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# The Keys to Governance and Stakeholder Engagement: The Southeast Michigan Beacon Community Case Study

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## Keywords

Beacon Communities, governance, health information exchange, clinical data repository, data sharing

## Disciplines

Health Services Research

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# The Keys to Governance and Stakeholder Engagement: The Southeast Michigan Beacon Community Case Study

Terrisca R. Des Jardins, MHSA<sup>1</sup>

## Abstract

Community-based health information exchanges (HIEs) and efforts to consolidate and house data are growing, given the advent of Accountable Care Organizations (ACOs) under the Affordable Care Act and other similar population health focused initiatives. The Southeast Michigan Beacon Community (SEMBC) can be looked to as one case study that offers lessons learned, insights on challenges faced and accompanying workarounds related to governance and stakeholder engagement. The SEMBC case study employs an established Data Warehouse Governance Framework to identify and explain the necessary governance and stakeholder engagement components, particularly as they relate to community-wide data sharing and data warehouses or repositories. Perhaps the biggest lesson learned through the SEMBC experience is that community-based work is hard. It requires a great deal of community leadership, collaboration and resources. SEMBC found that organizational structure and guiding principles needed to be continually revisited and nurtured in order to build the relationships and trust needed among stakeholder organizations. SEMBC also found that risks and risk mitigation tactics presented challenges and opportunities at the outset and through the duration of the three year pilot period. Other communities across the country embarking on similar efforts need to consider realistic expectations about community data sharing infrastructures and the accompanying and necessary governance and stakeholder engagement fundamentals.

## Introduction

The need for guidance on community governance structures is growing. Communities of providers and other relevant stakeholders are coming together for population health-related initiatives such as Accountable Care Organizations,<sup>1</sup> community-based health information exchanges (HIEs),<sup>2</sup> organized systems of care,<sup>3</sup> community-level quality improvement initiatives, and similar delivery-system reform pilots. These population health related initiatives oftentimes include improved population health, quality, patient experience, and efficiency goals. At the same time, they seek to reduce cost and duplication of services. These ambitious goals call for data sharing at a minimum and, if needed, data sharing in combination with community-level data warehouse and clinical data repository (CDR) infrastructure. This technical infrastructure allows consolidation and secure storage of patient data across data sources, and data use for patient treatment and population-level analytics.

Community-level governance implications exist when an infrastructure for data sharing and storage across disparate providers and organizations is put into place. In turn, there needs to be a method to address community governance and stakeholder engagement at two levels: a macro-level (i.e., community-level) executive leadership and participation, and a micro-level (i.e., community-based) intervention oversight and leadership.

The Southeast Michigan Beacon Community (SEMBC) in Wayne County, Michigan is one of 17 federally funded efforts through the Department of Health and Human Services that conducted work on the following areas of focus over a 3-year pilot period:

- Building and strengthening health IT (HIT) infrastructure and exchange capabilities, positioning each community to pursue a new level of sustainable health care quality and efficiency over the coming years;
- Translating investments in HIT to measureable improvements in cost, quality, and population health (as seen through an initial but scalable focus area, e.g., diabetes, asthma, heart disease, etc.), and;
- Developing innovative approaches to performance measurement, technology, and care delivery to accelerate evidence generation for new approaches.<sup>4</sup>

The urban SEMBC includes Detroit, Highland Park, Hamtramck, Dearborn, and Dearborn Heights. Economic woes and population flight, including movement of many health care providers to the suburbs,<sup>5</sup> have led to Wayne County (where these cities are located) being ranked last in Michigan in *The County Rankings & Roadmaps Program*.<sup>6</sup> Diabetes—selected as the area of focus for work during the pilot period—prevalence in Detroit is estimated to be as high as 16 percent, and the proportion of people who are on Medicaid or uninsured in SEMBC is almost twice as high as the rest of Michigan.<sup>7</sup>

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SEMBC and a subset of other Beacon Communities employed data warehouses and community-level, clinical data repositories as part of their strategy to carry out the aforementioned national aims. SEMBC can be looked to as one case study that offers lessons learned, insights on challenges faced, and accompanying workarounds over the 3-year pilot period related to governance and stakeholder engagement. The lessons learned through SEMBC are from real-world, “on the ground” pilot efforts across multiple interventions and community stakeholders. SEMBC’s experiences could prove beneficial to others across the country embarking on similar community-level initiatives.

## Case Study Framework and Methodology

Elliott et al. conducted a literature review of data warehouse governance (DWG) programs and found existing guidance for the health care industry was sparse.<sup>8</sup> Of the 15 articles included in their final article list, only 3 related to health care settings. The others focused on commercial settings. Elliott et al. point to David Walker as defining DWG as “the model an organization will use to ensure optimal use and re- use of the data warehouse and enforcement of corporate policies (e.g. business design, technical design and application security) and ultimately derive value for money.”<sup>9</sup> Elliott et al. offer a framework, derived from The Data Governance Institute (DGI) Data Governance Framework, that this case study employs to describe the SEMBC experience, with nine components for organizations to consider on DWG including:

1. Mission, vision, purpose;
2. Strategy, goals, and objectives with metrics for each objective;
3. Guiding principles;
4. DWG organizational structure and position within the greater organization;
5. Policies and processes for governing the data warehouse;
6. Users’ training, support and engagement;
7. Technical operations (data model, definitions, quality, metadata);
8. Security, access, privacy, risk and compliance; and
9. Communications plan for stakeholders, users and leadership.

While SEMBC did not embark on its pilot efforts with direct knowledge of the DWG framework, what SEMBC needed to address over the pilot period is consistent with the components included in the framework, given SEMBC’s inclusion of a community-level HIE and in particular a CDR as part of its work during the pilot period. Further, what makes SEMBC unique is the DWG framework being applied to an entire health care community working together rather than applied to a single health care setting or entity.

## Methodology

This case study relies largely on direct observation and experience, given that the author served as Director for the SEMBC during the pilot period, from February 28, 2011 through December 31, 2013. The author also reviewed SEMBC documents, including: final and periodic qualitative and quantitative reports to the Office of the National Coordinator for Health Information Technology

(ONC), the SEMBC website, governing board and committee documents and decisions, meeting minutes, lessons learned captured from SEMBC participants and contractors, among other programmatic records.

## SEMBC and the Chronic Care Model

Before moving forward with a description of SEMBC’s efforts across each of the above DWG framework components, it is important to note that interventions and the overall technical approach were both based on the identified need to provide better population and individual-level health management for adults with diabetes. Additionally, SEMBC stakeholders recognized that any technical approach and intervention pursued also needed to be scalable and applicable to other disease states and general patient care. The Chronic Care Model<sup>10</sup> (CCM), also referred to as the “Care Model” has been deployed throughout the SEMBC community by multiple stakeholder organizations (e.g., payers, health systems and hospitals, and large physician organizations) as the community embraces delivery system change. SEMBC’s approach was very consistent with the CCM, as SEMBC deployed most of the CCM’s elements during the pilot period.

The focus of this paper is on DWG and SEMBC’s governance and stakeholder engagement experiences. However, the CCM was also foundational to clinical interventions developed. The CCM and the DWG framework offer a comprehensive and complementary approach for communities seeking change in the delivery system that builds off of a technical foundation. The CCM encourages a multipronged approach to caring for communities, including the reorganization of health care, self-management support, decision support, delivery system design, clinical information systems, and community resources and policies as areas for needed intervention. The DWG framework offers guidelines on elements important to governance programs for data warehouse efforts. Coupled together, the CCM and DWG may offer a comprehensive picture of the full spectrum of work areas needed to pursue community-based transformation.

## Mission, Vision and Purpose

SEMBC stakeholders defined a mission—or clear, common purpose—and a vision for collaborative work as part of the original application development and submittal to the federal government to become a Beacon Community. This was accomplished by convening ad hoc planning groups during the proposal writing phase. There was a clinical workgroup that comprised community physician leaders; and also a technical workgroup of local chief information officers, chief medical information officers, and other technical experts. The groups met separately initially to divide the work, given the short turnaround required for proposal submission. However, they also combined forces after initial plans were fleshed out. These workgroups crafted the overall mission, vision, and purpose and also developed tentative work plans to guide the work upon award, taking into account both the current and desired future state.

There were conflicting views, both pre- and postaward, on whether or not a community-level clinical data repository was needed to accomplish the work. Ultimately, consensus was reached approximately 10 months after the funding award. To accomplish the population-level analytics needed for a community picture of care, the consensus was that some central housing of data, through a community-level CDR, was desired. Stakeholders felt that current federated technology approaches could not provide the type of community-based analytics sought.

To achieve this consensus, SEMBC convened an additional Ad Hoc IT Workgroup—comprising board members, IT experts, and clinicians—for approximately 3 months to review various technology options, facilitate additional questions and answers with potential vendors, and develop a final recommendation to pursue a dual HIE vendor solution for governing board approval. (Following vendor contract execution, and after nearly 7 months of pursuing a dual HIE vendor solution, SEMBC reversed course to follow a one-vendor HIE approach, given challenges related to tight timelines for implementation.)

**Table 1. Initial Key Governance Dates**

September 2010:	ONC awards SEMBC federal funding
February 2011:	SEMHA convenes SEMBC Governing Board
March 2011:	Staff hiring process commences
May 2011:	Ad Hoc IT Committee begins meeting
June 2011:	HIT-Enabled Clinical Transformation Interventions Implementation begins
July 2011:	Ad Hoc IT Committee Technology Strategy Recommendation approved by SEMBC Board
January 2012:	HIE Vendor Contracts executed

SEMBC’s mission and vision point to accomplishing something larger than the implementation of technology itself. While key to accomplishing the ultimate mission and goals, technology is a means and not an end. SEMBC’s mission during the pilot period was to improve diabetes mellitus (DM) care and associated outcomes in SEMBC’s medically underserved and disadvantaged community—while reducing costs. Given the emphasis on chronic disease, at least initially, the CCM provided guidance for potential interventions to support improvements in diabetes care. SEMBC’s vision statement is that the Detroit area’s patient-centric, electronically connected system of care coordination delivers the best possible health care. This system is designed to optimize each health care related encounter and promote the attainment of optimal health outcomes. As part of the initial planning period, SEMBC stakeholders also developed a series of “big hairy audacious goals,” (BHAGs) that served as longer-term “reach” goals or aspirations.

**Table 2. SEMBC Mission and Vision**

**SEMBC Mission Statement:** To improve diabetes mellitus (DM) care and associated outcomes in SEMBC’s medically underserved and disadvantaged community—while reducing costs.

**SEMBC Vision Statement:** The Detroit area’s patient-centric, electronically connected system of care coordination delivers the best possible health care. This system is designed to optimize each health care related encounter and promote the attainment of optimal health outcomes.

SEMBC’s work engaged hundreds of organizations across interventions and committee governance roles. Although individual stakeholder organizational representatives changed over the course of the pilot period, there was not much movement in participating organizations. Consistent stakeholder participation at an organizational level was important for the consistent application of the mission and vision over the pilot period. When organizations were added to address various pilot needs, or when there was individual representative turnover for an existing stakeholder, SEMBC staff provided an orientation including the mission, vision, and common purpose.

### Strategy, Goals, and Objectives with Metrics for Each Objective

As a Beacon Community, SEMBC needed to focus on federal aims (as stated earlier) and local strategies, goals, and objectives within those overarching aims. SEMBC deployed a series of strategically integrated interventions across ambulatory care sites (Federally Qualified Health Centers, private primary care practices, etc.) and hospital emergency departments, and also community-facing interventions, too many to detail within this case study (See Appendix A for Intervention/Work Area, Objectives, Metrics, and Results Summary table). Each intervention had a specific set of subgoals to achieve, strategies and objectives to accomplish each goal, and defined metrics and data sources for tracking and evaluation. Equally important, for each area of work, SEMBC identified risks and risk mitigation tactics, and requisite timelines and stakeholder and staff assignments for planning, implementation, continuous evaluation, and ongoing improvement.

Risk mitigation, particularly related to deployment of community-level data sharing and aggregation, required a substantial amount of time over the pilot period. The SEMBC clinical transformation workgroup identified anticipated risks and mitigation tactics for each intervention as part of an initial risk assessment. SEMBC staff and contractors were primarily responsible for actual risk mitigation during the pilot period. Examples are discussed in the Lessons Learned section later in this article.



## Guiding Principles

SEMBC stakeholders developed a set of guiding principles for governance generally, and specifically for data sharing and the data repository deployed. For example, relative to governance generally, stakeholders agreed to a set of principles that included placing community goals before individual organizational goals when deploying SEMBC work. Stakeholders initially agreed to enter into Beacon activities with a noncompetitive spirit. Specific to the data repository, this meant that health care providers would “not compete on data,” as all the major health system CEOs committed to, and would share data for a community-level data repository. This meant supporting the consolidation of data through the real-time exchange of data and storing data for future information sharing.

**Table 3. SEMBC Governing Board Roles, Responsibilities, and Operating Principles (Abbreviated List)**

### General Roles and Responsibilities:

1. Provide overall program oversight and guidance;
2. Promote Beacon Project within the SEM community;
3. Promote Beacon Project within your own organization; and
4. Provide support to the Beacon project appropriate to your organization's role in project.

### Operating Principles:

1. We will operate in an open, honest, and transparent environment.
2. We will create good (not perfect) plans.
3. We will focus on achieving the project objectives.
4. We will focus on execution and delivery.
5. We will comply with all applicable legal and financial regulations.
6. We will respect our team members and give everyone an opportunity to express their opinion without fear of ridicule or embarrassment.
7. We will engage in positive discussion (and debate) to resolve issues.
8. People will keep the commitments they make - in the timeframe promised.
9. We will work to limit scope creep and budget creep.
10. We will trust each other to complete the work.
11. We will document our work, our communications and our achievements.
12. We will celebrate our successes.
13. Decisions will be made in a timely fashion.
14. Decisions may be revisited with the approval of the majority of the Board, but will not be routinely second guessed.
15. We will run this project in the best interest of the community at large and not according to any individual or corporate agenda.

The original set of guiding principles did not change; however, the board co-chairs periodically revisited or highlighted particular guiding principles during board meetings. This revisiting of principles served as a reminder to member organizations, for example, about what to do in cases where there were potential conflicts of interest and placing community goals before organizational goals. The guiding principles were challenged at many times over the course of the pilot, given a very competitive marketplace, uncertainties in the direction of federal policy, changes in institutional leadership at a local level, internal organizational priorities for electronic health record (EHR) system installations and conversions, and other competing priorities. Given these challenges, and also the federal timelines, there were points during the pilot period where SEMBC exhausted all potential efforts in reaching

consensus among partners. Alternatively, SEMBC moved certain work forward with a “collaborative of the willing.” All stakeholder organizations remained “at the table” through the duration of the work from a governance perspective. All stakeholders participated at some level across at least one intervention. However, not all stakeholders participated at the same level as originally envisioned.

## DWG Organizational Structure and Leadership

Given sensitivities related to data sharing and “ownership” of the process and data under the federally supported pilot, organizational structure was one of the most important elements for SEMBC’s experiences related to governance. It required time to nurture the necessary relationships and trust across the community of stakeholders in order to move work forward. SEMBC had to address several layers of organizational structure at both the macro- and micro-levels: lead agency and fiduciary (macro), community-level governance (macro), and intervention-level oversight (micro).

First, given SEMBC’s multi-stakeholder composition, a lead agency and fiduciary was needed to organize the work, manage staff on a day-to-day basis, and to interface with the federal government. Given the multi-stakeholder nature of the work, as well as the very tight timelines for Beacon Communities, it was necessary for SEMBC to identify an existing, experienced non-profit organization to serve as lead agency and fiduciary for the community in order to jump-start efforts. Doing so eliminated the need for pilot efforts to incorporate independently, which would have required additional agreements among stakeholders. SEMBC and the federal government leveraged the Southeastern Michigan Health Association (SEMHA), with an over 60-year history in the community, to serve this role. Based on the experience in southeast Michigan, criteria for selecting a lead agency for other communities to consider include: neutrality, community longevity, prior and on-going relationships with community stakeholders, community trust, a mission consistent with the activity at hand, experience managing federal grants, and the ability to fulfill activities related to staffing, human resources, contracting, and financial management.

## Leadership

SEMBC also convened an executive board, a group of nearly 30 leaders representing public and private institutions. The board was co-chaired by a respected physician leader and an executive from the regional Chamber of Commerce, and was charged to provide directional decision making and oversight for the pilot work. There was no executive committee structure. However, given the large number of board members, there were circumstances where additional deliberation was needed (e.g., during the technical vendor contracting phase) for decision making. When these occasions arose, SEMBC staff organized telephonic board meetings as well as an opportunity for board members to meet on-site with SEMBC staff for additional information, review and guidance. Given the community goals and requisite data sharing,

membership of the SEMBC Executive Board included physician organizations and health systems, Federally Qualified Health Centers (FQHCs), and other private and hospital-affiliated ambulatory care providers, payers (both public, e.g., State of Michigan and Centers for Medicare and Medicaid Services (CMS), and private), employers, consumer organizations, quality improvement organizations, and universities, among others. Some board organizations represented their individual organization (e.g., hospital, physician organization); others represented groups (e.g., regional chamber representing employers, Voices of Detroit Initiative representing FQHCs). SEMBC's lead agency, SEMHA, worked with local organizations and the federal program office to identify the member organizations to serve on the board during the pilot period.

Organizational representatives needed to be leaders within their respective organizations. They also had to be in a position to make commitments on behalf of their organizations, and adhere to an established set of board member expectations related to their roles and responsibilities and ethical considerations relative to SEMBC. For example, if they served in another capacity that presented a potential conflict, disclosure and, if needed, resolution of the conflict, were required.

The executive board created numerous workgroups and subcommittees reflecting the membership required to carry out pilot work. These groups met on a regular basis and set the course for planning and activation of SEMBC's HIT- and HIE-enabled clinical interventions. Meeting frequency varied by workgroup and subcommittee, and was more frequent during planning and implementation. Reporting to the executive board, SEMBC workgroups and subcommittees established during the pilot period included: HIE-Enabled Clinical Transformation (originally two separate workgroups to spread the planning and facilitate a quicker start to activities), several subcommittees for specific interventions, Privacy and Security, Evaluation and Measurement, Sustainability, and Communications. SEMBC facilitated regular physician and office staff user groups that served as a forum to share early lessons learned and provide input on refinement for activities. SEMBC staff also facilitated monthly leadership calls with the board co-chairs, as well as periodic planning meetings with all the workgroup co-chairs.

Two noteworthy issues encountered both at a board level and also at the workgroup and committee level include: (1) the importance of striking an appropriate balance between the technical experts, clinicians, legal and operational leaders; and (2) the necessity of having designated staff and contractors to manage and conduct the work. SEMBC encountered issues on both fronts at the outset and through the duration of the pilot period. Striking the right balance between individual representatives, given different areas of expertise, opinions and beliefs about data sharing, and orientation and understanding of how to best approach a given intervention was a challenge. And, although SEMBC's work was community driven and relied on stakeholder participation, it was important to have a set of experienced, full-time staff members and contractors who could navigate stakeholder relationships and

provide day-to-day management for the work. In some cases, given the lack of resources, certain participants (e.g., FQHCs, quality improvement organizations, university evaluators, ambulatory care clinics, and others) were contracted to participate across interventions; and some were provided funding to offset the costs of participation, technology, and staffing.

Toward the end of the federally supported pilot period, and as the activities and organization itself transitioned to the next steps and changing areas of focus, SEMBC also encountered the need for a flexible organizational structure. That is, organizations not originally involved needed to serve a larger role, and the actual structure is now morphing into something new and not supported by federal pilot funding. SEMBC's original board no longer exists, given the conclusion of the pilot period in September, 2013.

SEMBC's participating physician organizations, FQHCs, and interested health systems are in the process of forming "The Beacon Cooperative," which is anticipated to transition current Beacon governance and technology to a newly formed and independent nonprofit organization. In the meantime, SEMBC's lead agency, SEMHA, continues to assist in facilitating the transition and also holds the HIE designation from the Michigan Health Information Network. However, transition challenges are emerging related to sustainable funding sources, differing organizational technology and exchange priorities, and competing marketplace demands and incentive programs.

## Policies and Processes for Governing the Data Warehouse and Security, Access, Privacy, Risk, and Compliance

SEMBC found enough overlap in relevant stakeholder participants to combine the necessary governance activity on privacy and security, and policies and procedures for the data repository, under one umbrella. This was accomplished through the Privacy and Security Workgroup reporting to the executive board and chaired by an attorney and a technologist (a chief information officer from a large physician organization). The workgroup comprised both legal and nonlegal health system, hospital, and physician representation, as well as representation from local universities.

SEMBC's main objectives were to ensure that its HIE and accompanying data repository was a trusted Health Insurance Portability and Accountability Act (HIPAA) compliant entity and to safeguard against potential breaches. Activities included developing necessary policies and procedures governing use and protection of data, and HIPAA and Health Information Technology for Economic and Clinical Health (HITECH) Act protocols; monitoring policies, procedures and protocols for needed enhancements; developing and executing data sharing agreements, intervention-level memorandums of understanding and other required agreements; exercising due diligence in making sure SEMBC's vendors and participants are HIPAA compliant; and conducting training, among other activities.

SEMBC staff secured sample agreements, policies and procedures, and other documentation from communities with similar technical strategies to serve as templates for SEMBC development. Staff first edited template documents to be consistent with local work. Staff then circulated the draft documents to workgroup members for their individual comments, combined all comments into a master document, convened the workgroup to review suggested edits, and then forwarded final documents (when necessary) to SEMBC attorneys for review. The SEMBC Executive Board would then grant final approval. The ability to secure sample documents from other communities, coupled with local stakeholder commitment to rigorously review drafts internally first, helped accelerate the timeline for development across all needed documents.

Given that the overall technical approach and data use principles were established by SEMBC leadership through a consensus building process, the workgroup faced few challenges related to specific legal verbiage in contracts and policies and procedures.

### Users' Training, Support, and Engagement

Training, support, and engagement were needed across all SEMBC interventions to address technological-, quality and process improvement-, and clinical-intervention implementation needs. SEMBC's clinical and technical workgroups identified this level of support as necessary for successful interventions. SEMBC's lead agency allocated necessary budgets, from a governance standpoint. SEMBC facilitated these activities through practice coordinators who regularly interfaced with participants at each intervention site to provide necessary training and support with intervention roll-out and ongoing activity. Practice coordinators had combined expertise in health care quality improvement, technology, and process improvement, among other areas. SEMBC also found it important to engage both physician and practice champions (both clinical and administrative) to support deployment. Training largely occurred on-site and was ongoing through the duration of the pilot period. The level of training dedicated to a particular practice or other intervention site was determined based on need. There were occasional off-site in-person and telephonic training opportunities provided to participants. One example was an early morning (so as not to interfere with business hours) training session on capturing race, ethnicity, and primary language from patients. Additionally, as mentioned previously, SEMBC also facilitated regular physician and office staff user groups to share early lessons learned and to iterate on interventions.

### Technical Operations (Data Model, Definitions, Quality, Metadata)

Where this activity overlapped with privacy and security efforts (e.g., auditing and monitoring of the data repository, data flow, and maintenance), certain technical operation activities fell under the privacy and security domain. Where the activities addressed data quality, measure definitions, metadata, and other similar areas, SEMBC leveraged its Evaluation and Measurement Workgroup to provide oversight. Part of this decision was related to function, but part of it was because SEMBC's HIE and data

repository were not live at the outset of the pilot period. This necessitated having to retrieve other data sources for operations, intervention assessment, and evaluation. These data sources included claims data from private payers, Medicare and Medicaid, clinical data from health systems, lab data from a lab vendor that aggregates data across community labs, and clinical data pulled manually from EHRs. The committee used standard National Quality Forum (NQF)-endorsed Healthcare Effectiveness Data and Information Set (HEDIS) measures, and accompanying measure definitions, to calculate baseline and quarterly measures for the community level and at the individual intervention site.

Given that SEMBC was able to pursue an alternative plan for needed data from the outset, SEMBC was able to quickly establish a measurement baseline. SEMBC then subsequently collected data from established sources on a quarterly basis. The Evaluation and Measurement Workgroup was able to secure initial data-source commitments quickly by reaching consensus that these initial data sets were only to be used for measurement purposes and that comparative information would be blinded if shown publicly.

In parallel to ongoing data collection and measurement through the evaluation process, significant technical work moved forward during the pilot period. The technical work included: identification of the overall technical strategy (community-level HIE plus CDR), development of the HIE vendor request for proposal, facilitation of a bid and contracting process, and development and implementation of the HIE and data repository. The technical implementation efforts during the pilot period focused on the deployment of an Integrating the Healthcare Enterprise (IHE) and HIPAA-compliant master patient index (MPI), integration and testing of data sources and EHRs into the HIE and CDR, and roll-out of initial use cases related to public health reporting and population health management. By the end of the pilot, SEMBC had over 100,000 consolidated patient lives recorded in the CDR, which was doubling in size every 2 months.

### Communications Plan for Stakeholders, Users, and Leadership

From a governance and community buy-in perspective, clear communications were important in keeping all stakeholders up to date. SEMBC employed a full-time communications and marketing director during the pilot period. The director developed a recognizable brand for SEMBC, using a consistent logo, color scheme, and graphics. SEMBC shared regular, very transparent, and consistent communications on progress to establish a trusted brand across the community. The director also developed communications that emphasized alignment of SEMBC work with existing community priorities and incentive programs.

Perhaps most importantly, efforts were deployed to demystify HIT and HIE and the community-level clinical data repository. HIT and HIE can be concepts that are difficult to understand and articulate. Having a communications expert on hand to translate "IT-speak" and clinical terminology for different audiences (phy-



sicians, consumers, and executives) was important to gaining early and ongoing support. SEMBC produced multiple, easy-to-understand brochures and brief one-pagers that explained concepts in plain language for clinical and nonclinical audiences. SEMBC practice coordinators and technical staff used the materials as part of their ongoing work with SEMBC participants.

Over the course of the pilot, communications about “early wins,” and the ability to show early results, to the extent possible, were also important to building stakeholder buy-in and momentum for the work. SEMBC also developed executive board dashboards for reporting at board meetings, other regular reporting for the ONC and SEMBC workgroups, quarterly newsletters for all interested partners, and videos to help highlight specific interventions. SEMBC also participated in other dissemination activities including journal articles, HIT and HIE roadmaps, and local and national presentations.

## Lessons Learned

Perhaps the biggest lesson learned through the SEMBC experience is that this work is hard, particularly within the context of a federally funded, time-limited pilot period. While many of the other Beacon Communities had existing HIE and CDR infrastructure to leverage, SEMBC’s work included design of, contracting vendors for and implementing the HIE and CDR within the pilot period. SEMBC’s work required a great deal of community leadership, collaboration, and resources.

Other communities across the country embarking on similar efforts need to consider realistic expectations about how much time is required to build a community-level data infrastructure and deploy multiple interventions leveraging the infrastructure or other HIT assets available. Shared decision-making around HIE strategy, vendor bid and contracting processes, and commencement of the technical implementation required approximately 9 more months than originally anticipated as part of the 3-year pilot. (Most Beacon communities had nearly 3½ years, however, SEMBC was one of two communities granted funds approximately 6 months after the initial award.) Establishing a trusted community leadership and governance structure, and continuing to cultivate stakeholder relationships, sets the foundation for work. At the same time, if consensus is not able to be achieved, it may be necessary to consider approaching pieces of the work with a “collaborative of the willing,” with the hopes that others will join SEMBC’s efforts later when they are ready. Finally, other communities embarking on similar work may benefit from considering the following challenges and opportunities SEMBC faced.

## Challenges and Opportunities

SEMBC encountered many challenges and expected and unexpected risks including: absence of an HIE and CDR at the outset, lack of stakeholder consensus across certain areas, limitations in technical capabilities, and competing stakeholder demands. However, challenges also presented opportunities and other lessons learned that are described in more detail below.

## General Approach to Risks and Risk Mitigation

Risks, expected and actual, and risk mitigation, particularly related to deployment of community-level data sharing and aggregation, required a substantial amount of time over the pilot period. The SEMBC clinical transformation workgroup identified potential challenges and risks, as well as mitigation tactics, at the outset (and through the duration) of the initiative. The entire SEMBC team approached the work as many of the clinics approached their interventions, with a “Plan, Do, Study, Act,” rapid-cycle quality improvement mindset. It is difficult to approximate the amount of time staff and contractors devoted to risk mitigation, but time spent became a part of anticipated daily work with clinics, other intervention sites, and technical vendors.

First, the workgroup identified potential participant readiness and attrition risks. To address these risks, the clinical transformation workgroup recommended that pilot participants have an EHR and patient registry in place at the outset of planned interventions.

Having a system already in place, even if the system was not being optimally or meaningfully used, was perceived as a signal that the practice or provider was ready (or more ready) to engage than were those without a system. Additionally, the workgroup recommended that staff overrecruit so that the interventions had more participants than were required to cover any attrition over the duration of the initiative. SEMBC did experience attrition due to retirement, death, and relocation, with very few opting out due to lack of interest.

## Addressing Technical Capability Challenges

Technical capabilities and the limitations faced, both from a user standpoint and also relative to vendor offerings, presented challenges over the duration of the pilot. These challenges included: EHR interoperability, lack of data standards (data content and transport), propriety programs, cumbersome reporting tools, and lack of easy-to-understand vendor training materials, among others. To address user-related issues, SEMBC deployed practice coordinators and technical staff to assist with practice-level data pulls and other technological needs.

SEMBC was also actively involved with the ONC Beacon-EHR Vendor Affinity Group, comprised of ONC representatives, several Beacon Communities, and EHR vendors, to collaborate on a mutually agreed upon set of data and interoperability standards in alignment with Meaningful Use (MU) Stage 2 requirements. In a short period, the Affinity Group along with participating Beacon Communities were able to assist the EHR vendor community (and selected HIE vendors) to better focus and prioritize their development efforts of evolving content standards (C32/C83/CCDA) and transport standards (IHE and Direct) in real world environments. One of the goals of this work was to not only assist vendors to achieve MU stage 2 certification more rapidly, but in a manner that provided end users with more meaningful options for exchange that could be held up by the ONC as models for other vendors to emulate (repeatable and scalable).

However, despite some progress on standards development, SEMBC continued to struggle with issues related to vendor standards and interoperability, particularly given the tight timelines for the Beacon Communities. Given competing marketplace demands and priorities, very few participating EHR vendors were able to meet agreed upon timelines for standards development, testing, and deployment. Another associated challenge was that of providers not upgrading to new versions of the EHR software when EHR vendors were ready.

### Addressing Competing Demands with Local and National Programming Alignment

Another important and very real risk identified was one of competing demands across participants, given various public and private incentive programs and multiple demonstration projects throughout the community. Competing demands included: multiple measure sets for regular incentive reporting, multiple care management and patient navigation interventions (leading one stakeholder to quip that a care manager was needed to coordinate the care managers available to an individual patient), and meeting the needs of underserved populations. SEMBC also experienced very tight timelines, given the federal pilot period. SEMBC interventions, to the extent possible, were developed in alignment with the local payer and federal meaningful use incentive program offerings. Additionally, SEMBC staff met regularly with leadership from other initiatives to align efforts and pursue common work where possible.

Despite efforts toward alignment, SEMBC was not able to resolve all competing demands. For example, given the tight timelines the Beacon Communities faced, SEMBC was not able to meet the overall meaningful use<sup>11</sup> community goals before the end of the Beacon program. The CMS offers an incentive program to Medicare and Medicaid providers who meaningfully use EHRs toward

improved patient care. The ONC required all Beacon Communities to conduct activities around meaningful use and to set a goal for each community to bring 60 percent of its eligible providers through the first stage of meaningful use. One of the challenges is that the total number of physicians targeted by the ONC included the entire defined geography, regardless of whether SEMBC was directly working with the physician on a SEMBC intervention.

### Addressing Additional Meaningful Use (MU) Goal Challenges

The other significant challenge around the meaningful use work was that the federal incentive program timelines allowed providers more time than the local SEMBC timelines. This issue was further exacerbated since most of the SEMBC providers qualified for incentives under the Medicaid program, which allows a more phased in approach to capturing incentives. So, while SEMBC was asking clinic participants to meaningfully use their systems as part of the SEMBC intervention work, CMS provided initial incentive payment for the purchase and installation of a system and not the use of it.

Despite these challenges, SEMBC in partnership with MPRO (Michigan's Quality Improvement Organization and one of the lead organizations for meaningful use work in Michigan) made significant progress in assisting providers to engage and use technology meaningfully. All SEMBC participating providers, a subset of the total MU-eligible providers, had installed and were using EHRs and patient registries by the end of the program period. Of the 593 eligible professionals in the SEMBC catchment area, 20 percent had achieved Stage 1 MU as of September 2013, and an additional 41 percent were in the process of doing so.

See Table 4 for a summary of the key challenges, lessons learned, potential solutions, and opportunities.

**Table 4. Challenges and Lessons Learned, and Potential Solutions and Opportunities**

Key Challenge or Lesson Learned	Potential Solution and Opportunity
Absence of HIE and CDR at outset of pilot.	Reconceptualize activities during the project to move forward interventions in parallel. Identify other mechanisms and data sources to evaluate efforts.
Stakeholder consensus not always possible across work areas/interventions.	Communicate participant expectations at front end of work. Continually nurture stakeholder governance structure. Approach work and interventions with a collaborative of the willing. Be flexible and phase in interventions as needed, given competing priorities. Overrecruit for participation.
Expected and unexpected risks.	Conduct risk assessment and identify risk mitigation tactics at outset, and periodically review. Approach overall work, not just interventions, with a "Plan, Do, Study Act" rapid-cycle quality improvement mindset.
Technical capability limitations relative to both users and vendors.	Deploy practice coordinators to assist with technological needs. Participate in standards development activities. Participate in EHR vendor pilots. Use a single set of resources across practices rather than have each practice attempt to develop their own internal HIT/HIE resource.
Competing demands across stakeholders and participants.	Align efforts with other community and federal initiatives and incentive programs to the extent possible. Meet with community leaders to identify ways to better align work across community to reduce "noise" faced by providers.
"Boots on the Ground" are just as important as technology itself.	"Boots on the ground" are essential in engaging and coordinating care of urban/inner-city patients who may be challenged by issues related to social and economic determinants of health. Technology is foundational, but human element is also essential. Physicians, office managers, PHNs, practice coordinators, and others are needed for work to succeed.

## Conclusions

The SEMBC experience provides lessons learned and insights to other similar community-based initiatives, particularly those that include data sharing in combination with stored data through data warehouses or repositories. Elliott et al. offers a DWG framework with nine components needed for health care settings to consider. In SEMBC's case, the DWG framework applied to an entire health care community working together rather than to a single health care setting. SEMBC found it necessary to address all the DWG framework components in order to pursue its work. SEMBC also found that organizational structure and guiding principles needed to be continually revisited and nurtured in order to build the relationships and trust needed among stakeholder organizations pursuing common community work and goals set forth.

## Acknowledgements

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## Appendix A. Interventions/Work Areas, Objectives, Metrics, and Results Summary

Intervention/Work Area	Objective	Metrics	Results
<p>Clinical Decision Support (CDS)</p> <ul style="list-style-type: none"> <li>Alert for A1c</li> <li>Alert for Patient Health Navigator (PHN) based on elevated A1c</li> <li>Alert/reminder for blood pressure</li> <li>Diabetic reminders</li> <li>LDL documentation</li> <li>Reminder for foot exam</li> </ul>	<p>Primary care clinician/site implements CDS within EHR, registry, and other with assistance of SEMBC practice coordinator. CDS implementation to assist with better quality care and patient outcome. Goal established at outset was to realize at least a 5% improvement for each measure.</p>	<p>Healthcare Effectiveness Data and Information Set (HEDIS) diabetic measures:</p> <ul style="list-style-type: none"> <li>A1c testing</li> <li>LDL testing</li> <li>Eye exam</li> <li>Foot exam</li> <li>BP&lt;140/90</li> <li>A1c value &lt;8.0</li> <li>A1c value &gt;9.0</li> </ul> <p>Identified high-impact measures. Baseline followed by quarterly measure calculation. Additional measures were tracked at a community level.</p>	<p>125 physicians engaged with approx. 180,000 total patient population. 18,000+ patients with diabetes. Achieved from 5% to nearly 20% improvement on all but one targeted measure, with eye exam being the one measure with no movement. *</p>
<p>Patient Education</p> <ul style="list-style-type: none"> <li>Body mass index (BMI) brochure/pamphlets</li> <li>Diabetic educator/class</li> <li>Nutrition education</li> <li>Documentation education</li> <li>Foot exam flyer included with encounter form</li> <li>Salt-free diet education and handout</li> </ul>	<p>Primary care clinician and site implements patient education supports with assistance of SEMBC practice coordinator, patient navigator, and other community resources. Education to assist with better patient engagement and outcome.</p>	<p>HEDIS diabetic measures as listed above.</p>	<p>See above.</p>
<p>Other Health Information Technology (HIT)</p> <ul style="list-style-type: none"> <li>Diabetic Action Plan</li> <li>HIT report to capture hypertensive patients and medication review</li> </ul>	<p>Primary care clinician and site implements HIT strategies with assistance of SEMBC practice coordinator. HIT to assist with improving quality of care and patient outcome.</p>	<p>HEDIS diabetic measures as listed above.</p>	<p>See above.</p>
<p>Quarterly metric and data report review</p>	<p>Primary care clinician and site pulls and reviews quarterly metrics and data report for review, and targeted quality improvement with assistance from SEMBC practice coordinators. Review to assist with improving quality of care and patient outcome.</p>	<p>HEDIS diabetic measures as listed above.</p>	<p>See above.</p>
<p>Tools</p> <ul style="list-style-type: none"> <li>Hemoglobin A1c Poster</li> <li>Create colored DM checklist for all measures</li> <li>Diabetic Action Plan</li> <li>Diabetic questionnaire showing date of last event</li> <li>Text4health</li> </ul>	<p>Primary care clinician and site uses tools developed and provided by SEMBC. Tools to assist with improving quality of care and patient outcome.</p>	<p>HEDIS diabetic measures as listed above. For Text4health: participant experience survey.</p>	<p>See above. Also regarding text4health: Over 1,000 patients completed enrollment and actively participated in the service (with significant satisfaction in the service and improvements across multiple behavior change indicators).</p>
<p>Workflow</p> <ul style="list-style-type: none"> <li>Medical assistant workflow change; monitor A1c and LDL actively</li> <li>Tracking log for outside tests</li> <li>Workflow change to capture documentation</li> <li>Workflow change to remove socks and shoes</li> <li>Workflow change for foot exams</li> <li>Workflow change with router and physician</li> </ul>	<p>Primary care clinician and site works with SEMBC practice coordinator to review and implement workflow changes to assist with improving quality of care and patient outcome.</p>	<p>HEDIS diabetic measures as listed above.</p>	<p>See above.</p>



## Appendix A. Interventions/Work Areas, Objectives, Metrics, and Results Summary (cont'd)

Intervention/Work Area	Objective	Metrics	Results
Patient Health Navigator (PHN)	Primary care clinician and site work with SEMBC PHN to identify and refer high risk patients for PHN intervention. PHN to assist with patient engagement, compliance with treatment plan, goal setting and removal of barriers to care, among other areas.	HEDIS diabetic measures as listed above. Pre-, immediate post, and 6 months post patient survey. Additional patient experience survey conducted. Metrics included patient engagement, patient reported health status and use of services, patient knowledge of disease, and other.	See above. Over 2,200 referrals, with 50% patient engagement rate. Statistically significant improvement in: medication adherence, readiness to change (healthy food choices, being physically active, checking blood sugar, keeping appointments, and other).
Diabetic screening at emergency department (ED)	EDs work with SEMBC to conduct diabetic screening at ED, with connection to diabetic educators and primary care. Assist with identification of patients with or at risk of diabetes and connection to regular source of care for better management and reduction of ED use.	Number of patients screened. Percent of diabetics, prediabetics, referral to PHN, ED use.	Over 25,000 patients tested. Identified 7,600 previously unknown diabetics or prediabetics. 57% reduction in ED visits for patients who engaged with PHN and diabetic education and connection with primary care. 33% reduction in ED visits for patients who were told they were diabetic and did not engage with additional SEMBC assistance offered.
Health Information Exchange (HIE) and Clinical Data Repository (CDR)	Planning, vendor bid, and contracting process, implementation of HIE and CDR to facilitate information exchange among participants and better population health management through use of CDR. Conducted in parallel with HIT-supported interventions and work areas described above.	HIE participants. EHR and data source integrations. Number of patients captured within CDR. Survey of practices and physicians regarding knowledge, attitudes, beliefs and perceptions re: HIT and HIE over time. Baseline and postsurvey.	HIE and CDR was live, with implementation in process by end of pilot period. Participation from entire safety net provider community, including all FQHCs in Wayne County. Organizations representing 4,500 physicians, one large health system, labs signed on to engage over time. 102,000 lives in CDR and doubling approximately every 2 months at end of pilot period. Recognized as state-designated HIE. Ten major data integrations complete, with many more in progress, at end of pilot period. Provider perceptions about EHRs and registry, comfort level with technology, and belief that HIE will help practice made positive directional changes. However, not statistically significant as sample size too small. Also, documented perceived growing issue and obstacle with lack of internal practice and clinic project management related to HIE participation. Early use cases implemented for public health reporting, ADT notification and use of CDR to identify patients for follow-up.
Meaningful Use (MU)	Primary care clinician and site work with SEMBC practice coordinators to pursue MU to assist with improving quality of care and patient outcome. ONC goal for SEMBC was to assist 60% of community-eligible providers (not just those providers SEMBC was actively working with) to achieve MU by end of pilot period.	HEDIS diabetic measures as listed above. MU metrics for physicians in process.	All 125 SEMBC participating providers, a subset of the total MU-eligible providers, had installed and were using EHRs and patient registries by the end of the program period. Of the 593 eligible professionals in the SEMBC catchment area, 20% had achieved Stage 1 MU as of September 2013, and an additional 41% were in the process of doing so.
Community events	SEMBC hosted or participated in community outreach events to facilitate awareness of SEMBC activities. Selected events also assisted in diabetic screening and referral to primary care.	Not actively measured.	SEMBC hosted or participated in over 70 community outreach events during pilot period.
Remote diabetic retinal exams	SEMBC worked with 4 clinics at end of pilot period to implement remote diabetic retinal exams to address issue that eye exam measure remained unchanged.	Too late in pilot period to implement measurement.	Positive anecdotal feedback from practices on improved patient compliance through point of care service.

Note: This table does not document work associated with establishing the community governance structure, evaluation and measurement process, or communications as these areas are documented within the case study narrative.

\* Final results submitted to the Office of the National Coordinator in the Southeast Michigan Beacon Community Final Report, December 2013.