

Approaches for Overcoming Barriers to Cross-Sector Data Sharing

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Building a culture of health requires strengthening the alignment of the health care and social services sectors.^{1,2} Cross-sector partnerships can range from screening for social needs and risks and referral to community resources to full integration of a shared data set and colocation of health care and social services delivery. Such alignment can help to break down professional siloes that have perpetuated inequities in underserved communities.³⁻⁵

Successful cross-sector partnerships require 4, generally stepwise, components: refining a shared purpose, sharing data with all partners, ensuring long-term financing, and building a governance structure emphasizing representation.⁶ Notably, data sharing capacity is correlated with movement through this progression. However, partnership development can face significant barriers,⁷⁻¹⁰ in part because of a misalignment of goals related to different organizational structures and work cultures across sectors,^{11,12} as well as different regulatory frameworks. Further, the fee-for-service reimbursement model does not typically support payment for social needs, limiting incentives for health care organizations to invest in cross-sector partnerships with social service agencies.

Despite such barriers, there is growing momentum toward cross-sector collaboration and attention from foundations and government agencies¹³; however, the extant peer-reviewed literature lacks exploration of successful cross-sector partnerships and specific use cases of data sharing process development and documentation of challenges and potential solutions.^{14,15} Our case study of the Mid-Ohio Farmacy (MOF) aims to address this gap by presenting an example of health care and social services sector collaboration and highlighting lessons learned related to data sharing for service integration. The goal of the MOF is to improve health outcomes by addressing food insecurity for at-risk patients with a referral from their health care provider to access fresh produce via a local network of food pantries.¹⁶ The following analysis characterizes factors influencing the development and sustainability of the data sharing process that supports the MOF food referral program and presents implications for both the regulation of cross-sector data sharing and the development of future cross-sector alignments aimed at addressing social needs and social risks.

ABSTRACT

OBJECTIVES: To characterize factors influencing the development and sustainability of data sharing in the Mid-Ohio Farmacy (MOF), a produce referral program implemented in partnership between a community-based organization (the Mid-Ohio Food Collective ["Food Collective"]) and an academic medical center (The Ohio State University Wexner Medical Center [OSUWMC]).

STUDY DESIGN: We used an in-depth case study approach to identify challenges that arose during implementation of the MOF and related solutions via semistructured interviews with representatives of both organizations (May-September 2020).

METHODS: Key informants from OSUWMC (n = 20) and the Food Collective (n = 11) were identified using a combination of purposive and convenience sampling; they included administrators, project champions, clinical providers, and food pantry representatives. Interview transcripts were coded using a deductive dominant approach guided by a logic model aimed at determining the resources and activities relevant to the development of the partnership.

RESULTS: Challenges of cross-sector data sharing fit into 3 themes: data sharing regulations, data exchange capabilities, and cross-sector data integration. Overcoming these challenges required creative workarounds—for example, linking patients across organizations was done via establishment of a unique, partnership-specific patient identifier, which was incorporated into the health system's electronic health record for continuity.

CONCLUSIONS: Our findings suggest that current regulatory frameworks are misspecified to the growing interest in cross-sector partnerships between health care and community-based organizations. Future efforts to support these relationships should consider clarifying rules around data sharing and increasing Medicaid support for nonmedical, health-related social needs.

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TAKEAWAY POINTS

We identified challenges to cross-sector data sharing and the approaches used to overcome these challenges in the Mid-Ohio Farmacy, a partnership to address food insecurity.

- ▶ Cross-sector data sharing is a critical piece of forming successful partnerships between health care organizations and community-based organizations.
- ▶ Through an in-depth case study of the Mid-Ohio Farmacy, we identified 3 key challenges: (1) data sharing regulations, (2) data exchange capabilities, and (3) cross-sector data integration.
- ▶ In addition to policy solutions that support cross-sector data sharing, overcoming these challenges requires both a high level of technical skills by partners and innovative approaches to integrating data from community-based organizations into clinical care.

METHODS

Study Design and Setting

The Mid-Ohio Food Collective (“Food Collective”), a regional food bank, created the MOF to partner with the health care sector. Engaging with the health care sector aligns with the vision of the Food Collective to offer nutritious foods to community members in need. The MOF first began with a partnership between a federally qualified health center (FQHC) and the Food Collective. Current partners include 3 FQHCs, 2 free clinics, a Medicaid managed care plan, and an academic medical center: The Ohio State University Wexner Medical Center (OSUWMC). This in-depth case study¹⁷ is focused on the partnership between OSUWMC and the Food Collective, which began in 2019 and currently includes 8 primary care and specialty clinics. The partnership between OSUWMC and the Food Collective was initiated by a program champion who had helped establish the initial partnership and then subsequently transferred employment to OSUWMC. Their existing trust and working relationship with the Food Collective, combined with the knowledge that the Food Collective was seeking to expand partners, created an opportunity for OSUWMC to join the MOF. This opportunity was supported by broader efforts at OSUWMC to collaborate with community partners to address social needs.

Intervention

To receive a MOF referral, a patient must have an affirmative response to a validated food insecurity screening tool¹⁸ embedded into OSUWMC’s Epic electronic health record (EHR) and have a qualifying chronic condition (ie, diabetes, hypertension, obesity). Qualifying and interested patients are asked to sign a release of information (ROI) if the visit is in person or to give verbal consent via telehealth. The ROI allows OSUWMC to transfer protected health information (PHI) about the referral to the Food Collective. The clinician enters a unique patient identifier (ie, “RxID”) into an EHR data field. Nightly, a report identifying all newly referred patients is uploaded to a secure file transfer protocol (SFTP) server where it can be accessed by the Food Collective.

Patients who consent to the ROI are handed or mailed information about the MOF and a card with a barcode that links to their RxID. This card associates patient utilization of the food pantry with the

RxID already stored in the Food Collective’s data system (ie, FreshTrak). A monthly report of food pantry utilization by referred patients is then generated by the Food Collective, encrypted, and shared with OSUWMC via the SFTP server to enable tracking referrals, utilization, and health outcome evaluation.

Data Collection

We conducted one-on-one semistructured interviews with OSUWMC administrators and providers and Food Collective stakeholders regarding development and implementation of the MOF. For OSUWMC administrators, we used purposive sampling to recruit key informants (ie, MOF champions, data administrators, privacy officers, institutional leaders). For OSUWMC providers, we used a convenience sampling approach, sending a recruitment email to a listserv that included physicians, pharmacists, and nurse practitioners practicing in MOF-affiliated clinics. Working with MOF leadership, we used a purposive sampling approach to recruit Food Collective administrators and staff from affiliated food pantries.

The interview guide was developed to explore the resources and activities relevant to the MOF evaluation logic model constructs (ie, inputs, activities, outcomes, impacts).^{19,20} This guide included questions about expectations of and experience with the MOF, the implementation process, MOF-related workflow changes, data resources to support the program, and factors perceived as influencing MOF sustainability. Interviews were conducted between May and September 2020, audio recorded, and transcribed verbatim. Additional sources of data included nonparticipant observation of program meetings and reviewing MOF administrative documents. This study was approved by The Ohio State University Institutional Review Board, and verbal informed consent was obtained from all participants.

Analysis

We used a deductive dominant approach to transcript coding that allows for the identification of emergent themes.²¹ Specifically, a preliminary codebook was developed based on the MOF evaluation logic model constructs. Initial code definitions were drafted by 3 coders (D.M.W., M.J.D., and J.A.G.) who reviewed a subset of transcripts. The 3 coders applied this initial codebook to common transcripts (n=3) and collectively identified and defined emergent subcodes. The coding team then split, merged, and refined codes and their definitions iteratively via “second cycle coding” processes based on further transcript review until consensus was achieved and no further iterations to the codebook were proposed.²² The coding team worked collaboratively to apply the final codebook to all transcripts and met throughout the coding process to discuss emergent themes. NVivo software (QSR International) was used for coding.

TABLE 1. Data Sharing Regulations for the Mid-Ohio Farmacy: Challenges and Solutions

Challenge	Representative comment	Solution	Representative comment
HIPAA rules related to exchange of data between covered and noncovered entities	“Some people would tell us, ‘No, don’t sign a [BAA]; if possible, figure out some other way to do it. You’re a community-based organization and [the BAA] further protects the health care provider more than you.’ And at the same time too, on our end, we are understanding of the BAA and what it meant was that basically any kind of downstream partner that we had would also have been covered by that [agreement]. So, in our mind, that was our food pantries as well. And we could not really see a way to make all of our food pantries HIPAA compliant.” – Food Collective representative	Patient consents to ROI	“We went back to our legal team and said, ‘What are our options?’ and really the only option was for a patient to consent. And if the patient consented to releasing the information, then there was no risk of any violation because you have the patient’s permission to send this non-health care entity their personal information.” – OSUWMC administrator
Different interpretations of HIPAA	“And there was a bit of a...disagreement...a difference of opinion from their point of view; they didn’t think a patient name, address, and a phone number was what we call PHI....We follow Medicare’s definition of that and we do think that is protected information. So, we had to tell them, ‘Look, we have to have this consent in place, and we can’t move forward until we get that arranged.’” – OSUWMC administrator	Sharing experience with other community organizations via Feeding America and development of health care partnership toolkit ²¹	“There was a Health Partnerships...toolkit that we created with Feeding America last year....We do get a reach-out from a lot of other food banks on what’s been the process and then Feeding America will also tap some of the people who... do this day to day...so I would say that we’re fairly networked. We communicate all the time to each other.” – Food Collective representative

BAA, business associate agreement; HIPAA, Health Insurance Portability and Accountability Act; OSUWMC, The Ohio State University Wexner Medical Center; PHI, protected health information; ROI, release of information.

RESULTS

A total of 31 interviews were conducted with OSUWMC administrators and providers (n = 20) and representatives of the Food Collective and their affiliated pantries (n = 11). Interview lengths ranged from 18 to 64 minutes (mean, 33 minutes). Analysis revealed data sharing as a critical element in the successful formation of a working partnership between OSUWMC and the Food Collective. However, interviewees described several challenges—spanning 3 key themes—related to establishing data sharing processes between stakeholders: (1) data sharing regulations, (2) data exchange capabilities, and (3) cross-sector data integration. Below, we characterize these challenges and the solutions conceived by the MOF partners to address them.

Data Sharing Regulations

A challenge at the core of the MOF’s potential feasibility were the Health Insurance Portability and Accountability Act (HIPAA) policies dictating the exchange of PHI between covered entities (ie, OSUWMC) and noncovered entities (ie, the Food Collective and associated food pantries). Although HIPAA allows for data sharing of PHI between covered and noncovered entities for the purpose of coordinating patient care (eg, as in the MOF) through a business associate agreement (BAA), Food Collective interviewees expressed concerns regarding what specifically is allowable under HIPAA and whether partner food pantries could be HIPAA compliant, ultimately resulting in their reluctance to enter into a BAA.

These concerns were resolved by requiring patients to consent to the ROI (see [Table 1](#)). Despite this resolution, this hurdle resulted in a great degree of legal back-and-forth between entities—creating

an initial barrier to the formation of the partnership. Moreover, the ROI necessitated a more detailed clinical workflow to enable receipt and documentation of the ROI and created an additional potential barrier to patient participation in the MOF, as patients may be reluctant to share their PHI with external entities.

A second critical aspect of this challenge was that OSUWMC and Food Collective administrators reported different interpretations of the specific data elements that constitute PHI, as described by a Food Collective representative: “The information that is transferred in order to make this referral occur is basic demographic information....In our understanding of that, that is personally identifiable information. But there was no diagnostic information or anything like that being transferred. So, we were getting conflicting reports too, of, you know, what is personal identifiable information vs what is personal health information and what level of risk do people run in transferring that type of information.”

To help future cross-sector partners anticipate such issues, representatives from the Food Collective advocated for greater sharing of experiences with data exchange between community-based organizations and health care institutions through established professional networks, such as Feeding America.²³ Nonetheless, Food Collective representatives felt that more information about regulatory issues would be beneficial: “When we did this health partnership toolkit, this was a [glaring] area to me that was missing. I really think that [Feeding America] should commit a little bit more of [their] Healthcare Partnership toolkit to the legal stuff because at that point in time I felt like that was all that I was doing—viewing legal documents.”

TABLE 2. Data Exchange Capabilities for the Mid-Ohio Farmacy: Challenges and Solutions

Challenge	Representative comment	Solution	Representative comment
Matching patients via a unique but non-medical record identifier storable in EHR	"This is all custom development; none of this existed in Epic....They tasked me with the responsibility of trying to come up with a mechanism to be able to document the RxID and be able to follow up, send that information to Mid-Ohio Foodbank." – OSUWMC administrator	<ul style="list-style-type: none"> • Use RxID to identify patients and link data across organizations • Epic EHR can accommodate customizable data store elements 	"Fortunately, Epic has some tools that they call smart data elements that...allow you to define a discrete data item and then be able to assign that to a particular document and then documents can be stored for each patient. To have that discrete data item... the [EHR] has to have a mechanism of being able to have customizable data store elements, and fortunately Epic has that capability." – OSUWMC administrator
Lack of mechanism to share data securely and bidirectionally	"The data exchange piece took months and months because we had to go through a risk assessment with our IT security team and we had to get approval from the Epic team that we could house this information, and where do you house the information that Mid-Ohio is sending back to us, and how is it protected, and all that sort of stuff." –OSUWMC administrator	<ul style="list-style-type: none"> • Daily report of referred patient demographics uploaded to sFTP and sent to Food Collective • Monthly report of food pantry utilization shared from Food Collective to OSUWMC through sFTP 	"[Bidirectional reporting] serves 2 purposes. One is that it allows our staff members in the clinic to register patients asynchronously....We create a data file with some simple patient demographics...and then [the Food Collective] takes that file and merges it into their data set, so that's how they know when there are new patients....All those patients who have an OSU RxID, [the Food Collective] will dump to a data file and sFTP it back to us and then we can merge it...and look at other data in that patient's chart, such as...clinical lab values." – OSUWMC administrator

EHR, electronic health record; IT, information technology; sFTP, secure file transfer protocol; OSUWMC, The Ohio State University Wexner Medical Center.

Data Exchange Capabilities

The data exchange between OSUWMC and the Food Collective was viewed as the defining aspect of the MOF, but several challenges had to be overcome (see [Table 2](#)). First, a mechanism was needed to match patients across institutions. The ROI permits sharing of demographic information but not the patient's medical record number. This restriction required use of a unique identifier, the RxID, that can be stored in the EHR to enable linkage of clinical and food pantry utilization data from the Food Collective's FreshTrak data collection and storage platform. Customizing an unassigned data entry field to store the RxID data element (ie, a smart data element in Epic's EHR) was required to define the discrete data item. Developing this RxID and customizing the EHR necessitated a high level of technological expertise, and the flexibility of OSUWMC's EHR (ie, Epic) was credited with enabling use of the RxID.

A second challenge was establishing a bidirectional workflow to share data. The developed approach includes daily reports of referrals automatically sent through sFTP from OSUWMC to the Food Collective and monthly reports of food pantry utilization sent back through sFTP from the Food Collective to OSUWMC. This process enables OSUWMC to analyze patient food pantry utilization in tandem with clinical outcomes for quality improvement and research purposes. OSUWMC stakeholders highlighted the ability to assess patient use of the MOF as a key facilitator of program sustainability. Notably, Food Collective representatives remarked that their technological capacity, including their data collection and storage infrastructure and ability to develop a protocol for linking patient referrals and MOF records, is rare for a food bank.

Although the issue of exchanging information between the partners was resolved using the RxID, other EHR-related challenges remain problematic. For instance, a representative from the Food Collective

noted how EHRs do not allow for linkages at the household level: "In health care, your EHRs don't have really any links to link those family members together, whereas in our site, in our systems, we do link individual people and roll them up into household units that they had self-identified. That's a bit of a barrier or a challenge because you could receive 2 referrals for a food-insecure person, and one's a husband, one's a wife, or siblings, but they are in the same household."

Moreover, patient food insecurity status is currently stored at the patient level, rather than the encounter level, in the EHR, which limits routine screening and inhibits tracking of food security fluctuations over time. Interviewees also noted that some food pantries had limited technological capabilities due to reliance on volunteers with limited technological literacy and unreliable Wi-Fi, which hampered data collection and sharing at the local pantry level.

Cross-Sector Data Integration

Although establishing the data sharing infrastructure helped to support the operational aspects of the MOF, unresolved challenges exist related to integrating social services data into clinical care (ie, integrating FreshTrak data with the OSUWMC EHR data) (see [Table 3](#)). At the time of this study, patient-level food pantry utilization data were not yet communicated to referring providers, despite their expressed interest in these data. Questions also emerged about best practices to share these data so that they could be useful at the point of care.

Despite the absence of full integration of data at the point of care, the feedback of referral information can be used to encourage providers to refer eligible patients to the MOF, as described by one physician: "They would send out numbers of who had referred and numbers of people [who] are referred at some point....It

TABLE 3. Data Communication Challenges for the Mid-Ohio Farmacy

Challenge	Representative comment
Lack of data feedback to referring providers	"To my knowledge, [no data are provided]....On a patient [by] patient level, it certainly would be helpful too. You know, 'Hey, I saw you got some food, how's that helped you? Can we do anything? Do you need information about how to cook?' You know what, it can lead me to do more things too." – OSUWMC provider
Unclear how to present data meaningfully	"I think it would be a mixed bag. I think, having [been a practitioner], that...if I had a patient come in, you know, I'm worried about 10 other things, just like the other providers are. So depending on the situation, I may not catch that detail [in the EHR]. But if it's on a report, that sticks out to me....We have a report that goes out to our providers every morning that says this patient is due for cervical cancer [or] breast cancer screening, [or] their [glycated hemoglobin] A _{1c} is greater than 9. If it came on something like that and it was highlighted as... their diabetes is still poorly controlled, I'll reinforce that program, they were referred and didn't use it...I think that some providers would use it—not all, but some." – Food Collective representative

EHR, electronic health record; OSUWMC, The Ohio State University Wexner Medical Center.

wasn't a competition or anything; they were just like, 'Hey, you guys are doing great, this is how many people have referred.' And you could see by provider, and I was like, 'Oh, those providers are really referring people, I should probably do this more,' and that kind of made me realize how widely applicable the referral process would be and maybe start doing it a little more. So, that was just helpful to know what your colleagues are doing and how you can improve your practice."

DISCUSSION

A key finding of our study is that HIPAA allowances for data exchange between covered and noncovered entities may not be articulated with sufficient clarity.²⁴ For instance, HIPAA presently allows for health care providers to share PHI with social service agencies without patient authorization, yet most health care providers remain uncertain and cautious in doing so. Recently proposed modifications to HIPAA attempt to clarify and codify this allowance in an effort to encourage cross-sector alignment.²⁵ Further, the recently passed CURES Act Final Rule restricts information blocking by health care organizations—or refusal to share patient information.²⁶ If the HIPAA modifications are passed into law, they will enable social service organizations to file a formal complaint with the Office of the National Coordinator for Health Information Technology (ONC) if a health care organization engages in information blocking or requires unnecessary contracts. In practice, however, social service organizations may be reluctant to file a complaint against a voluntary partner, as it could damage the viability of the partnership. Instead, the potential for this complaint may serve as a lever for social service agencies to compel information sharing.

These changes may facilitate cross-sector data sharing but could potentially create more opportunities for privacy breaches or unintended uses of PHI; thus, monitoring the impact of enhanced data sharing on privacy will remain important.

Incorporation of the food security screening tool within the EHR has been key to the MOF partnership's success. As such, the MOF presents a use case not only in cross-sector data exchange, but also for the implementation of EHR-enabled social risk screening within a clinical workflow. The interviewees in our study noted some limitations to this aspect of the program, including the need for a high level of technical capabilities, as well as misspecified storage of the data at the patient rather than the encounter level. These findings advance the current literature on how to incorporate social risk data^{27,28} into the EHR and, if successful, how to effectively engage with this type of data at the point of care.¹⁴ This issue is notable given that ONC proposed including social risk (eg, housing, transportation, food insecurity) data elements in version 2 of the United States Core Data for Interoperability (USCDI) standards.²⁹ USCDI standards dictate what data elements an EHR should be capable of capturing and exchanging. There is vast potential for integration of social risk data to enhance population health by permitting greater diagnostic precision, facilitating shared decision-making, and promoting prevention and referral activities.¹⁴ Greater evaluation of use cases, such as the MOF, is needed to inform the integration of social risk data into EHRs and to identify best practices.

Our findings also suggest that more work is needed to develop approaches for integrating data fully across sectors. Although the MOF partners successfully developed a unique patient identifier enabling longitudinal tracking of patients in aggregate, the partnership lacks a shared database, preventing more nuanced integration of data into patient care and programming. Recent national efforts have aimed to increase participation of community partners in cross-sector data sharing toward the development of shared databases. For instance, the Robert Wood Johnson Foundation Data Across Sectors for Health initiative and the Centers for Medicare and Medicaid Innovation Accountable Health Communities program aim to create greater linkages between health care and social services agencies.^{30,31} As with our efforts, data sharing has emerged as a key facet of the studied models,³² yet additional guidance on creating fully integrated, shared databases at the point of care is still needed to leverage cross-sector alignment toward health equity.

Limitations

Our findings should be interpreted with important limitations in mind. We analyzed a limited sample of stakeholders within a single partnership. We chose to focus on OSUWMC's experience given its stage in development of bidirectional data exchange with the Food Collective, whereas other partners in the MOF, including FQHCs and Medicaid managed care plans, are less far along in their implementation and have different goals and resources to support the development of the data exchange. Similarly, as noted in our findings, the Food Collective's technological capacity may exceed

that of most food banks. Thus, our findings may have limited generalizability to other organizations within or beyond the MOF. However, moving forward, Feeding America has agreed to take over the ongoing support and maintenance of the FreshTrak platform and plans to use it as the basis for a national-level platform that will be offered to every Feeding America food bank and more than 30,000 food pantries at no cost, potentially mitigating some of this concern. Finally, our analysis was focused on the issues that pertain to data sharing, and we did not examine other issues relevant to cross-sector partnership development, such as the role of trust, sustainability, or governance issues. These topics remain ripe for further exploration.

CONCLUSIONS

Collaborations between the health care and social service sectors have promising potential to advance health equity via integrated referral models to address social risk and social needs. Our case study of the MOF referral partnership between the Food Collective and OSUWMC provides insight into the challenges of and potential strategies for creating and sustaining cross-sector data exchange. ■

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