and social needs data can be pulled from an EHR or care management platform into Healthify (available in Track and Coordinate).
- Referral outcomes can be integrated from Healthify into an EHR or care management platform (available in Track and Coordinate).
- Community resources can be searched for in a third-party system via API integration.

Healthify engages a third-party company, Redox, to manage HL7 integrations (for example, with Epic or Cerner), and integrates with other platforms using Healthify's Representational State Transfer (REST) API.

Other integrations: HealthBI, HealthBridge, Altruista, Carescope, Humanarc, Health Current.

Number of sites with an integration: 7.

Platform Profiles

Single Sign-On

Healthify supports SAML 2.0, including Just In Time provisioning (on-the-fly user account creation).

Data Analytics and Reporting

Healthify provides standard reports and data extracts which are sent to clients on a pre-determined, mutually agreed upon schedule. These include visual reports delivered via email, as well as CSV files delivered via email or SFTP. The following outlines Healthify's standard reporting suite:

- **Executive Insights Reporting**: visualizes key metrics of user engagement, screenings, searches, referrals, and referral outcomes, stratifying each across SDH category, patient demographics, referral status, and more.
- **Operational Reporting**: visualizes key metrics of user engagement, screenings, searches, referrals, and referral outcomes, stratifying each across individual users, user groups, and community partners.
- **Data Extracts**: provides access to underlying activity data captured within Healthify that can be tied back to patient/member records within claims or medical utilization datasets. Standard Data Extracts available include Screenings, Searches, and Referrals/ Referral Outcomes (both de-identified and personally identifiable versions of extracts are available for differing analytics use cases)

Healthify is also able to support customized reporting and data extracts upon request.

Data Security and Confidentiality

Healthify is HITRUST certified. All partners sign Business Associate Agreements (BAAs).

Other Services or Functionalities

Healthify includes Google Translate to allow >100 languages for translation, an in-app chat function for product support, and online knowledge-base access.

Data Ownership and Sharing

Client-provided data remains property of the client. The client is entitled to access and retain all client-provided data upon termination. Healthify does not sell data to or share data with third parties.

Pricing

Healthify offers two pricing options, enterprise or network, depending on the goals,

Platform Profiles

size, and scope of the organization. Costs include the following:

- One-time fees: Implementation services, network management services, and integration development fees.
- Recurring fees: Software subscription, public-facing resource directory, and integration maintenance fees.
- Included: Dedicated account management, end user support, resource network curation and validation, and reporting and analytics.

Contact sales@healthify.us for a custom quote.

Time to Deploy in a New Community

Expected set up time for Healthify Search capabilities is 30 days. The closed-loop approach within Healthify Coordinate can take anywhere from four to six months to set up, primarily due to the time needed to identify and contract with community partners.

Healthify has provided us with the following details of their implementation strategy once a contract is signed:

1. *Project Design: Collaborative process to clearly establish the health organization's goals and objectives related to social determinants of health management. Healthify Project Managers proctor discovery sessions intended to surface all involved service lines and parties within and outside the health organization. Healthify then launches a prescriptive project design process to establish scope, timelines, resource requirements, and success criteria for deployment.*

2. *Implementation: Healthify staff work elbow-to-elbow with the health care organization team to refine scope and guide deployment. The Implementation Team oversees and communicates progress against relevant milestones defined in the project plan. The implementation Team also engages internal and client teams to ensure successful deployment.*

3. *CBO Network Development and Management: For those interested in the Coordinate solution to establish a closed-loop referral network of CBOs, Healthify will deploy its in-house team of community partnerships experts to work side-by-side with these clients to:*
   a. *Complete a capabilities and community needs assessment to determine underlying requirements of the network*
   b. *Establish a network development plan, which includes ideal CBO partners, and a detailed project plan for building out the necessary network infrastructure*
   c. *Perform CBO partnership outreach, readiness assessment, and selection to formalize contracted CBOs in the network*
   d. *Conduct ongoing network and CBO performance evaluation to ensure*

Platform Profiles

long-term viability of the community network

4. *Ongoing Partnership for Success: Each client is paired with a Healthify Account Executive. The Account Executive collaborates with client to optimize use of the platform as measured in quarterly executive reviews.*

5. *Program Optimization: Ensures ongoing user onboarding and training. Account Executive leads continual identification and management for areas of improvement.*

States with Healthify Customers (as of April 2019)
50[1]

Examples of Current Customers

- Aetna
- Blue Cross Blue Shield of Kansas
- Howard County Health Department, MD
- New York University Langone Health, New York, NY
- UnitedHealthcare

Customer Feedback

Here is what users we talked with in 2018 liked about Healthify:

Directory is kept up-to-date; fast turn-around on suggested resources to add/delete; ability to keep lists of preferred resources; attractive, easy to use interface; set-up of platform included having customer identify their super-users/champions and used a train-the-trainer model.

Except for customer feedback, this profile is based on vendor-provided information as of April 2019 and has not been independently verified.

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1 Healthify's customers include a number of multi-state and national-level organizations.

Platform Profiles

NowPow
www.nowpow.com

Company Overview

Founded in 2015, NowPow is a Chicago-based for-profit company with 60 full-time employees. It describes itself as a "women-owned and -led technology company that powers communities with the knowledge that people need to get well, care for others, and manage with disease." NowPow is built on the scientific research of founder Dr. Stacy Lindau, Professor at the University of Chicago.

Platform Overview

A platform designed for care professionals to connect people to social services that includes social needs identification, screenings, a comprehensive resource directory, referral matching, closed-loop referrals, and outcome tracking.

Product Lines

- **NowRx**: A mobile-enabled app designed for community health workers and care professionals to access a resource directory, identify matched resources, and make shared referrals. Does not have patient accounts.
- **PowRx**: Includes *NowRx* functions, **plus** EHR integration, patient accounts, bidirectional communication, and ability to send tracked referrals to partner organizations that close the loop. Target end users include social workers, care coordinators, case managers, and patient navigators.
- **Point of Care**: Fully integrated into the EHR (no user interface) and uses proprietary algorithms to generate personalized lists of resources that are printed with the patient's After Visit Summary. No closed-loop referrals. Target end users include clinicians and physicians.
- **CommRx**: A free, referral-receiving version of NowPow designed for CBOs. Includes access to the community resource directory, a shared referral functionality, and a live analytics dashboard. Target end users include CBO program coordinators and administrators.
- **Community Resource Finder**: A patient-facing searchable resource directory designed for patients to identify and share resources with themselves or others. Accessible via an online portal or a tablet, computer, or waiting-room kiosk.

Platform Features

Resource Directory

Build: During the directory building phase NowPow seeks partnerships with existing

directories (e.g., local United Way 211s) to build on local expertise. Next, NowPow staff conduct an audit of each identified resource to ensure that each service page is comprehensive and easy to navigate.

Update: After resources are published in the directory, an in-house Service Information Team verifies and validates every service at a minimum of once every six months. NowPow also regularly conducts resource directory feedback with end-users at implementation sites.

Screening

PowRx's screening functionality is fully customizable. Screenings can accommodate all question types (e.g., single-select, multi-select, numeric responses, open text fields) and support branching logic. To date, NowPow has incorporated the AHC Health-Related Social Needs Assessment, PRAPARE, Health Leads, the Hunger Vital Signs Screening Tool, and several custom social risk screenings. NowPow also supports pre-screening questions that generate the appropriate questions for the patient. Patient-facing screenings are available to enable a patient to self-administer on a tablet in a secure manner. All screenings can be translated upon customer request. NowPow's system of filters and condition algorithms uses screening results to generate "HealtheRx", personalized e-prescriptions for community-based resources.

Resource Searching

Service categories: Childcare and Parenting, Dental and Vision, Education, Emergency and Crisis Help, Employment, Exercise and Physical Fitness, Family Planning and Pregnancy, Financial Assistance, Food and Nutrition, Goods, Healthcare Supplies and Medicine, Home Maintenance, Hotlines, Housing, Immigrant Support, Legal, Medical and Healthcare, Mental Health, Safety and Prevention, Seniors, Substance Use and Treatment, Technology, and Transportation.

Search modes: Auto-generated results (HealtheRx). Users can also run a search manually.

Filters: Fee structure, accepted insurance type, gender, language, special populations (e.g., veterans), federal poverty level, accessibility, targeted conditions, hours, available transportation, and other (e.g., in-home services). These filters can be applied on a single search or in the development of a curated list of health and social referrals targeting multiple needs.

Referrals

Referrals can be shared with the patient or caregiver via text, email, or print. For those using PowRx, tracked referrals can also be sent securely via the platform to participating social service providers/CBOs. In order to receive referrals, the CBO needs to

Platform Profiles

use a free, referral-receiving version of NowPow called CommRx. Participating orga-
nizations log in to CommRx to view notifications and manage incoming referrals. The
referral will include some editable contact information, such as the patient's name,
address, phone number, and email address. Additionally, the health system user can
include a referral note, flag the referral as urgent, and confirm patient consent before
sending.

Both referral makers and CBO users have the ability to close the loop on the referral
to confirm the outcome of the appointment. Multiple statuses are available through a
drop-down menu (including successful attendance or cancelled appointment) and an
open text field is also available to document outcomes. The user also has the ability
to schedule follow-up appointments as a next step. This outcome data is automat-
ically visible on the person's NowPow record and can be pushed back to the EHR
patient record if EHR integration has been set up. A secure messaging platform within
NowPow enables referral senders and receivers to communicate and coordinate.

Number of sites with functional closed-loop referrals: 4.

EHR Integration

NowPow is designed to integrate with EHRs, Health Information Systems, and Care
Management Systems to support real-time, bidirectional data exchange between
platforms. NowPow has completed integrations with Epic, AllScripts, AthenaHealth,
and GE Centricity using a combination of HL7 interface standards, FHIR APIs, and web
service APIs depending on the integration context. In the absence of an integration,
NowPow supports a secure patient file upload.

Number of sites with an integration: 7.

Single Sign-On

NowPow uses IdentityServer Version 3, which supports the following protocols:
OpenID Connect, OAuth2, and SAML 2.0.

Data Analytics and Reporting

Standard reporting: NowPow offers 25 standard report packages in the following
categories:

- **Awareness**: Referrals listed on HealtheRxs including the number of HealtheRxs
  generated by health condition, geography, user, and organization.
- **Engagement**: Insights into interactions between care professionals and pa-
  tients across the referral lifecycle, such as communication form (e.g., text vs.
  email) and engagement trends over time.
- **Activation**: Closed-loop referral outcomes, the number and type of patients

Platform Profiles

referred, the most referred service types, and to whom referrals were made.

- **Service Providers**: Most frequent referral receivers, average response time on referral scheduling, and closed-loop feedback.
- **Service Gaps**: How resource demand aligns with resource supply and how far patients must travel to access certain service types.
- **Needs Identification**: Insights from the results of screenings/assessments, including which needs have been identified by screenings, and those needs closed successfully.
- **User Engagement**: Information on levels and types of user adoption among NowPow users.

Data feeds: NowPow can provide raw data feeds directly into a data warehouse for further analysis.

Technical assistance: NowPow works with customers to define intervention objectives and identify key metrics to track and monitor over time. They support all internal evaluations undertaken by customers and provide standard and custom reports as needed.

Data Security and Confidentiality

The NowPow platform complies with all HIPAA policies and procedures as well as additional security measures required by health system and health plan customers.

Other Services or Functionalities

Logic model & Return on Investment (ROI) calculator: Informed by the original CommunityRx outcomes, NowPow has created a logic model and ROI calculator available to all customers. Prior to each customer implementation, NowPow collaborates with the customer to identify the specific outcome objectives that they want to achieve and the metrics needed to measure progress.

Data Ownership and Sharing

NowPow does not own or sell any identified patient data. NowPow uses public data about CBOs to power the resource directory. NowPow maintains ownership of the NowPow software, which includes a proprietary taxonomy, condition algorithms, and other proprietary functionality. They also own usage data (e.g., how people use the software) for use in quality improvement and de-identified patient data (used to generate community-level reporting such as identifying service gaps).

In the event of contract termination, a customer may keep all NowPow reports generated throughout the engagement.

Platform Profiles

Pricing[1]

NowPow's pricing model includes the following components:

- One-time fee: Implementation, screening development, and integration build.
- Ongoing fees: Software subscription and integration maintenance.
- Included: Analytics, customer success, product support, and training.

Below are prices made available by NowPow in September 2018.

For more detailed pricing inquiries, please contact More@NowPow.com.

	Per Seat License[2]	Enterprise	Network
NowRx	$45/user/month; volume discounts available	Ask vendor	Ask vendor
PowRx	$95/user/month; volume discounts available	Ask vendor	Ask vendor
Point of Care	Ask vendor	Ask vendor	Ask vendor
CommRx	Free of charge up to 15 users	Ask vendor	Ask vendor
Community Resource Finder	Ask vendor	Ask vendor	Ask vendor

Time to Deploy in a New Community

Though deployment schedules vary significantly from customer to customer depending on the size of the community and the scope of the intervention, most of NowPow's customers are able to launch the platform within one to three months of signing.

NowPow has provided us with the following details of their implementation strategy once a contract is signed:

- *Project team alignment: Define initial goals, metrics, and reporting requirements; define system set up and user workflows.*
- *Resource directory configuration: Define scope of directory; develop partnership with local 2-1-1 or other directory initiative in the region.*
- *Referral partnerships and configurations: Identify tracked referral partners (internal/external) and develop short- and long-term community network strategy.*

1 Pricing is based on the number of staff user accounts. Per-seat cost decreases as number of users increase
2 Per seat: A licensing agreement based on the number of staff user accounts; Enterprise: A fixed fee for either a high or unlimited number of staff user accounts for one organization; Network: A fixed fee for a group of organizations, often for an unlimited number of users.

Platform Profiles

- *Health care provider launch: Training and on-boarding of care professional users.*
- *Community network launch: Training and on-boarding of community social service providers; typically done in a phased rollout*

States with NowPow Customers (as of September 2018)
CT, IL, MN, NC, NJ, NM, NY

Examples of Current Customers

- Rush University Medical Center, IL
- NYC Department of Health and Mental Hygiene, NY
- Yale New Haven Hospital System, CT
- Allina Health, MN & WI
- Presbyterian Health Services, NM

Customer Feedback

Here is what users we talked with in 2018 liked and disliked about NowPow:

- *What do clients like?* HealtheRxs provide quality, condition-specific resources; information given to patient is patient-friendly and appealing.
- *What do clients dislike?* Reporting not flexible, EHR integration challenging.

Except for customer feedback, this profile is based on vendor-provided information as of September 2018 and has not been independently verified.

Platform Profiles

One Degree
www.1degree.com

Company Overview

One Degree was founded in 2012 and is a non-profit organization based in San Francisco, CA with 13 employees. Its mission is to "empower people to create a path out of poverty for themselves and for their communities." It serves low-income families by helping them access social service resources through technology, including its flagship website 1degree.org, companion mobile apps for iOS and Android, and One Home, a website dedicated to affordable housing.

Platform Overview

The platform is a public-facing community resource directory that has tracking tools for both help-seeking individuals and social service professionals. Professionals also have access to referral and coordination features built specifically for health care and social service providers.

Product Lines

- **One Degree**: A free version of One Degree for up to 10 users in an organization that allows users to search the resource directory, select resources into a list that can be shared with the patient, and update referral status.

- **One Degree Plus**: For unlimited users, contains all the features of *One Degree Basic* **plus** users can collaborate with their team on custom lists, make referrals, generate reports, and integrate with other platforms.

- **One Degree Premium**: For unlimited users, contains all the features of *One Degree Plus* **plus** custom screening tools and other enterprise-level services.

Platform Features

Resource Directory

Build: One Degree engages a team of resource specialists (part-time, independent contractors) to perform the research, verification, and data entry to build their resource directory. In many cases, organizations and agencies in the community contribute their own databases and collections to One Degree.

Update: One Degree updates most resources every 180 days, with an option for listed community-based partner organizations to update their own listing.

Screening

- Built-in social needs screening tools: Hunger Vital Sign, housing insecurity, diabetes risk, depression, and Medi-Cal and CalFresh eligibility.
- Custom screening tools can be built upon request with *One Degree Premium*.
- Resources are suggested automatically based on screening results.

Resource Searching

Service categories: Urgent, Family & Household, Food, Health, Housing, Education, Legal, Employment, and Money.

Search criteria: Organization name, need, and location.

Filters: Open hours, languages, location, community, and gender.

Sharing: Users can keep a list of favorite resources and those on *Plus* or *Premium* can collaborate on shared lists.

Tracking outcomes: Patient users report on their progress using the resources they have found. One Degree conducts automated follow-up with users.

One Degree has developed and follows the Social Service Data Standards.

Referrals

Referrals are attached to a patient account in their "Plan". They can also be shared with the patient by email or text message. An email notification can be sent to the referral receiver to alert them to a new referral. The referral receiver, patient, or referral sender can change the status of the referral to "Utilized", "Not Eligible" or "Wasn't Right for Me." Automated reminders about outstanding referrals can be sent to patients by text message and email.

Number of sites with functional closed-loop referrals: Not shared.

EHR Integration

One Degree supports integrations using its API. As of September 2018, they have done a one-way integration with NextGen.

Other integrations: Salesforce.

Flat file imports and exports are also possible if not integrating.

Number of sites with an integration: 1.

Single Sign-On

One Degree supports Google SSO.

Platform Profiles

Data Analytics and Reporting

One Degree contains 4 basic reports covering the following categories: referral status, client participation, staff and community participation, and resource needs. In addition, custom reports can be built upon request.

Exports: Data can be exported as a CSV file.

Data Security and Confidentiality

One Degree signs BAAs with all partners.

Data Ownership and Sharing

As a nonprofit organization, One Degree's resource database is free and available to the public. Users that have added personal data to the platform are the only ones with access to it, except in cases where they themselves have proactively shared it. Personal user or client information is never shared with or sold to any third party. Upon contract termination customers can export all data they have added to the platform.

Pricing

Contact One Degree for pricing information.

Time to Deploy in a New Community

One Degree customers are typically able to launch the platform within one month of signing. Contact One Degree for details on their implementation strategy.

States with One Degree Customers (as of April 2019)

2 states: CA, FL.

Examples of Current Customers

- Los Angeles County Department of Health Services, CA
- Northeast Valley Health Corporation, CA
- LIFT Los Angeles, CA

Customer Feedback

Here is what users we spoke with in 2018 liked about One Degree:
- Reporting; can upload attachments like class schedules to listings; ability to flag updates; custom resource collections.

Except for customer feedback, this profile is based on vendor-provided information as of April 2019 and has not been independently verified.

Platform Profiles

Pieces Iris
www.piecestech.com

Company Overview

Pieces Technologies was founded in 2015 as a for-profit innovation off-shoot of the non-profit research institute Parkland Center for Clinical Innovation. Pieces Tech is based in Dallas, TX and has 45 employees. Its mission is to "advance health at every decision." Pieces has developed two platforms: Pieces Iris, which we describe here, and Pieces Decision Sciences, which applies Artificial Intelligence along clinical pathways to predict risk and recommend interventions.

Platform Overview

This platform facilitates referrals, communication, and information sharing between health care providers and social service providers. This is accomplished through a focused resource directory, referral system, and case management functionality.

Product Lines

Pieces Iris: Enables users to screen for social needs, find active community partners to which patients can be referred, and provide full case management and information sharing among health systems and social service agencies.

Platform Features

Resource Directory

Pieces Iris combines a comprehensive local directory with a focused network ("Iris Network") of referral partners.

Build: To build the directory in Pieces Iris an in-house team works with the customer to incorporate lists of organizations with whom the customer already has a relationship, contacts those organizations to gather the names of the organizations with which they have relationships, and generates a comprehensive directory. If there is a pre-existing directory, it can be uploaded to the platform.

Update: Iris Network organizations can update their directory entries as needed. In addition, the Pieces Iris team reviews, confirms, and updates all resources every 180 days.

Screening

Pieces Iris contains a question bank rather than a selection of tools. Customers can build a screening tool from the questions in the bank. Custom screening tools using

questions from outside the bank can be built upon request. The platform uses screening results to automatically generate a list of needs.

Resource Searching

Service categories are customizable to each customer and may include Adult Education, Child Care, Child Education, Child Support, Clothing, Criminal Justice, Disabilities, Employment, English as a Second Language, Faith-Based Involvement, Food, Health Care Coverage, Access to Medications, Access to Mental Health, Physical Health, Housing Income, Legal, Money Management, Parenting Skills, Safety, Societal Involvement, Substance Abuse, Transportation, and Utilities.

Search criteria: Program name, need, and service category.

Filters: Search radius, program status, and network status (i.e., activated for closed-loop referral).

Referrals

Referrals to organizations outside of the Iris Network can be shared with the patient by print-out and email. Within the network, all referrals are sent through the platform. Notifications are sent to the receiving organization when a new referral enters the queue.

Number of sites with functional closed-loop referrals: Not shared.

EHR Integration

- Pieces Iris supports integrations using HL7 and APIs. Thus far Pieces has integrations with Epic and Meditech.
- Integrations with other resource databases are also possible through file uploads or APIs. They have integrated with a food inventory system through a RESTful API.
- Flat file imports and exports are also possible if not integrating.

Number of sites with an integration: 2.

Single Sign-On

Pieces Iris supports a WSO2 framework utilizing SAML.

Data Analytics and Reporting

Pieces Iris contains on-demand reports covering the following categories:

1. Service delivery reports – by individual and families.
2. HMIS reports - Detailed Annual Performance report, Housing Priority reports,

Platform Profiles

etc.
3. Operational reports - Enrollment report, User Login report, etc.
4. Ad hoc reporting available through Report Generator for over 300+ fields for which data is collected through Pieces Iris

In addition, custom reports can be built upon request.

Raw data feeds are possible and can include all organizations participating in a group (with appropriate sharing permissions). Data can be exported as CSV or Excel files. Full data migration is also an option when joining the Iris Network.

Data Security and Confidentiality

Pieces Iris has PHI and privacy standards that allow for four different levels of consent by the client/patient. Pieces Iris is HIPAA compliant.

Other Services or Functionalities

Case management: Pieces Iris provides the following case management features in addition to those already mentioned in this profile: configurable intake and assessment forms; needs-driven tasks, appointments, encounters, and referrals; multiple user roles and custom program access; and management for resources such as beds, classrooms, and lockers.

HMIS: Pieces Iris supports including homeless management and is HMIS compliant.

Data Ownership and Sharing

Organizations using the Pieces Iris platform own their data. They are able to select the organizations with whom they share any data. Pieces Tech does not sell the data to any third party.

Pricing[1]

Pieces Iris' pricing model includes the following components:

- One-time implementation fee: onboarding, administrator and staff training, integration, data migration, and set up
- Annual fee: software license, maintenance, client support, account management

Below are prices made available by Pieces Tech in September 2018.

	Enterprise
Pieces Iris	At CBOs: $2,000-5,000 annually
	At hospitals with partner CBOs: $50,000-125,000 annually

1 Enterprise pricing: A fixed fee for either a high or unlimited number of staff user accounts for one organization.

Platform Profiles

Time to Deploy in a New Community

Pieces Iris customers are typically able to launch the platform within one month of signing.

Pieces Tech has provided us with the following details of their implementation strategy once a contract is signed:

Typically, a health system is the "hub" and social and health services based in the community join on the Iris network for full case/program management and data sharing. Hundreds of other community agencies are included in the Pieces Iris referral directory. Pieces Tech's experienced client engagement team partners with our clients to expertly manage the implementation process. Data acquisition and workflow integration are integral to successfully deploying Iris at any scale. A Pieces Iris Subject Matter Expert will align customer needs, goals, and objectives to help guide the onboarding process. A Client Engagement Manager will be assigned who will be a permanent client resource post go-live to ensure program success. Pieces Tech uses a "train the trainer" approach, and administrators will be responsible for introducing new workflows to their case management teams.

States with Pieces Iris Customers (as of September 2018)
AZ, CO, IL, TX

Examples of Current Customers
- OSF Health System, IL
- Metro Dallas Homeless Alliance, TX
- Parkland Health and Hospital System, TX
- Parkview Medical Center, CO
- Salvation Army

Customer Feedback

Here is what users we spoke with in early 2018 liked and disliked about Pieces Iris:

- *What do clients like?* Easy to navigate.
- *What do clients dislike?* Difficult to export data, custom assessment is limited.

Except for customer feedback, this profile is based on vendor-provided information as of September 2018 and has not been independently verified.

Platform Profiles

TAVConnect
www.tavhealth.com

Company Overview

TAVHealth was founded in 2011 in San Antonio, TX and was acquired by Signify in March 2019. Its mission is to "turn your town into a team™ by building thriving networks of payers, providers, government agencies, and community organizations that work together to collaboratively solve Social Determinants of Health and improve outcomes." The TAVHealth platform is called TAVConnect.

Platform Overview

TAVConnect facilitates coordination and collaboration among a network of social service and health providers. Components of the TAVConnect platform include a focused directory, configurable workflows that provide a sequence of assigned tasks across community partners, role-based privacy architecture, and a patient portal.

Product Lines

- **TAVConnect for Enterprise**: Full-feature version combines all of TAV's services with the configurable TAVConnect platform. Customers have the option of using the TAVLink outreach team (at extra cost), which actively manages the social care plan of each member on behalf of the customer.
- **TAVConnect for Community**: Lightweight version of TAVConnect for Enterprise designed to be quickly adapted by community organizations. The platform allows an active network of community organizations to safely and collectively document, track, and share social needs and referrals; access a directory of verified local resources; and co-manage patients' full longitudinal social history.
- **MyTAV**: An included web portal and mobile application that patients and families use to search for resources and self-refer, track progress toward goals, see their customized social care plans, and communicate with community organizations.

Platform Features

Resource Directory

TAVConnect contains a focused network within a broader resource directory.

Build: Customers receive a populated resource directory of verified and catalogued local organizations that can be searched by social determinant domain. TAVHealth identifies resources through multiple sources, including local and national data sets, customer-specific knowledge, and crowd-sourcing strategies.

A subset of the organizations in the resource directory will belong to TAV's narrow

network of community based organizations that join a formal legal structure to enable compliant data sharing.

Update: TAVHealth reviews and updates resource information every 180 days.

Screening

TAVHealth has a library of over 100 surveys and assessments within TAVConnect. Other assessment tools can be uploaded or custom-built into TAVConnect on request.

Screening can be administered by TAVLink (see "Other services and functionalities" below) or the CBO network members or self-administered through the MyTAV mobile application.

Resource Searching

Service categories: TAVHealth follows the AIRS taxonomy, a standardized format for indexing and accessing social service databases.

Filters: Include (but are not limited to) geographical location and eligibility criteria.

Favorites: Users can create and share lists of their favorite resources.

Referrals

Once staff users identify and document members' social needs in TAVConnect, a list of community organizations is generated, and they can share the referral with the patient and send it through the platform to an organization within the network.

Referral recipients are notified in the application and via email when a referral has been made. Additionally, the patient is notified about the referral in the MyTAV application and via an email linking them to TAVConnect. Patients can view and respond to the referral as well as communicate with TAVConnect staff users within MyTAV.

Referrals are tracked in real time; if a response is not received within a preset timeframe, the initiator will be alerted to seek an alternate solution.

EHR Integration

TAVConnect integrates bidirectionally with EHRs via HL7 real-time messages or batch mode flat file interfaces. The platform also captures member attribution data and other information such as eligibility and attribution files, immunizations, attendance, and data elements from claims and community care management systems.

Number of sites with an integration: Not shared.

Single Sign-On

TAVConnect supports SAML 2.0.

Platform Profiles

Data Analytics and Reporting

The TAVConnect platform tracks how often a community resource is being utilized, which specific location and program were used within that community resource, referral response time, and performance of social needs resolution tied to specific downstream outcomes configured by TAVHealth's design team.

Outcomes-specific reports include, but are not limited to, network performance and accountability; community geo-spatial hot spotting and cold spotting; rising member social risk; and quality and financial measure outcomes for risk-based contracts, as well as outcomes on readmission, emergency department utilization, and Centers for Medicare and Medicaid Services value-based contract performance (Bundled Payments for Care Improvement, AHC).

Looker, a data analytics and visualization platform, is integrated directly into TAVConnect. All data in TAVConnect, whether derived through manual entry or automated data feed, can be accessed for real-time reporting and analytical purposes. TAVConnect customers can control data filtering, pivoting, summary statistic generation, and data visualizations.

The reporting platform mirrors the permission-based model; each specified user of TAVConnect can use reporting without compromising patient privacy at the program, state, and federal levels.

Data exports are also available.

Data Security and Confidentiality

TAVConnect is compliant with HIPAA and all other state and federal information sharing laws. TAVHealth implements and closely follows the HITRUST CSF framework. It employs an in-house legal team that builds and manages a formalized legal structure of CBO networks. This includes a member-based authorization process with role-based permissions that determines what information can be viewed and shared in TAVConnect across different users and organizations, as well as the actions and access each user can take.

Other Services or Functionalities

Predictive analytics and risk segmentation: TAVConnect can provide predictive analytics and risk segmentation using social data. These social predictive models generate individual- or population-level risk stratification and identification. Social risk scores and segmentations can also be combined with existing clinical risk scoring within TAVConnect to identify and proactively provide outreach to patients.

TAVLink: For an additional fee, TAVConnect for Enterprise customers can hire TAVHealth's non-clinical telephonic outreach team, which is specialized in motivational interviewing techniques, to support care coordination.

Platform Profiles

Data Ownership and Sharing

TAVHealth's customers retain title to and ownership of all data they supply to the platform. TAVHealth, in turn, is granted a license to use and share the data consistent with the purpose of the engagement: addressing the Social Determinants of Health of individuals served.

Pricing[1]

TAVHealth's pricing model includes the following components:

TAVConnect for Enterprise:

- One-time build fee
- Unlimited licenses
- Ongoing PMPM

TAVConnect for Community:
- No to low monthly fee

MyTAV:

- Free for all TAVConnect customers and their members

Please contact TAVHealth for prices.

Time to Deploy in a New Community

TAVHealth's customers are typically able to activate a formalized community network and launch the TAVConnect platform within 90 days of signing.

TAVHealth has provided us with the following details of their implementation strategy once a contract is signed:

- *Identify project goals and desired outcomes*
- *Membership/population social analysis (identifying top SDH impacting customers' populations)*
- *Source community organizations aligned to address the unmet social needs of each customer's specific populations*
- *Design and deliver evidence-based Pathways to coordinate the delivery of social services within the network*
- *Deliver a validated Community Resource Guide available to all members and users*

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1 Per seat: A licensing agreement based on the number of staff user accounts
PMPM: Per member per month; pricing that varies depending on the number of patients or beneficiaries served
Enterprise: A fixed fee for either a high or unlimited number of staff user accounts for one organization
Network: A fixed fee for a group of organizations, often for an unlimited number of users

Platform Profiles

States with TAVConnect Customers (as of April 2019)
10 states

Examples of Current Customers

- Baylor Scott & White
- Iowa Department of Human Services
- MAXIMUS, Ascension
- South Texas Regional Advisory Council
- Stephen F. Austin Community Health Network
- United Way of San Antonio

Customer Feedback

Here is what users we spoke with in early 2018 liked about TAVConnect:

Flexible and easy to customize; easy to navigate; fast response to user-requested updates to resource listings.

Except for customer feedback, this profile is based on vendor-provided information as of April 2019 and has not been independently verified.

Platform Profiles

Unite Us
www.uniteus.com

Platform Profiles

Company Overview

Founded in 2013, Unite Us is a for-profit company focused on building coordinated care networks connecting health and social service providers. The company describes itself as "helping systems and communities efficiently deliver care and services by inter-connecting providers around every patient, seamlessly integrating the social determinants of health into patient care."

Platform Overview

This platform emphasizes referrals, communication, and patient tracking within a network of engaged organizations providing social and health care services.

Product Lines

Unite Us: The core platform; it connects a community-wide network of partners for care coordination through screening, bidirectional closed-loop referrals, data and outcome tracking, patient-facing tools, and real-time communication and data sharing as well as inter-network referrals.

Platform Features

Resource Directory

Unite Us builds a directory that combines a focused network of the customer's identified community partners with a more comprehensive list of "out-of-network" service providers. Unite Us onboards each partner organization and works with them to create its directory profile. Each organization is responsible for keeping its own information up to date. As all organizations in a network have the capacity to send and receive referrals (see 'Referrals' below), they are expected to stay active. Networks are monitored by the Unite Us Customer Success Team, which will notify organizations if they are unresponsive, rejecting multiple referrals, or have not been active in the network.

Screening

- The platform has built-in social needs and other screening tools, including PRAPARE and the AHC Screening Tool.
- Users can request to build custom screening tools.
- A list of resource suggestions can be automatically generated by the platform based on screening results.

Resource Searching

Service categories: Unite Us has developed a proprietary care coordination taxonomy with 20 main parent types and over 150+ subtypes. It is mapped to AIRS, ICD-10 codes, and is Open Referral interoperable.

Search criteria: Searches can be based on the aforementioned taxonomy; additionally, all organizations have up-to-date profiles with program eligibility, capacity, hours, and other searchable information.

Filters: Location, accessibility, language preference, and more.

Sharing: Users can share a resource listing via email or SMS.

Public facing: Patients and clients have access to a public-facing resource database.

Referrals

When a user makes a referral through Unite Us, they can share a comprehensive patient profile including the patient's name, contact information, history, documentation, and needs-related information. Referrals are received by dedicated program staff, not by a generic organizational account. The recipient can then take action on the referral by updating its status, including "Reject", "Hold for Review", "Send" and "Accept". Each of these actions triggers alerts to the referral sender, both in the software and via email. Once accepted, users can communicate with all members of a patient's care team including the organization that initiated the referral and any other community organizations serving the same patient. Users can document notes & track service delivery, add documents, message patients, update demographic and SDOH data, and log structured outcomes.

Number of sites with functional closed-loop referrals: 50 (all sites).

EHR Integration

Unite Us has developed its own patent-pending EHR integration, based on SMART, a set of open health care data standards that build on FHIR . To date integration has been implemented with Epic, though integration with other EHRs is possible.

Epic: Provides Epic users with a unified view that combines clinical and social patient data and facilitates the initiation of social care episodes directly from the Patient Chart. Uses Epic's SSO feature.

Other integrations: Salesforce, iCarol.

Platform Profiles

Single Sign-On

Unite Us supports both SAML and OAuth.

Data Analytics and Reporting

Unite Us provides built-in reports in the following categories:

- **Patients**: Demographics
- **Service delivery**: Service episodes, referrals made, referrals received
- **Outcomes**: Structured patient outcomes
- **Performance**: Organizational referrals, rejections, acceptances
- **Efficiency**: Time to create an intake and refer a client, time from intake to referral acceptance, and time from intake to an outcome

Customers can request custom reporting from Unite Us.

Exports: Each organization has access to data exports which customers use to analyze network performance, impact, efficiency, and other outcomes..

Data Security and Confidentiality

Compliant with Privacy & Security Standards: Unite Us implements controls necessary to maintain the confidentiality and integrity of PHI and PII stored in the system, including patient/user rights and technical, physical, and administrative safeguards. Additionally, Unite Us follows the Department of Health and Human Services guidelines on Breach Notification and Breach Enforcement procedures established via the HITECH Act (2009).

Unite Us conducts internal security awareness trainings for its team members and requires them to pass a post-training assessment. Unite Us has implemented extensive standards that apply cross-functionally to the Family Educational Rights and Privacy Act of 1974 and Federal Information Processing Standards compliance.

Secured, Encrypted Technical Infrastructure: Unite Us is managed on HIPAA compliant servers in a data center with Statement on Auditing Standards-70 Type II certifications via Amazon Web Services. Data is encrypted at rest and in-transit, while backups are performed throughout the day without interruption to service and are encrypted and stored within the S3 Amazon Web Services platform. Unite Us has signed BAAs with all third party technical partners.

Access Controls: During the onboarding process into Unite Us, all users must request access to the system; identifying their role and associated permissions prior to logging into the system. Their access to information is based on their role and permissions. Internally, Unite Us provides each employee with only the necessary level of access into the system and continuously monitors activity.

Platform Profiles

Other Services or Functionalities

- Product support: in-app chat function and online knowledge base.
- Custom site: Unite Us can create a custom website to host the resource directory and assistance request API.
- Network services: network implementation, onboarding, training, and growth support.

Data Ownership and Sharing

Data are owned by software users and the community utilizing the network, not Unite Us. The system is built based on a set of permissions for each organization and user, only allowing ownership of patient data to organizations that have been referred and are serving patients (accepted), or creating a patient profile (to refer or serve).

Unite Us does not sell data to third parties.

Pricing

Unite Us pricing is a license-based pricing structure, as well as a per member per month arrangement for health plans..

Included in license: Implementation costs, ongoing account management and tech support, and network growth and strategic support.

Add-ons: Vary, but typically include technology integrations.

Please contact vendor for price information.

Time to Deploy in a New Community

Unite Us has provided us with the following details of their implementation strategy once a contract is signed:

Typically to launch a coordinated network takes anywhere from 1-3 months. Included in a network launch is the full suite of network services to engage the community through socialization, training, and onboarding. When a network launches users have access to the full capabilities provided by Unite Us, including screening, bi-directional closed loop referrals, real-time communication, in-app reporting dashboards, and patient outcome tracking.

When an organization partners with Unite Us, the customer success team will take the user and their community partners through network development, community engagement, and strategic guidance.

States with Unite Us Customers (as of April 2019)

20 states

Platform Profiles

Examples of Current Customers

- North Carolina DHHS
- Alliance for Better Health, Troy, NY
- Good Samaritan Health, Tulsa, OK
- Intermountain Healthcare, UT
- Centene Corporation, LA

Platform Profiles

This profile is based on vendor-provided information as of April 2019 and has not been independently verified.

About SIREN

Our mission is to catalyze and disseminate high quality research that advances efforts to identify and address social risks in health care settings.

SIREN projects are focused on:
- Catalyzing high quality research to fill evidence gaps;
- Collecting, summarizing, and disseminating research resources and findings to researchers and other industry stakeholders;
- Increasing capacity to evaluate SDH interventions by providing evaluation, research, and analytics consultation services to safety-net and mission-aligned health systems.

Visit our website or contact us at siren@ucsf.edu.

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The report was originally published on April 16, 2019. On June 13, 2019, a minor correction was made on page 40: "no formal studies had yet been published" was changed to "few studies had yet been published (see p. 50 for a list of studies)".

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