DATA SHARING REQUIREMENTS INITIATIVE

COLLABORATIVE APPROACHES TO ADVANCE DATA SHARING

DRIVING ALIGNMENT IN PAYMENT REFORM APPROACHES ACROSS AND WITHIN THE PUBLIC AND PRIVATE SECTORS OF THE U.S. HEALTH CARE SYSTEM

HCP LAN
Health Care Payment Learning & Action Network

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Overview and Purpose

This report is a product of the Health Care Payment Learning & Action Network (LAN), which was created to drive alignment in payment reform approaches across and within the public and private sectors of the U.S. health care system. The report is designed to help leaders of organizations, including providers, payers, and employers, who are working or wish to work in alternative payment models (APMs) to understand what information they will need from outside their organization and the processes involved in obtaining that information. Secondarily, this report will aid organizations, including third party entities, vendors, and policymakers, that support the data sources and data sharing processes to understand how best to enable their efforts. While the report is not a "how to" guide, as the specifics for each organization and region differ, it will be helpful in the strategic planning process to identify the APM functions that require data sharing, to assess current capacity and barriers, and to consider strategies within and across organizations to fill gaps in necessary data sharing functionality.

To advance APM adoption, the LAN convened the Value-Based Data Sharing Requirements Initiative (DSRI) to gather information on recent approaches and experiences building data sharing capacity. The DSRI leadership team is composed of diverse health care stakeholders who shared their experiences, incorporated input from interviews with organizations engaged in data sharing in support of APMs, and reviewed material on critical developments in technology and policy. This report summarizes this information and is meant to be of practical value for those faced with building similar capabilities, specifically in planning and developing future data sharing activities.

One of the key insights from the DSRI findings is the essential role, in developing data sharing capacity, of collaboration, shared goals, and shared solutions to enable sustainable APM success. Unlike fee-for-service (FFS) payment models that largely limit accountability to a single setting (such as hospital or physician's office), APMs require providers to understand and/or be accountable for patients across the medical neighborhood and over time. The requirement imposed by APMs to view data across settings and providers necessitates the need to move beyond single entity solutions that provide only partial views of care and cost patterns.

The process begins when entities exploring the implementation of differing payment models—whether it is used by an accountable care organization (ACO) or medical home, or is a population-based payment (PBP) model or an episode payment approach—agree on the goal. The goal will define the parameters of the data sharing model and lay the foundation for ongoing relationships among the APM partners. The technical challenges to accurately compile and make patient and provider data available across settings requires collaboration across an array of stakeholders, but importantly, it also creates an opportunity for more efficient solutions through shared service approaches.

The diagram below illustrates the data flow among a typical set of partners within an APM and its associates; however, as APMs evolve to include other data sources, such as patient reported outcomes and registry data, these relationships will evolve. Data sharing can be accomplished either by movement of actual data files, as suggested in the diagram, or data may stay where it originated and be made available to various other entities or for various other functions. **The DSRI leadership team does not prescribe any specific strategy for data sharing, as it recognizes the circumstances will vary by region and initiative.**

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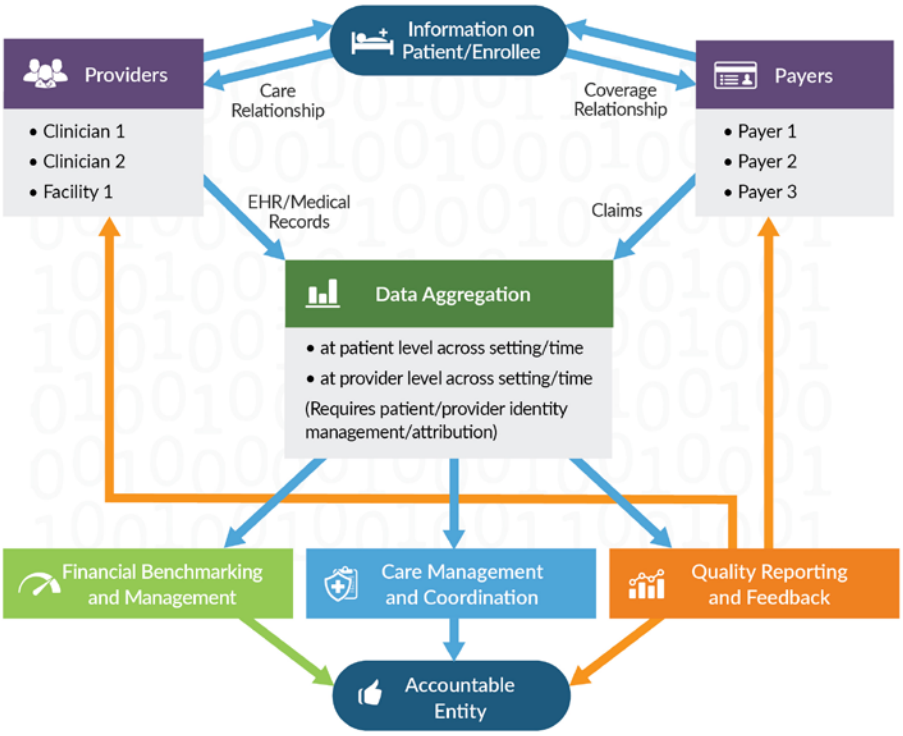
As illustrated in the diagram, information flow in an APM starts with the relationships between the patient/enrollee and their provider(s) and payer(s). Both claims and clinical data need to be aggregated at the patient level to provide the entity(ies) responsible for the care and health of a defined population a full view of patient care and costs across providers. Further, to ensure meaningful performance metrics, data from all payers should be aggregated at the provider (or other accountable entity) level. Providers will not know how to effect change if they receive conflicting reports from multiple payers. Once aggregated, the data can be organized and transformed into information for financial management, quality reporting, and care management.

Diagram 1: Alternative Payment Model Data Flow



This report identifies diverse regional and state enablers of aggregation, sharing, and analytics, such as health information exchanges (HIE) and multi-payer claims databases, as well as industry-led initiatives. However, the techniques in data aggregation and analytics are rapidly evolving. Alternative strategies, such as distributed models and use of cloud computing, could also provide the necessary data infrastructure for APMs in the future.

It is important to work across organizations, both regionally and nationally, to identify and build data sharing capacity. Importantly, the report emphasizes the interface of an individual organization with other entities both within and beyond its community. Key building blocks, such as patient and provider identity management, attribution methods, tools for reporting performance on quality measures, and risk stratification logic, need to be agreed upon and supported by all involved in the endeavor to build an APM. It is neither feasible nor efficient to build such tools from scratch, organization by organization. The tools are complex, resource intensive, and require common definitions for aggregated data to be transformed into useful information. The report therefore seeks to ensure that the decisions made by

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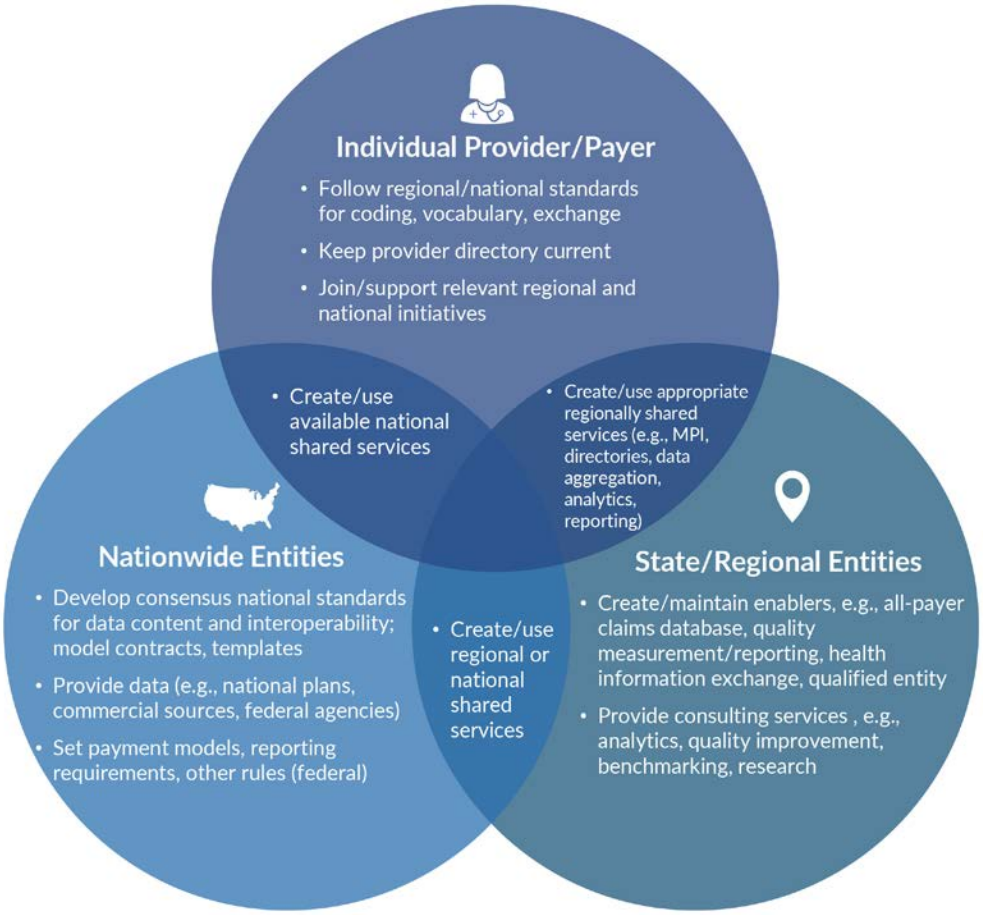
individual organizations align with key efforts at the regional and national level to enable the system-wide scaling of a data sharing infrastructure, creating a robust data ecosystem to support APMs nationally.

The diagram below illustrates the importance of the various layers of support—the enterprise supporting the APM, and the regional and national data supports for the data sharing infrastructure. It provides examples of the types of functions that might best be supported at each level.

Diagram 2: Examples of Roles and Collaboration for Data Sharing Functions for Value-Based Payment



The report includes six sections designed to assist organizations to make the necessary strategic decisions, including identifying the partners at the regional and national levels, to build effective data sharing infrastructure to support APMs. These sections build on each other. The first section, Foundational Building Blocks, lists the overall foundational supports, and the next two sections, Checklist of Business Requirements and Strategies for Addressing Governance, Data Sharing Barriers, and Sustainability, outline the key technical and analytic functions that data sharing relies on and the key relationship and sustainability needs that must be fulfilled. The fourth section, Illustrative Scenarios – Build, Buy, Collaborate, then provides an approach for decision-making and illustrates considerations

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and decisions for working with external partners. The fifth section, Building a "Community Infrastructure" at the Local, Regional, State, and National Levels describes the important collaborative strategies for working at the local, regional and national level. The final section, Detailed Resources, provides specific detail and resources that can be used to ensure that local and regional efforts maximize and build on the work of others.

As Medicare, Medicaid, employers, and commercial payers press for new ways of paying for care, the data sharing enterprise will become an ever more important component of provider and payer strategic planning. Thus, as more and more providers, payers, state, and federal leaders design payment reforms, the data sharing discussion must be front and center, or those initiatives may falter. A lack of useful data is often cited as the biggest barrier to providers taking the risk involved in models that require accountability across settings of care and over time. The trust and collaborative relationships built from these discussions envisioning the evolution of health care payment and delivery can be used as the foundation for the data sharing discussions.

What does this mean for patients? Not only is information access a critical component of patient and family engagement, but individuals are also valuable sources of data – patient reported outcomes and other critical patient generated health data, that will be critical to APMs ability to provide high-value care. Those who are designing APMs should be thinking now about implementing new forms of patient/family access to information, and integrating patient-facing tools into broader strategic plans around data sharing. The goal is a delivery system that is seamless for patients and provides care that meets their needs and preferences. To accomplish this, patient information will be available and accurate across providers, without redundancies in tests, labs, questions, and forms; hand-offs between providers will be smooth, and providers will work with patients to help them manage and maintain their health even when they are away from care facilities. This goal requires incentives within the APM to encourage providers to achieve the best outcomes for patients, the availability of comprehensive data to support changes in care management, and a data sharing infrastructure that includes patients as contributors to and recipients of that data. The Principles for Patient- and Family-Centered Payment in Appendix D describe how to address the needs and priorities of patients and families as organizations transition to value-based payment.

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Section 1: Foundational Building Blocks

Setting up the foundation to any APM is complex, and this section describes the manner in which to approach this task, as well as the necessary building blocks within the organization and across the entities considering the APM implementation. These building blocks are also critical underpinnings of the organizations supporting the data sharing infrastructure. Although these organizations may be external to those directly involved with the APM, building the technical solutions is most effective when accomplished alongside the foundational building blocks of the APM itself.

The list below represents the collective experience of the eighteen organizations we interviewed and the wisdom of our DSRI leadership team. (See list of organizations in Section 6: Detailed Resources and the list of DSRI leadership team members in Appendix B).

- ✓ **Committed leadership.** The technical and analytic resources for building data sharing capacity must not be underestimated. Making decisions that best align with the organization's goals and implementing those decisions requires committed leadership at the highest levels. In provider organizations, this also means involving the people necessary to implement key system changes—physicians and other clinicians need to be involved early and often to incorporate their perspectives as the APM is implemented. However, leadership must also extend beyond the enterprise level to encompass the regional, and potentially the national, level, since the data sharing infrastructure for APMs will require efforts at all levels.
- ✓ **Vision that serves as a "true north" or focal point for all involved.** Data sharing is not an end unto itself. Successful organizations did not persuade their partners to take risks simply to share data; instead, risks were taken because data sharing was presented as a means to an end: improving patient care across all settings and over time.
- ✓ **Strategic goal alignment.** It is important to ensure that the effort to share data meets the overall strategic needs of the organization and community, not only of APMs. Such an effort is large and resource intensive. The way data capacity is built hinges on how central the effort is to the overall strategic vision. Specific strategic needs might include:
    - o A smaller group practice needing to collaborate with a larger organization both to assist with reporting on the new Quality Payment Program (QPP) in the Medicare Access and CHIP Reauthorization Act of 2015 (MACRA) legislation and to create the data sharing foundation for an APM,
    - o A provider network that has acquired several hospitals or group practices needing to share normalized electronic health record (EHR) data, upon which the necessary cross-provider infrastructure to support an APM could be built, or
    - o A medium-sized payer needing to develop more analytic and data sharing capacity to compete with other payers in a region with several large health systems that want APMs to align with their Medicare business.
- ✓ **Identification of practical use cases.** To develop trust and link to strategic goals, use cases must address organizations' and communities' real needs. Each APM is structured differently, and the data infrastructure must be based on the use case that defines the particular set of activities, operational functions, and business cases. This allows each stakeholder (provider, payer, and patient) to understand what is being done and why it benefits them.

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- ✓ **Identification and development of key technical and analytic resources best achieved through a shared service approach.** Data aggregators and provider organizations also noted that the information technology architecture, which includes the analytic logic for risk stratification and establishing benchmarks, care management strategies, and even governance approaches, could be more effective and efficient if aligned approaches were available and used across organizations.
- ✓ **Patient-level data and perspectives.** Patient-level data and inclusion of the patient in gathering and providing access to data is important to success. While the regulatory rules, such as the Health Insurance Portability and Accountability Act (HIPAA) and others, allow for some data movement to occur for treatment, payment, and health care operations, there is a need to obtain the trust of clinicians, payers, and patients to ensure that data could be shared outside of these limiting regulatory rules. Individual patient data needs to be at the heart of each of the data sets, thus allowing for measurement at a population level, attribution to providers and payers, and application of the analytic results at the individual patient care level. Further, it is important to have broader information on additional key elements, such as the social determinants of health, that impact health status and outcomes. Patient access to their own data is also an important underlying functionality, and their ability to contribute data is increasingly valued.
- ✓ **Sufficient technical resources.** There is an operational challenge to collect data in non-duplicative, standardized, harmonized ways to drive policy, organizational investment, and deployment of resources (human and otherwise). Key technical pieces include the ability to collect, aggregate, and normalize data received from a myriad of sources, including multiple EHRs (each in its own format) and multiple claims data sources. Data must then be analyzed and reports subsequently created. Information must be easily accessible among various payers, and accountable entities, and within and across providers within those entities.
- ✓ **Flexible approaches.** Organizations have a wide variety of approaches to data sharing and some approaches are more comprehensive than others. Our interviewees told us that if the only data an organization had was claims data, it did its best with claims data, while if an organization had only clinical data, it used clinical data. The most comprehensive efforts use both clinical and claims data and plan to evolve to include additional data to improve capacity. Some of the most important integration of these data—and a key option for those at the beginning of developing data capacity—is to use external organizations whose business was data integration, storage and dissemination.
- ✓ **Collaboration critical.** Most successful organizations—both those that "do" APM models (providers and payers) and those that "enable" them to do APMs (e.g., health information exchanges, quality reporting organizations, multi-payer claims databases) – agree that the movement toward more complex data sharing is unlikely to slow. The risks of having inadequate data about one's patients beyond one's own provider system or plan, of having to do quality measurement and reporting through siloed processes, and other challenges all point to the fact that organizations will need to collaborate to succeed. In short, the cost of going it alone will become unsustainable in the emerging health care space.

- ✓ **Trusting relationships.** Data sharing requires relationships within and across organizations. Data will move at "the speed of trust." Building relationships through honest acknowledgement of each other's issues and creating a transparent process is key to success.

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- ✓ **Enabling infrastructure and services.** Providers and payers implementing APMs should assess the data sharing resources that exist within their community or state, and actively decide how they can contribute to and link up with a more robust data sharing infrastructure. As regional data aggregation collaborations mature, and as options for clinical data to be exchanged across providers expand, connecting with existing infrastructure will be more feasible and lessen the need to build it from scratch. There is a growing patchwork of "enablers" for value-based data sharing, comprising health information exchanges (HIEs), quality improvement/reporting organizations, all-payer claims databases, and commercial vendors and consultants. Many organizations are participating in national initiatives to reduce data sharing barriers [see Large National Initiatives and Network Resources]. However, for APMs to advance nationwide, it is not sufficient for individual organizations to take their own steps toward successful implementation, even in working partnership with entities critical to their needs. They should be aware of the needs and opportunities to create a nationwide data sharing ecosystem [see Building a "Community Infrastructure" at the Local, Regional, State, and National Levels].

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Section 2: Checklist of Business Requirements

This section gives providers, payers, statewide initiatives, HIEs, or data organizations that seek to enable data sharing to support APMs, a framework and strategies for defining key data needs. In considering this checklist of business requirements, strategic planning leaders should consider their internal resources; resources shared across their APM partner organizations; and resources, such as regional data collaboratives or national initiatives, that could support their APM data infrastructure.

There are various challenges specific to data sharing within the context of APMs. For example, many initiatives have found that combining clinical data from various provider EHRs is a challenge in APM arrangements. The logic and infrastructure to standardize/normalize clinical data across EHRs may be available regionally or from other organizations nationally. Another challenge for which external resources could be helpful is in identity management of providers and patients. This function is critical for attributing patients to providers and for understanding provider relationships within health systems. It would be inefficient for organizations to do this individually.

Data sharing is necessary to support several key APM functions. In this section, we describe:

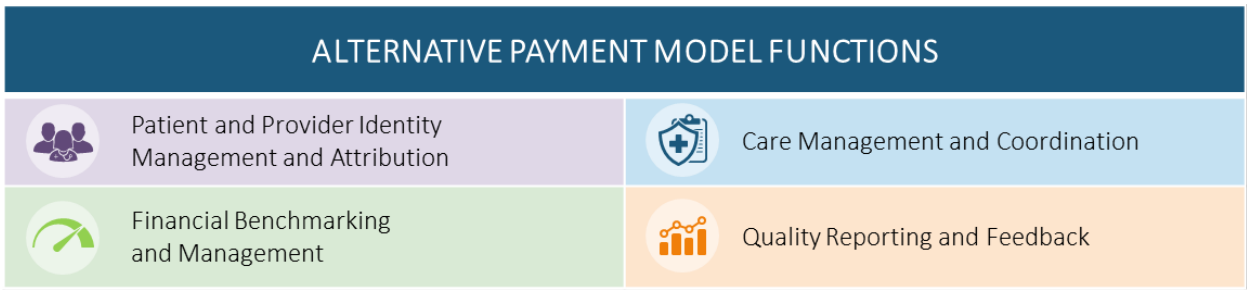
- specific business requirements to support the APM functions,
- strategies to meet those requirements, and
- challenges to meeting those requirements.

This checklist does not include everything an organization will need to support an APM, but it does list the primary requirements for which a data infrastructure is necessary. At the end of the section, there is a template checklist for organizations or collaboratives to use in rating their level of readiness for building the necessary data sharing infrastructure to support an APM. In Section 4: Illustrative Scenarios – Build, Buy, Collaborate, we provide scenarios to further assist strategic planners in understanding the many types of external organizations that could assist in building this infrastructure.

APM Functions Supported by Data Sharing

Interviewees described a wide variety of strategies for meeting these requirements, but all involved multiple parties, sources of data, and strong technology and analytic skills. The four functions listed in Diagram 3 are the cornerstones for supporting APMs.

Diagram 3: Alternative Payment Model Functions



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Each function requires a significant data sharing infrastructure to be effective, and each also requires technical architecture best created in a collaborative manner either regionally or nationally. The call-out box below describes some of those services that might best be shared.

POTENTIAL SHARED SERVICES
Shared service approaches can be an effective strategy for efficiently building the required functional capacity. Some shared services create technical capacity such as information technology architecture, patient and provider identity management, and portals for provider and payer communication and reporting. Others are more logic-based, such as attribution rules, definitions of total cost of care, or risk stratification logic for both financial and quality benchmarks. Still other shared services are related to creating standardized terminology and output, such as normalized output from EHRs, uniform definitions of quality measures, and uniform ways of defining providers or patients. The deficiencies of our nation's data infrastructure cannot all be solved by organizations seeking to develop APM strategies, but the need for information to flow easily for purposes of moving our health delivery system to patient-centered systems of care are pressing the need for this aligned infrastructure as never before.

Patient and Provider Identity Management and Attribution

APMs require the ability to define the patient population, and the services and key metrics for which the provider entity is accountable. For an accountable care organization (ACO) or patient-centered medical home (PCMH), the ability to identify and de-duplicate patients with whom the provider or practice has a relationship (often defined by number of provider visits or dollars) is critical. Typically, the cost and quality accountability extends for all services and the health of the attributed population over at least a year. This requires a very specific definition of the patient, provider, and the relationship between patients and providers, as well as the relationships among providers.

These common information services are the backbone of a range of core tasks necessary in an APM. Specifically, they are critical to aggregating and analyzing data in a meaningful way. Accurate and up-to-date directories that accurately associate providers with specific payers and individual providers with provider systems will greatly enhance the attribution process. Further, ensuring that patients are only counted once and that their data is not inadvertently attributed to another patient (even if they have the same name) is the work of an identity management system.

Identity management seeks to establish the identity of providers, patients, caregivers, and other stakeholders, and attempts to link health information associated with an encounter with the correct patient and provider across and among health care providers. This differs from identity management within an organization which is typically designed to create rules around access to information.

Business Requirements Checklist

Analytic and technical capacity to:

- ✓ **De-duplicate patients.** Typically, this involves bringing together diverse types of information, such as name, address, birth date, date of service, etc. to determine whether a patient in one data set is the same person in another.

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- ✓ **De-duplicate providers.** This involves a similar process as de-duplicating patients, and involves information, such as provider name, where the provider went to school, provider location, and billing numbers to determine whether the individual provider is the same across data sets. It is complicated by the fact that different identifying numbers are used for different purposes and payers. That is why it is important to also understand the provider relationships with other practices, systems, and the related billing practices.
- ✓ **Link/distinguish across clinicians, practices, and systems.** It is important to be clear whether accountability is at the individual clinician level or is broader across a system or practice. These relationships need to be documented, and as they change often, and the relationship status should be regularly updated.
- ✓ **Distinguish between billing and rendering provider.** Often a large practice of clinicians will use the same billing number even though the individual services are delivered by different clinicians. For performance improvement purposes, it will be important to make this distinction.
- ✓ **Maintain and update as relationships evolve.** Health delivery and payment is quite fluid. Billing numbers can change, when for example, providers change networks or go in and out of the Medicaid program or practices are bought. While complex, these relationships should be documented and updated as close to real time as feasible.

Strategies

Strategies for patient and provider identity management and attribution should leverage regional and state resources whenever feasible or available. It is challenging for any organization to be successful on its own. The strategies below are complex and require significant resources from funding, technical, and analytics perspectives.

- Agree to support data sharing with a common master identity management system across users, and to continually improve the identity management system with reconciliation processes and feedback from users.
- Use data points, such as location, address, and reason for eligibility to create crosswalks between various data sources.
- Require standard practices around uses of provider number on claims and in EHRs.
- Develop provider directories to record relationships and update regularly.

Challenges

- Patients may be assigned different identifiers when they change insurers. Patients may become eligible through a family member, thus creating multiple identifiers.
- Providers are supposed to have a single National Provider Identifier (NPI), but for billing purposes, various NPIs and other identifiers, such as the taxpayer identifier, may be used. Further, NPIs are not always included in the claims data. It is also difficult to distinguish between a practice NPI and an individual clinician NPI.
- For purposes of accountability, the level at which the cost of quality of care is being managed is important. For example, if an individual clinician is doing a great job managing his or her diabetic patients, but the practice or system-level scores are low, this relationship must be transparent.
- Often it is easier to track accountability through a billing provider. However, the clinician rendering the service is the “entity” making the decision. This relationship needs to be identified to be as effective as possible in managing the cost and quality of care.

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Financial Benchmarking and Management

Cost data are necessary to establish baselines and benchmarks and for ongoing care management, and they ultimately to determine payment and incentives. Cost data include total cost of care, per member per month cost and utilization components (such as admission, discharges, and transfers) at the practice, and regional and other benchmark level. This function relies on uniform approaches to patient and provider identity management, attribution, risk stratification, billing and claims analysis to the extent feasible. Also, payers will often vary in their mechanism to determine benchmarks, such as whether the benchmark is set at an average total cost of care or a level that is considered a high level of performance. It will be helpful for these decisions to be aligned across initiatives to provide a clear signal to providers.

Much of financial benchmarking and management strategies rely on consensus across partners. No perfect risk adjustment method exists, and benchmarks for measuring performance can be established in a variety of ways. Establishment of an APM requires a forum and a specific process to select these key parameters, including the logic, analytics, and data flow process to calculate them. Transparency and communication are essential for a successful effort.

Business Requirements Checklist

Analytic and technical capacity to:

- ✓ Access payment, billing and/or utilization data, and move to data aggregator for analysis.
- ✓ Develop the key logic for creating benchmarks.
  - o Ensure sufficient data to compare across like populations/providers.
  - o Control for different pricing structures.
  - o Ensure that the manner in which risk adjustment would apply to the benchmarks to ensure providers with sicker patients are not at a disadvantage.
- ✓ Provide feedback for ongoing monitoring and management to accountable entity.
- ✓ System for feeding data/information from performance into payment system for differential payment.

Strategies

- ✓ Utilize continuum of levels of data to:
  - o Analyze claims for individual patients and the entire population. If claims can be linked to clinical data at the patient level, this provides even more helpful detail.
  - o Absent detailed claims, other approaches include use of key utilization variables, such as number of admissions, discharges, use of post-acute care; diagnoses from claims forms; and total cost of care.
  - o Use proxies for costs, such as billing data and the Medicare fee schedule; or rely on utilization data such as Admission, Discharge, and Transfer (ADT) systems and/or continuity of care documents (CCDs) from EHRs and prescriptions or lab data.
- ✓ Use National Committee for Quality Assurance (NCQA), the Centers for Medicare and Medicaid Services (CMS), or other publicly available data, if data is insufficient to customize benchmarks.
- ✓ Rely on payer analysis given to the provider, including ongoing utilization metrics.
- ✓ Send monthly claims from payers to providers for analysis.

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- ✓ Utilize web portal to make reports or claims available (this could be the same portal as that which is used for quality management and, potentially, care management).

Challenges

- Prices paid across payers and providers differ, making comparisons difficult.
- Payers and providers are sensitive about who sees cost/price data, as it could harm contract negotiations.
- Absent clinical data, it is hard to do risk adjustment. Furthermore, risk adjustment is complex and not standardized. A shared understanding of risk modeling by the clinical and administrative staff is necessary to be able to set benchmarks and forecasts.
- Need data across providers and for a similar comparison population to most effectively establish benchmarks.

Care Management and Coordination

To be effective, data must be available to support total population management as well as to identify vulnerable/high cost patients, understand patients' care trajectory, and identify best practices to better manage care coordination around hand-offs. Both longitudinal data from claims from all the providers seen by patients and clinical data across these providers are useful. Some of our interviewees had limited access to claims data, while others had limited access to clinical data across providers. However, all did the best they could with the data they had. Some used portions of the EHR data, such as ADTs, or the CCD record. Optimally, however, it would be possible to obtain and aggregate both claims and clinical data.

One key challenge often described by our interviewees and addressed by a shared approach is ensuring that EHR data are normalized across the health system. Care management platforms host clinical data that can be accessed by a care team across settings. This requires EHR data to be standardized, as individual providers often have different EHR vendors with different output even with a single health system.

Business Requirements Checklist

The analytic and technical capacity to:

- ✓ **Access information across providers, including those out of network.** This requires sending, finding, and receiving common standardized clinical data across the care continuum. Our interviewees noted the difficulty in ensuring the use of a standardized data set at the code level and the limits of interoperability of data. They noted that the focus on the CCD document was helpful, but not sufficient for ensuring the same semantic meaning across providers.
- ✓ **Access information at the patient level.** Arraying data at the patient level allows for flexibility, as it can be aggregated at any level—at the individual setting or the care system and for purposes of individual interventions.
- ✓ **Build the logic to identify vulnerable patients and enrollees and support care strategies.** This can be done by individual care systems; however, much work has been invested in these strategies by others, and it may be useful to identify partners that can assist with this.

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Strategies

- ✓ Extract all or key EHR data. Or, if clinical data can't be extracted, then extract claims data.
  - o Utilize detailed claims data (would need analytic and technical infrastructure to receive and use) and/or utilization reports based on claims data, with information such as admissions, discharges, prescriptions, lab claims, and referral patterns.
  - o Make all EHR clinical data available for those providers who need it and when they need it, or, if unavailable, make available extracts of ADT or CCD or both. These data extracts will also need to be standardized, such that it is semantically interoperable in the sense that a lab test from one facility means the same thing as a lab test from another.
  - o Recognize that clinical data is much more powerful than claims data for care management only. However, claims make it possible to go beyond the provider network of the accountable entity, and doing so is also critical.
- ✓ Standardize claims across payers and EHR data across providers.
- ✓ Be as timely as possible, especially with claims data; it is not feasible to wait for all adjudicated claims.
- ✓ Create web portals for providers to access patient-level data and apply rules for HIPAA compliance. In the future, the hope is that these data can be easily accessed within the EHR at the point of care.
- ✓ Tie the care management system to quality improvement, monitoring, and reporting.

Challenges

- Providers in practices in the same health care system or group often have EHRs from different vendors; the systems are not required to place information in the same fields or have the same format or structure. Standardizing all the data among different systems is time consuming and expensive.
- Creating the technical infrastructure and the analytic logic for access to individual patient information requires significant investment. It may be unnecessary for each accountable entity to create this infrastructure themselves; organizations should partner wherever possible on the infrastructure to assure economies of scale.
- Without claims or aggregated clinical data from other community providers, it is often difficult for the accountable entity to follow patients across the full continuum of care, especially if the patient sees other providers or is hospitalized outside of their network.
- Other factors, such as social determinants of health, are not tracked in claims or clinical data but may nevertheless have a big impact on patient health. Data sharing initiatives may need to expand their ability to obtain data from other sources, including patients themselves, to account for these factors. One example of this is the Maine HealthinfoNet's shared HIE record and prospective risk modeling tools targeted at care management. The HIE record also now includes social determinants of health information such as housing, transportation, and employment status.

The Patient's Role

Data sharing among payers and providers does not capture the spectrum of core populations and uses needed to advance data sharing capacities and relationships that support care management and coordination.

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Individuals cannot possibly be active partners in care, effectively achieve health goals and treatment plans, or make informed decisions without accessible, electronic information about their health and health care, and a corresponding ability to share such information. Providers in turn cannot succeed under new models of care without activated and engaged patients.

> Information access is a critical component of patient and family engagement, and individuals are also valuable sources of data, including patient-reported outcomes and other critical patient generated health data, that will be critical to an APM's ability to provide high-value care. The information they can provide about their pain levels, functional status, abilities, and support needs to complement clinical information to provide a comprehensive, person-centered view of an individual's health. Collecting and using patient-generated health data is a pivotal opportunity to improve performance on high priority health conditions, address unnecessary readmissions, and enhance patient and family engagement in care.[1]

Quality Reporting and Feedback

The goal of APMs is to encourage a greater focus on the value of health care. This requires data sharing for meeting both financial and quality goals. Therefore, information must be collected, reported, and fed back to the accountable entity on a variety of quality performance benchmarks. Most APMs will include an interaction between meeting financial and quality goals to determine payment levels. It would be helpful if those in the market would agree to use common or similar quality metrics and to use common definitions and specifications. After quality performance metrics are agreed upon, the partner organizations can perform a data element inventory to identify which data elements are needed and where they can be obtained. Further, some states have quality reporting organizations that allow providers to report all their data to all payers through that one organization.

Business Requirements Checklist

Analytic and technical capacity to:

- ✓ Identify, specify, and build the logic necessary for quality metrics; create the necessary weighting strategies and determine the way performance targets will interact with payment.
- ✓ Collect the information necessary to populate designated metrics (create the denominators and numerators and establish where and how they will be collected). This requires detailed specifications that reach into either claims or clinical data. This sometimes involves new data capture at point of care, as relevant data elements are not routinely captured in health IT.
- ✓ Ensure that the payer or accountable entity can interact with providers to ensure accuracy and trust in metrics.
- ✓ Create mechanism for feedback, including ongoing performance.
- ✓ Obtain sufficient information from similar populations and patients to establish benchmarks.
- ✓ To the extent feasible, establish a mechanism to "report once" for a set of measures to all relevant payers.

[1] Patient-Generated Health Data, ONC, March 2014. https://www.healthit.gov/sites/default/files/patient_generated_data_factsheet.pdf

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Strategies

- Build upon other initiatives with infrastructure already in place; use state quality reporting or Medicare metrics, given that most providers already report some metrics to the Medicare program. Organizations wishing to limit further data collection could rely to the extent feasible on already reported metrics, but apply them to include all patients, when appropriate. The new Qualified Clinical Data Registry or Qualified Entity programs allow for some of these data to be captured for a single provider across payers and across health systems—a provider can report once on a metric across all its patients. Further, the Qualified Entity program, if one exists in the initiatives state or region, obtains Medicare data monthly.
- Enhance care management capacity at the patient-level so quality metrics align with care management strategies.
- The goal is to put the necessary quality data into the hands of the provider at the appropriate place in the workflow. If portals to do so are already established, the data necessary to support the APM quality reporting to the payer and from the payer and across the provider can build on them. To avoid "portal fatigue," it would also be helpful if the financial information was available to the appropriate parties on the same portal for feedback purposes.
- Standardize data elements, CCDs, or specifications for key elements for quality metrics. Federal policy efforts to require increased uniformity across EHR vendors and to include more uniform minimum information to populate quality metrics could assist in making this a more accurate and efficient process.

Challenges

- Lack of EHR standardization makes pulling data elements to support quality metrics challenging. It must be done metric-by-metric and, presumably, after underlying data is already normalized across EHRs. Initiatives could use quality metrics derived from the CCD, as those elements are reported in a more standard way from the beginning.
- Need longitudinal patient data at the patient-level to ensure a complete record across sites, to eliminate double counting, and to prevent inaccuracies due to missing data. Difficult to get absent claims data; however, QCDRs or HIE with the ability to aggregate data across practices and EHRs for the same patients can be helpful if claims data are unavailable.

The chart below provides a high-level overview of the key APM functions described above, with the necessary resources outlined across the top. Organizations can use this to consider their internal and partner capacity for data, technical and analytic resources, what type of resources might be available through regional collaboration, and what resources at the national level could support their initiative. A more detailed template listing all of the business requirements described above is also included in the Appendix. Section 4 includes three illustrative scenarios designed to demonstrate the manner in which this template might be used.

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Diagram 4: Business Requirement Checklist Template

APM FUNCTIONS	Data Availability (Claim, Clinical, Rx, Labs)	Technical Resources (People & Systems)	Analytical Resources (People & Logic)	External Resources (Regional Collaboratives/ Other Initiatives)
Patient and Provider Identity Management and Attribution • Deduplicate patients • Deduplicate providers • Link across clinicians/ practices/systems • Identify building and rendering providers • Attribute patients and providers • Maintain and update	__/10	__/10	__/10	__/10
Financial Benchmarking and Management • Access payment, billing, and utilization data. Aggregate for analysis. • Understand and develop key logic for creating benchmarks. Control for risk, sample size, and pricing. • Solicit feedback for ongoing monitoring to accountable entity and payer • Develop system to tie performance to payment	__/10	__/10	__/10	__/10
Care Management and Coordination • Access information across providers, including out-of-network • Build logic to identify vulnerable patients/enrollees and support care strategies • Access patient level information	__/10	__/10	__/10	__/10
Quality Reporting and Feedback • Specify logic for metrics, weighing strategy and interaction with payment • Collect information using detailed specifications • Enact loop to ensure providers review metrics for accuracy • Create mechanism for ongoing feedback • Obtain sufficient information amount and type to establish benchmarks	__/10	__/10	__/10	__/10

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Section 3: Strategies for Addressing Governance, Data Sharing Barriers, and Sustainability

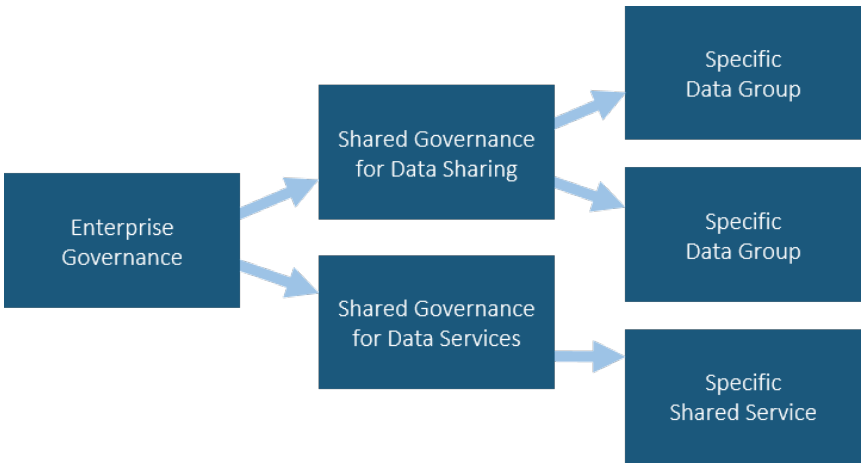
When asked what their primary pain points are, many organizations mention governance, getting data to flow adequately, and sustainability. While technical and analytical capacity noted in the previous section is critical, the strategies in this section are essential for the relationships to support and sustain the APM enterprise.

Interviewees gave many suggestions for strategies that any entity should consider, as well as approaches more specific to the type of entity. Suggestions included elements specific to organizations that implement value-based programs (the "doers," such as providers and payers) or to those that support them ("enablers," such as HIE, all-payer claims databases, and quality reporting organizations). One cross-cutting theme was the difficulty – even impossibility – of "going it alone" and the value of identifying partners and collaborating on mutual interests. This includes building on existing collaborative activities and using common templates, standards, tools, and contracts, such as model Data Use Agreements (DUA) or shared services, such as patient or provider identification.

Governance

Governance, as it relates to data sharing arrangements, refers to a common set of rules expressing technical, privacy and security, financing, and business practice requirements to create a consistent trust baseline for stakeholders. Providers, payers, and plans have their own internal enterprise governance, and they are party to additional governance agreements for sharing information with others, possibly focused on specific data, or for collaborating around specific shared services, such as a provider directory.

Diagram 5: Illustration of Multiple Levels of Governance



Organizations responsible for sharing and/or aggregating personal health information across providers and/or payers must have robust governance to ensure data is used appropriately and maintains the trust of all participants. Existing governance requirements for multi-payer data aggregation exist through the Medicare Qualified Entities Program, all-payer claims databases (APCDs) legal and

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operational requirements, and other state, federal, and organizational-specific requirements, including those related to HIPAA[2].

As value-based payment gets traction in regional health care markets, there will be a need for regional collaboration around sharing and aggregation of multi-payer claims and clinical data to be supported by a common set of rules and expectations that prioritize the use of the data and ensure privacy, security, and sustainability. Specific services related to patient and provider identity management and quality reporting will also require oversight and expectations related to standards compliance, data quality and integrity, measurement validity, etc.

Data governance is usually handled by a sub-committee under a broader governance structure that both addresses requirements for completeness, accuracy, and timeliness and stipulates the standards and formats for shared data. Some functions may be done by this sub-committee or others, or at a higher level. These functions include setting priorities, policies, and practices for data collection and management; setting permitted uses and authorized users of the data; and, handling security and other technical issues.

Leaders of all entities will want to be comfortable that these functions are competently executed with strong security and meaningful oversight. However, the scope of the governance structure can be scaled to the specific needs and scale of a given data sharing partnership. Whatever the governance needs are, entities must plan it out over multi-year periods and budget for it.

> **Example of governance for a shared service.** For CPC+ in Colorado, payers got together to jointly procure the aggregation of claims data and eventually add clinical data and eCQM reporting. Their process for coming to an agreed upon strategy did not involve much formal governance, such as a charter. Taking a practical approach, they were able to make fast progress, incorporating good user-centered design and content.

Strategies for "Doers"

Governance strategies for health care providers and plans – the "doers" or implementers of value-based payment models – may include:

- Having their own internal governance structures, including data governance, to oversee their enterprise-wide needs. Some of these functions could be considered business management. These structures typically operate under HIPAA-allowed functions, including business associate agreements.
  - A provider or plan may have multiple data governance activities targeted at specific data sets/uses.
- Entering into separate agreements that govern specified data flows outside institutional walls, such as when providers or plans partner with other "doers" and/or join a regional or state initiative that enables data exchange.
  - The enabling initiative should have an existing governance structure and agreements that establish common policies and practices.

[2] https://www.hhs.gov/sites/default/files/exchange_health_care_ops.pdf

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- The agreements may stipulate that the partner organizations "flow down" the requirements to their own participants, without necessarily dictating how it must be done.
- Responsibility for these specific governance requirements should be integrated into the broader enterprise governance structure.
- Organizations should require a high-level official to participate in any separate governance structures of the enabling organization (e.g., a Board of Directors), and appropriately assign senior people to any relevant committees.

Strategies for "Enablers"

Governance issues for HIEs, quality improvement/reporting organizations, all-payer claims databases (APCDs), and other APM data sharing "enablers" may include:

- Third parties must be perceived as neutral, fair, and balanced.
- Specific bodies at all levels, from the Board of Directors to sub-committees, must be representative.
- Senior leadership participation from partner organizations should be required, if possible.
  - The need for real-time participation of senior leaders may limit the optimum geographic coverage of an enabling organization.

Strategies for "Doers" and "Enablers"

Many governance strategies for APM partnerships are common to "doers" and "enablers:"

- Good governance rests on two principles: inclusivity and transparency. All pertinent stakeholders, including patients, must be included in the governance structure and have genuine input into decisions. All decisions and processes must be transparent to stakeholders, and, in some cases, to external parties, including the public. While it gets more complicated to implement these as the scope and complexity of data sharing and number of partners increases, the principles remain foundational.
- Bring everyone in early—make it multi-stakeholder from the beginning.
  - If possible, begin with simple and/or high value data sharing use cases.
  - Create structures and incentives that bring top level executives to the table and require their active participation.
  - Use subcommittees to address specific issues, allowing additional key stakeholders (beyond the Board) to participate
    - Examples include committees for finance, legal issues, technology, security, and data governance.
    - The data governance committee may recommend policies/procedures for data acquisition, management, and quality; identify new data-content needs; and draft/modify the core data use agreement.
    - Integrate a patient advisory committee into the decision chain.
- Incorporate legal input early into any governance decision, rather than only for final sign-off, to avoid derailing carefully negotiated agreements.
- Invest in creating (or, preferably, adopting or adapting) standardized DUAs that can be tailored as appropriate.

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DURSA: The Data Use and Reciprocal Support Agreement of the eHealth Exchange is one of the most widely known examples of a comprehensive, multi-party trust agreement that is signed by all eligible entities who wish to exchange data. Initially created in 2009 to enable data sharing between a set of regional and state health information organizations, private parties, and federal agencies, it has twice been revised as the nature and scope of the initiative have evolved. The DURSA is a scalable alternative to multiple "point-to-point" agreements, which is not sustainable for widespread information exchange. It requires signatories to abide by common set of terms and conditions that establish Participants' obligations, responsibilities, and expectations. The obligations, responsibilities, and expectations create a framework for safe and secure health information exchange, and are designed to promote trust among participants and protect the privacy, confidentiality, and security of the health data that is shared.

The text of the DURSA is available online and may be freely adopted/adapted by other entities.

See the eHealth Exchange, Data Use and Reciprocal Support Agreement (DURSA) http://sequoiaproject.org/ehealth-exchange/onboarding/dursa/.

See also the Data Use and Reciprocal Support Agreement (DURSA) Overview, http://sequoiaproject.org/wp-content/uploads/2017/01/DURSA-Webinar-2017Jan12-FINAL.pdf?x54807/.

Data Sharing Barriers

Barriers to data sharing include competitive, technical, privacy, and security issues. These are not unique to each organization, and it is likely that an organization can identify and use strategies used by others.

Competitive Issues

Reluctance to share data by providers and/or payers is common. Even where organizations have agreed to come together in a data sharing environment, some parties may limit the type and scope of shared data. In part this reflects the fact that FFS payment does not reward data sharing, but it is also a result of business and competitive incentives that encourage providers, payers, technology companies, and other entities that hold or control data to limit its availability and use.[3] Data is increasingly seen as a highly valuable asset, with the potential to be leveraged for competitive advantage, or to be monetized by selling the data itself or analytical insights and tools derived from it. Separately, organizations may also be reluctant to share data that they regard as proprietary or that may be competitively sensitive.

Competitive issues include:

- Contract terms such as prices may be discernible, putting either providers or payers at a disadvantage.

[3] ONC, *Report to Congress on Health Information Blocking*, at 8 (Apr. 2015), available at https://www.healthit.gov/sites/default/files/reports/info_blocking_040915.pdf; *see also* Martin Gaynor, Farzad Mostashari, and Paul B. Ginsburg, *Making Health Care Markets Work: Competition Policy for Health Care*, at 16–17 (April 2017).

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- Predictive risk data may give a payer an unfair advantage or disadvantage.
- Dominant health systems and technology companies may use "closed" information sharing platforms to consolidate their already strong positions.
- Technology companies may block the export of certain data (e.g., through contractual or intellectual property restrictions) so that they can use it exclusively to develop and license analytics solutions and other products.

NATIONAL POLICY ADDRESSING DATA BLOCKING. The bi-partisan 21st Century Cures Act, which became law in December 2016, provides up to $1 million in penalties for vendors found to have engaged in information blocking, and as-yet-unspecified ramifications for providers who do the same. The law defines information blocking as, with respect to a health information technology developer, exchange, or network, business, technical, or organizational practice that, "except as required by law or specified by the Secretary, interferes with, prevents, or materially discourages access, exchange, or use of electronic health information; and the developer, exchange, or network knows, or should know, are likely to interfere with or prevent or materially discourage the access, exchange, or use of electronic health information." With respect to a health care provider, information blocking is when "such provider knows that such practice is unreasonable and is likely to interfere with, prevent or materially discourage access, exchange, or use of electronic health information." Health IT customers, providers, payers, and other stakeholders should require their vendors to demonstrate that they are adhering to the spirit of this law — for which regulations have not yet been finalized. Providers should also note the potential penalties for their own failure to share and adopt a forward-leaning strategy to make the changes needed to remove their own data blocking practices.[4]

Strategies

Some strategies can rely on work done by others, including developing data use agreements, building the technical architecture for security, and developing the logic necessary to mask prices.

Strategies for overcoming competitive data sharing barriers include:

- Starting with high-value use case(s) agreed to by all parties.
- Promoting common understanding of the intrinsic value of shared data (e.g., for providers and payers to have longitudinal view of patients/beneficiaries outside their networks).
- Ensuring that shared data cannot be reverse-engineered for purposes not agreed to in the DUA.
- Requiring maintenance of state-of-the-art privacy and security technology, policy, and procedures, including verification and breach reporting.
- Identifying "sticks and carrots" and the mechanism for using them, including:
  - Seeking agreement from dominant partner who is essential to the others, without imposing an unacceptable requirement on other participants.
  - Using incentives for participation, including payment (e.g., care management fees to providers, payer ties proportion of incentives to participation).

[4] Rajiv Leventhal, With Passage of the 21st Century Cures Act, Interoperability Moves to the Front Lines. Modern Medicine. https://www.modmed.com/21st-century-cures-act/

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- Identifying potential state requirements (e.g., Medicaid plan requirement to participate; public health reporting requirements).

Technical Issues

Building on or utilizing already built technical approaches is critical to removing data sharing barriers. For organizations to agree to share data they must trust the technical capacity of the data aggregator, whether it is a neutral third party or another provider or payer organization. Building the technical infrastructure is a complex, expensive process that should not be undertaken lightly. Seeking out an already built infrastructure, either a vendor or an established regional/state/national collaborator, such as an HIE, APCD, or national umbrella collaborative, should be considered early.

Technical difficulties often create significant barriers to effective data sharing. The burdens of normalizing non-standard data elements across EHRs or different export formats from EHRs or claims, mapping claims and clinical data, and ensuring data accuracy and integrity are enormous. Moreover, the technology supporting data exchange will continue to evolve. Too frequently, organizations are faced with health IT (HIT) investment decisions that lock them into technologies that risk becoming legacy burdens before new investments can be made. Some HIT products fail to deliver the functionality, including interoperability, promised to support the stated needs.

Strategies

While detailed technical approaches to overcoming these challenges are beyond the scope of this work, general strategies to address technical barriers include:

- Ensuring that technical competence to fully understand and address technical complexity is available either internally or externally. A minimum internal capacity will be required even if the technical infrastructure and analytics are outsourced.
- Budgeting for multi-year investments and occasional mid-course corrections.
- Being familiar with important voluntary national or regional initiatives that have the potential to significantly reduce the technical barriers to data sharing and lower costs. Consider joining if appropriate, or insist that suppliers of technology be members. (See Resources Section)

Privacy and Security

Concerns about privacy and security are often raised. Given the increasing number and impact of data breaches, such concerns are highly appropriate. As APMs create a need for more complex data sharing among more diverse partners, privacy and security challenges may become greater for individual participants and the networked partners collectively. Sometimes providers raise concerns on behalf of their patients, and sometimes providers misstate HIPAA limitations on sharing. Payers and providers are concerned about the privacy of their enrollees and patients. However, in some cases, such concerns may be a pretext when competition is the real concern.

Privacy

The HIPAA Privacy Rule establishes the floor for protections, notably waiving the patient's right to consent to the use and disclosure of his/her protected information for treatment, payment, and operations (TPO). Operations include the non-TPO activities required for APMs, such as conducting quality assessment and improvement activities, population-based activities relating to improving health or reducing health care costs, and case management and care coordination. However, increasing attention to the value of making patients partners in their care is adding to discussions about

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strengthening their access to and control of their information. Health care entities that value a meaningfully engaged patient are exploring policies and practices beyond HIPAA.

Security

The number and scope of cybersecurity breaches in 2016[5,6] show that small and large healthcare organizations, including insurers, are equally at risk. Breaches now carry more serious penalties, following modifications to the HIPAA Privacy and Security Rules that were made after publication of final rule provisions of the Health Information Technology for Economic and Clinical Health (HITECH) Act. Partners in APM data exchange should ensure that agreements require each partner to implement state-of-the-art security protections (including training of staff) and to notify partners and perform appropriate follow up for any breach. Many agreements also impose penalties, including refusal to exchange, for failure to meet the requirements.

Security technologies continue to evolve. One emerging approach, blockchain, claims the potential to totally transform information security, among other benefits for information collection, storage, and exchange.

Good DUAs are necessary but not always sufficient to overcome data sharing barriers. The DUA will specify what data is to be shared, with whom, and the permitted uses. It should also spell out the privacy and security requirements of all participants. Forward-looking strategies that consider the patient as a partner in the exchange will incorporate explicit provisions about their contributions to and use of the longitudinal patient record, which is the ultimate goal of the data sharing enterprise. (See Patients as Partners for Data Sharing in APMs)

The Patient's Role

As data sharing arrangements are developed and implemented, it is important to build in HIPAA requirements to provide patients with access to their health information (including digital forms/formats, if readily producible), and to address provisions in the recent 21st Century Cures Act to empower and improve patients' access to their own electronic health information. APMs must advance patients' and family caregivers' ability to access, contribute to, and use their own health information to achieve high-value care and a healthier population.

$ Sustainability

The overarching reality facing all organizations contemplating, developing, or implementing APM models is that the data sharing requirements are technically and financially challenging. Significant upfront investment in technical capacity and staff are needed, along with a recognition that it may take several years to break even and to truly understand the data. Some providers see the larger payments from successfully implementing down-side risk as the critical financial milestone, bringing added revenue to offset investments for data sharing.

[5] U.S. Department of Health and Human Services, Office for Civil Rights, Breach Portal. https://ocrportal.hhs.gov/ocr/breach/breach_report.jsf

[6] Erin Dietsche, 11 of the biggest healthcare data breaches of 2016, Becker's Health IT & CIO Review, December 22, 2016. http://www.beckershospitalreview.com/healthcare-information-technology/11-of-the-biggest-healthcare-data-breaches-of-2016.html.

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Establishing a return on investment (ROI) is critical. MACRA and other federal policy requirements provide a shared incentive for "doers" and "enablers": the "doers" must meet the requirements to succeed and the "enablers" must demonstrate that they can help them succeed or they will lose customers. Providers and payers must understand what the value to them is of engaging in multi-stakeholder data sharing and be willing to pay. Third party entities must see clearly how they can build a business on enabling diverse organizations to implement APMs.

Strategies

A foundational strategy for all stakeholders is to start with less complex and/or high-value use cases that engage key stakeholders at a high level and create foundation of trust and sharing.

Other specific strategies for establishing positive ROI include:

- For providers and payers:
  - Assessing the economic risk of not entering into a data sharing arrangement:
    - The costs and risk of having inadequate data.
    - The cost of using siloed quality measurement and reporting.
    - The cost of going it alone or not moving forward.
  - Conducting an internal assessment of capacity for technical infrastructure and data management and external assessment of available enablers. (See example scenarios in Section 2.)
  - Ensuring that the use cases can concretely demonstrate a contribution to the organization's larger strategic interests.
  - Examining realistic sources of revenue: care management fees, shared savings programs, and direct payer incentives.
- Identifying the "90-10" resources available through state Medicaid agencies to support specific work such as designing, developing, and implementing provider directories and query-based health information exchange.[7]
- For third party enablers (including but not limited to HIEs, quality improvement/reporting organizations, and APCDs):
  - Building business discipline and focusing on revenue from the outset, rather than relying on grants.
  - Examining realistic sources of revenue: like subscription models, such as a fee based on per member per month (PMPM), or user fees – general or per service – based on the value provided to different stakeholders; payment for additional services, such as dashboards, additional analytics or quality or public health reporting; state contracts, (e.g., for performing emergency planning and disaster preparedness for the region); grants from public or private entities for specific projects; and fees from research projects (with appropriate permissions).
    - Once the enabling products and services are firmly established in the home organization or geographic area, third parties should identify value-added services that may be provided outside any specific region (e.g., infrastructure, data management, analytics, and reporting.)

[7] Medicaid, Federal Financial Participation for HIT and HIE. https://www.medicaid.gov/medicaid/data-and-systems/hie/federal-financial-participation/index.html

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- Identifying emerging opportunities such as partnering with advanced technology or IT companies seeking to add heath care data services to their portfolios, e.g., enabling them to test products and services on the aggregated data set (with appropriate permissions).

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Section 4: Illustrative Scenarios – Build, Buy, Collaborate

This section uses specific scenarios to illustrate the process and key considerations for developing the necessary data sharing capacity to support APMs. Typically, an organization seeking to develop a data sharing infrastructure will be more familiar with either claims data or with clinical data. If the entity is a provider, it will have clinical data, but may need strategies to combine information across providers or to obtain and combine the clinical data with financial data (usually some form of claims, whether raw or in reports). If the entity is a payer, it may already have claims data, but want clinical data to risk adjust and monitor quality. The data also vary by level of detail. Some initiatives rely heavily on claims data, but only provide utilization reports on key data points to providers for financial, care, and quality management. Others, particularly in regions with well-developed HIEs, combine patient-level EHR data and claims.

As noted previously, one key to building an effective data sharing capacity is identifying key shared services and strategies to obtain them. In this section, we note the types of resources an organization might need to identify and obtain those shared services.

These scenarios provide examples of real use cases, keeping in mind the importance of technical and analytic skills, as well as relationship building and sharing data. The following is a checklist for organizations or initiatives to consider in creating their goals and assessing internal and external resources, with specific attention to each of the APM functions.

Checklist for Developing Data Sharing Capacity to Support Alternative Payment Models

Step 1: Set Goal

- ✓ Identify your goal with as much specificity as possible, such as accountability for a clinical episode of care or the entire continuum of care for a patient.
- ✓ What level of risk are you interested/willing to build into the APM?
- ✓ Does this initiative help achieve other organizational goals or market placement? Examples include compliance with MACRA, positioning for commercial payers, improved internal care management, etc.
- ✓ What is your level of interest in developing internal information technology or analytic structure? For example, if your interest is limited to bundling payments and you have sufficient relationships to obtain the information you need for care management, and quality and financial management, your goals for data sharing may be less comprehensive. If instead, you want to become an ACO, you will need to assess a broader set of data sharing capacity needs.

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Step 2: Conduct General Assessment

- ✓ Internal
  - Does your system or practice already have a solid internal management structure with good care management?
  - Have you been pulling utilization variables either from claims or EHRs for management of patients?
  - Do you have the ability to share and act on payer quality reports? Are you satisfied with your quality improvement activities?
  - Do you have leaders in place to inspire others to make this happen?
  - Is there a solid physician/clinician team in place to implement some of these changes?
  - If you are a payer, do you have the analytics necessary to support an APM? Do you have the technical infrastructure necessary?
  - Do you have funding for infrastructure development?
  - Do you have a health informatics staff interested in broadening their knowledge and capacity?
- ✓ External
  - How many payers and/or other providers are important to you? Is there one dominant one, and if so, are they interested in partnering in an APM?
  - If you are a payer, how many providers are in your market? Are there one or two dominant systems with whom you work well?
  - Do you have an analytic capacity to populate utilization metrics, reports, and web portals for providers?
  - Is there a regional collaborator, such as an HIE, APCD, or any type of data aggregator in the state or across state lines with whom you could collaborate?
  - Is the state or Medicaid interested in pursuing APMs?
  - Is there a Qualified Entity or Qualified Clinical Data Registry that can help with a quality reporting strategy?
  - Have any of the regional collaborators developed shared services upon which you could build your reporting mechanism or quality-measure development efforts?
  - How relevant are any of the national data sharing initiatives to your goals and needs? Do any of your partners participate, or would it be beneficial for you to join?

Step 3: Conduct Functional Assessment

- ✓ **Patient and provider identity management and attribution.** Do you have a master identity management system? You will need one internally, but also one across providers. Is there one already developed in your region or will you need to identify collaborators with which to buy or build one?
- ✓ **Financial benchmarking and management.** Are you able to pull and analyze billing, claims, or utilization data? If so, what type and how do you currently use it? Could it be re-purposed for supporting an APM? If you took on downside risk would you have sufficient information, such as claims, to follow patients longitudinally? Is there an external organization in your region with whom you could contract to analyze claims data, given the expense and intensity of doing it on your own?

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- ✓ **Care management and coordination.** How do you currently do care management within your organization, whether you are a payer or a provider? Are you currently coordinating with other organizations on admissions, discharges, transfers, or emergency department use?
- ✓ **Quality reporting and feedback.** What is your current quality reporting data collection, measurement, and improvement system? Do you have access to the data necessary to support an APM? Is there a regional quality reporting organization who could do this more effectively for you?

Step 4: Develop Strategies and Options

- ✓ What current capacity (technical and human resources) can you build on?
- ✓ What will you need to buy? What can you afford to buy?
- ✓ Is there some data sharing capacity you could obtain through collaboration?
- ✓ How can you align the data sharing capacity development to meet your vision for your organization and community?

Scenarios with options:
This section describes three fictional scenarios designed to illustrate the manner in which organizations decide how to balance building, buying, and collaborating to develop an optimal data infrastructure. Typically, our interviewees used all three strategies, but the approaches varied by size and resources of each organization, available collaborators, and the degree to which supporting an APM was aligned with other organizational goals.

See Appendix for a business requirements checklist template.

Scenario 1: Pleasant Valley Health System

Pleasant Valley Health System (PVHS) is a medium-sized hospital system (two hospitals) with a small physician practice, including five internal medicine providers, three family practice providers, one pediatrician, two cardiologists, one pulmonologist, one orthopedist, one orthopedic surgeon, and four nurse practitioners.

Goal

PVHS's primary goal is to successfully report on Merit-based Incentive Payment System (MIPS) measures for their clinicians, but would also like to move to an APM, perhaps a patient centered medical home (PCMH) model or as a hospital-led ACO program. It wants to continue to improve on readmissions metrics and believe working towards APM will support the MIPs for clinicians and readmissions goals for hospitals. PVHS is not interested in downside risk at this point.

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General Assessment

Internal

- Good cooperation among clinicians.
- Created informal care management by identifying vulnerable patients and reviewing performance on key Medicare and Medicaid measures.
- Considering billing new care management code for Medicare as a source of funding for efforts.
- Get information on admissions and discharges from the hospitals they work in the most.
- Three vendors are used for EHRs across the system.

External

- No HIE or APCD in-state.
- Willing to work with hospital(s) in-state, if feasible. Hospitals are hooked into a larger network for purposes of telehealth and are working to link up with our small practice.
- Payer mix is 40 percent Medicare, 30 percent Medicaid, 20 percent commercial (mostly Blue Cross Blue Shield), and 10 percent other.
- State has expressed interest in implementing some type of health reform payments and building on Medicaid Primary Care Case Management (PCCM) payments.

Functional Assessment

Patient and provider identity management and attribution: This is less of a problem in the PVHS market, as fewer provider options exist. PVHS has a good system to link the relationships between their providers and patients. PVHS doesn't know when patients go into the larger regional system, but think it is minimal. Challenge is patient identifiers change as patients move in and out of Medicaid and into commercial, but they do not move often, so address information and name can be used.

Financial benchmarking and management: Cost data are limited; would like claims data on Medicaid and commercial, and analytics to understand true costs for benchmarking; can use own clinical utilization data, such as ADTs and CCDs. Don't have information on comparable regions or patients for establishing benchmarks.

Care management and coordination: Physician and nurse practitioner leaders have created a new department to focus on care coordination; to develop the most efficient internal strategies; to use current EHR information of ADTs and CCDs to identify vulnerable/expensive patients, but they would like more granular data to identify best practices associated with good outcomes.

Quality reporting and feedback: Build on Medicare and Medicaid metrics; send reports to management, but do not have database that aggregates quality data, or makes patient-level data available in one place for feedback to providers.

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Strategies and Options

This system has a reasonable base for contracting to support APMs. PVHS recognizes the need for integration across the system and has the beginnings of a care management system. PVHS is already familiar with and successful at quality reporting for Physician Quality Reporting System (PQRS), but could use more financial information and analytics for care/cost management and to link quality reporting with the care management program. Note that the following options require some degree of collaboration, building, and buying into what others are already doing. These options are not necessarily mutually exclusive. Primarily, they identify potential external collaborators that could help develop shared infrastructure.

- ***Option 1: Work with Medicaid.*** Work with state through Medicaid to establish a PCMH program that allows for shared savings and includes capacity to aggregate claims for patients and analytics to provide financial benchmarks, ongoing financial monitoring, detailed information across all providers, and patient uses for care management. State could use the 90/10 match in federal funds to support.
- ***Option 2: Contract with an outside vendor*.** Take clinical data and the ADTs from out-of-network hospitals and build an analytics platform for financial and care management. Absent claims, the organization could apply the Medicare fee schedule as a proxy for actual claims data to create financial and quality benchmarks. Utilize the clinical data to define care management logic to identify vulnerable populations, appropriate care protocols, alerts, key processes, and outcomes metrics. The vendor should come with the capacity to create more comprehensive patient and provider indices and attribution rules. It also has a risk stratification tool. PVHS limits its quality metrics to those it already populates for Medicare and Medicaid.
- ***Option 3: Work with nearby larger provider system.*** A large hospital system in a medium-sized city 40 miles away proposes to link with the system for telemedicine purposes. The system suggests collaboration in a PCMH APM and asks the larger system to allow it to build on some of the data infrastructure already in place for integrating across providers. Together, the two systems work with Medicare, Medicaid, and commercial payers to begin to contract for both PCMH and ACO contracts. The larger system is interested in downside risk, the smaller in only shared savings approaches.

Scenario 2: Green Valley Insurance

Green Valley Insurance (GVI) is one of three commercial payers in a medium-size state with little APM activity. GVI has a managed care product for women and children in Medicaid and is the largest exchange plan in the state. Fifty percent of its business is still in the commercial employer space. Specialty clinicians in the state have expressed concern about meeting the new MIPs requirements and are hoping that they might be able to participate in an APM through GVI.

Goal

Develop a payment method that supports a shared savings or bundled payment initiative. By pursuing these paths, GVI hopes to build stronger relationships with clinicians (they need to retain relationships with specialty groups to support their employer contracts) and begin to build the

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infrastructure for greater cost savings. GVI also wants to improve its own scores on Healthcare Effectiveness Data and Information Set (HEDIS) metrics for Medicaid and for the exchange plans.

General Assessment

Internal

- Maintain a data warehouse, but primarily use it for building different benefit packages and actuarial functions. No analytics currently available to establish bundles or to support care management.
- Primary interaction with providers is negotiating prices; few care management activities; no disease management programs.
- Concerned providers will drop out and purchasers will go with insurers with a broader network, particularly for specialty care for oncology and orthopedics.
- Due to growth and development of new products across purchasers, it is difficult to keep track of enrollees and products and maintain accurate provider network lists and availability.

External

- Several provider systems are beginning to consider upside and downside risk arrangements and whether to become health plans.
- Large orthopedic specialty practice and several hospitals are pressing for some type of bundling to support Medicare orthopedic bundling.
- A fledgling APCD effort exists in the state, but to date only has Medicaid, state employee information, and one commercial payer. GVI insurance has been a part of this indirectly, as the state provides the Medicaid managed care encounter data to the APCD. Currently this is primarily used for quality reporting.

Functional Assessment

Patient and provider identity management and attribution: Limited capacity now. As GVI has grown, their number of purchaser clients in the low-income market has also grown, increasing confusion as people move in and out of the exchange, Medicaid, and small employer market. Provider networks are shifting continually and GVI receives numerous complaints about inaccuracies in their provider directory.

Financial benchmarking and management: Maintain a data warehouse for claims, but limit use for actuarial assessments of populations and benefit packages. Have identified the need to purchase or develop analytic capacity to analyze claims and provide feedback to networks on performance. Upgrades to systems are included in 5-year budget**,** but final decisions are awaiting strategy on the payment reforms under consideration.

Care management and coordination: GVI currently has little data or insight into care management. It has identified a potential capacity to build into an upgraded system: developing and providing utilization reports to providers. GVI has no disease or care management programs and relies solely on clinician initiative for these functions.

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Quality reporting and feedback: GVI has built an internal capacity to report to Medicaid and the exchange with the required metrics. GVI works with its networks to obtain the necessary data elements for the clinical quality metrics and to calculate claims-based scores. Scores are typically low, which may be due to difficulty in getting providers to accurately document the quality metrics. GVI has built a portal for providers to enter their clinical data, but it has no feedback function and limited capacity for interaction.

Strategies and Options

GVI has identified a need to upgrade their data warehouse systems for their own analysis regardless of this new initiative and has set aside funding to do so. Further, they need to work with their specialist providers to create new payment models to retain a comprehensive network of providers. The presence of an APCD in their market that works with one of their payers – Medicaid – could be a resource for them in moving toward APM relationships. Options 2 and 3 (below) assume the upfront work of building patient/enrollee- and provider- identity management is already established. Further, options 2 and 3 also assume that the risk stratification approaches for care management, and financial and quality benchmarking, could be achieved through one of those mechanisms.

- **Option 1: Build with assistance.** Hire a consultant to assist in choosing an analytics vendor that would establish a master identity management system and create the logic to support APMs through developing financial and utilization logic that could also be used for care management reports to providers. Place an emphasis on orthopedic bundles and PCMH models. Require a portal for pushing out reports and data to provider networks and pulling in clinical data for quality and accountability reports.
- **Option 2: Participate with the current APCD.** Work with those in the APCD to build a more comprehensive technical and analytical capacity to support APMs. This option could be done along with building internal capacity. It would be helpful for the providers in the region to be able to get quality reports that represent multi-payers. Currently, sample sizes are very low, and thus inaccurate at the individual provider level. This would require an annual investment of dollars for the subscription fee and staff time. Further, it would not totally replace the need for internal upgrades, but could provide better information for providers in their networks.
- **Option 3: Seek technical and analytical support from an HIE.** Target an HIE that is seeking to offer its services in additional regions. The HIE may have the capacity to analyze claims and to link claims data with clinical data at the patient level. GVI could talk with its provider networks to determine whether there might be interest in working together with this HIE. GVI could limit the amount of resources it expends internally and address the technical infrastructure and analytical structure it is currently struggling with. One major concern may be that this option won't address all GVI's internal needs.

Scenario 3: Potomac Valley Health Information Exchange

Potomac Valley Health Information Exchange (PVHIE) was established by regional hospitals to ensure that information on patient emergency room use, admissions, and discharges is available to providers who treat those patients. Hospitals push information to a central database and various types of

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providers (facilities and clinicians) can access the information if it is determined they need it for payment, treatment, or health care operations.

Goal

Create a more robust data analytics capacity, including broader data elements and logic that would analyze data in the database. Collaborate with several larger HIEs in the country to explore what it would take to pull in claims data and link to clinical data. PVHIE would like to build capacity to support APMs and market their services to several large payers and health systems in their region.

General Assessment

Internal

- Great participation by hospitals and solid capacity for storing data on hospital usage. However, hospitals are primary participants, and there is limited participation by others in the market and limited funding.
- High quality, committed staff; new IT system capable of storing greater amount of data.
- Built the beginnings of an identity management system as patients often go to different hospitals. This has also required the ability to identify patients across insurers as many low-income patients move between insurance types and being uninsured.

External

- Lots of interest from larger practices in developing more capacity to allow for EHR data to be included in the PVHIE. One of the primary drivers is the potential for the PVHIE to normalize data across EHRs so newly acquired practices and other facilities can communicate with each other interoperably. Further, the practices believe that such a capacity would also be a building block for MACRA, MIPs reporting, and participating in APMs.
- The state has expressed interest in building capacity for aggregating EHR data and expanding analytics.
- Two self-funded employers have been direct contracting with a large hospital system and are pressuring that system to contract with them based on an APM.
- PVHIE is considering how to enhance its care management and quality improvement functions. It also has difficulty aggregating its data, as providers within its system use at least 30 different EHR vendors.

Functional Assessment

Patient and provider identity management and attribution: PVHIE developed a patient identity management system that creates relationships between patients and insurers. PVHIE has not attributed patients to providers based on use, but only tracks their use of hospitals. PVHIE has developed a capacity (an authentic registration and management system) to determine which provider can have access to the patient information. Patient attribution using a broader set of claims is a much bigger project, as is identifying the relationship among practitioners, practices, and systems.

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Financial benchmarking and management: Since hospital metrics are key to financial management, PVHIE has created some initial capacity that could be useful for establishing utilization benchmarks. However, PVHIE is at the hospital level and does not analyze its data at the aggregate population level or at a per patient level. Further, PVHIE does not have sufficient data to establish per cost benchmarks or provide for robust care management; however, it does have a portal for providers to obtain information.

Care management and coordination: Knowledge and tracking of hospital and emergency department use is a critical component of care management. However, more clinical and financial information is needed. The providers themselves could enhance their internal capacities, but all of them are having difficulty making their EHRs communicate with each other. The logic for identifying vulnerable populations and best practices and for estimating future risk is complex and does not exist in the HIE or with any provider in the region.

Quality reporting and feedback: PVHIE does not report any quality data on behalf of the hospitals. However, PVHIE already built a portal for hospital reporting, allowing providers to access the information.

Strategies and Options

PVHIE is in a good position to leverage the interest of both the clinician practices and the large hospital system to support the development of a more robust capacity. PVHIE could collect, normalize, and aggregate EHR data; and analyze these data and the current hospital use data in a manner that assists providers and payers in creating financial benchmarks and managing the populations of interest. PVHIE will need to determine the resources, both staff and funding, to create this capacity either internally, externally, or both. In this case, the question is which functions to build, which to buy, and what level of capacity to aim for.

- Seek and obtain infrastructure funding and promises of subscriptions from providers and utilize a generous grant from the state.
- Seek counsel from two other successful HIEs to determine whether to contract with a vendor to develop technical infrastructure and analytical capacity or to do this internally.
- Given a lack of experience with the specifications for collecting, storing, and analyzing such a broad data set, expand to EHR, ADT, and CCD reports instead of ingesting the entire data set into the EHR.
- Contract with a vendor to normalize data across providers, but rely on internal staff to develop analytics using these normalized data.
- Build improved capacity to take in the additional data and provide feedback.

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Section 5: Building a "Community Infrastructure" at the Local, Regional, State, and National Levels

As indicated throughout this report, individual organizations cannot "go it alone." They should look toward other entities within their community and beyond. There is a growing patchwork of "enablers" for value-based data sharing, including HIEs, quality improvement/reporting organizations, APCDs, commercial vendors and consultants, and other emerging "enablers." Organizations should reach out to existing resources and identify gaps and explore potential common approaches to address them. Summary descriptions of many successful organizations are included in the Detailed Resources section. The challenge for all stakeholders is to extend and scale these efforts to support providers implementing APMs across the nation.

Importantly, there are promising signs of a potential multi-level infrastructure. National private-sector initiatives are establishing common approaches, such as data standards and other interoperability mechanisms, for exchange of clinical data for care delivery. Regional entities are forming around functions where specific geographic scope is most efficient. For example, national commercial payers and large ACOs are finding that it can be more cost-effective to perform some functions at regional levels. Providers in some CPC+ markets have pursued a shared service approach to functions like patient attribution, data aggregation, master patient indexes (MPIs), and provider directories.

Looking forward, the federal government could incentivize or fund the creation of "data hubs" to act as trusted clearinghouses for the aggregation of cross-payer claims and cross-provider clinical data for common data services, and other services to support providers in value-based payment models as market needs dictate. The endpoint could be regional and state approaches within a framework of national resources, data assets, and standards. Diagram 2 (from Overview and Purpose) presents examples of roles and collaboration for data sharing functions.

Organizations considering the data sharing requirements necessary to support APMs will be making individual decisions about the best strategies to meet their goals. As this report illustrates, it will be challenging for individual organizations to build effective infrastructure absent collaboration to standardize key functions and to share data across and among payers and providers. Furthermore, the DSRI leadership team believes that local decisions are more likely to succeed when they are made with an awareness of how individual decisions and efforts contribute to system-wide scaling. Both "doers" and "enablers" should look for opportunities to participate in one or more initiatives at the local, regional, state, and national levels to acquire the knowledge, partners, and services necessary for their APM initiatives and to help shape them to reflect the needs of stakeholders "on the ground."

Regional and State Data Enablers

Regional Collaboratives

Regional initiatives include HIEs (addressed in greater detail in the Health Information Exchanges section below) and other efforts that are focused more broadly on health care improvement. Some work with claims, others with clinical data, and some with both. The purpose of data collection efforts varies from those whose primary function is coordinating the quality reporting function and others that ensure exchange of clinical data across providers.

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The Network for Regional Healthcare Improvement (NRHI). NRHI represents more than 30 Regional Health Improvement Collaboratives (RHICs) across the United States and three state-affiliated partners, all dedicated to the Institute for Health Improvement's Triple Aim objectives – enhancing patient experience, reducing per-capita costs, and improving population health. NRHI is the lead partner for The Center for Healthcare Transparency (CHT), an initiative to provide meaningful cost and quality information to patients, providers, and purchasers to enable value-based health care decision-making. The CHT had four to five regional/state groups which discussed the appropriate structure for collaborative work in specific areas, such as agreeing to use national standards for quality measures and patient identification to enable more uniform approaches.

States

Some states are taking the lead in establishing entities to support diverse types of data sharing, such as HIEs (historically for clinical information), APCDs, and quality improvement and measurement organizations. Examples are given in the Detailed Resources section.

Michigan Health Information Network (MiHIN). Michigan is an example of a state in which stakeholders across the health care system collaborate on a shared data services model, which supports payers and providers in the state, particularly those in value-base payment models. Founded in 2010, MiHIN was tasked with ensuring that effective technology and data models are in place for HIE. In addition, MiHIN was tasked with the creation of a shared governance model that provides the legal framework and policy infrastructure to safeguard and standardize the transfer of health information.

MiHIN is not an HIE, but instead supports a network of regional exchanges within the state with shared series to enable their analytic needs. MiHIN is not a state data warehouse, as data does not persist in MIHIN perpetually. Rather, data is temporarily cached for measurement purposes and/or it merely flows through. MiHIN performs several of the shared service functions mentioned previously: it ingests raw data feeds like ADT notifications and CCDs; extracts the data; performs quality checks; and transmits the data to Michigan's APCD, the Michigan Data Center (MCD).

MiHIN offers statewide provider directory services, and shares and receives provider directory information on a dynamic basis form regional HIEs, state agencies, and other entities, thus enabling stakeholders to validate and update their directories. They also offer identity management services, consent management, and attribution services.

MiHIN has helped reduce the administrative burden of creating information sharing agreements by establishing standard DUAs across the state. Every HIE has signed a DUA and common privacy protection agreement, and every provider in MiHIN has signed standardized agreements. These agreements were jointly negotiated by key stakeholders and can be adapted for new use cases.

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Health Information Exchanges

Health information exchanges have good working relationships with multiple stakeholders at the local, regional, and state level, offering a range of services from clinical information exchange for point-of-care and care coordination to sophisticated analytics for quality measurement and reporting. The Strategic Health Information Exchange Collaborative (SHIEC) serves as an umbrella resource for many of these entities and promotes cross-cutting collaboration among them. However, there are significant gaps in the geographic coverage provided by these entities, especially in rural areas.

> **The Patient Centered Data Home**
>
> The Patient Centered Data Home (PCDH), led by SHIEC, is a cost-effective, scalable method of exchanging patient data among HIEs. PCDH is based on triggering episode alerts, which notify providers a care event has occurred outside of a patient's "home" HIE, and confirms the availability and specific location of the clinical data. See SHIEC, Patient Centered Data Home, http://strategichie.com/wp-content/uploads/2016/07/PCDH-One-Pager__7-26-16.pdf

While HIEs have historically faced sustainability challenges, a number of high performing HIEs are already expanding services to organizations outside their own area. These HIEs have the potential to help entities in new areas obtain needed support. But it also suggests that HIEs, which historically have not been competitors, could become so. Fortunately, many of the leading HIEs are also members of nationwide exchange initiatives, such as Carequality and SHIEC, that promote interoperability and other common exchange approaches. Many Regional Health Improvement Collaboratives (including HIEs such as MyHealthAccess and the Health Collaborative) serve as the data governance entity for sharing data across communities. They have different governance structures from state-based APCDs, which are treated in more detail in the All-Payer Claims Databases, Qualified Entities, Quality Reporting Organizations section below.

[See Large Nationwide Initiatives and Network Resources]

All-Payer Claims Databases, Qualified Entities, Quality Reporting Organizations

As the push for quality reporting has ramped up in previous decades, many states have created quality reporting organizations and/or APCDs. They have been vital first partners for providers starting along the path to quality improvement and APMs. The National Association of Health Data Organizations (NAHDO) website shows 20 states where APCDs are legislatively mandated or voluntary. NAHDO is also working with states to create APCDs, often including local/regional HIEs in the discussions to promote synergies. Several states that implemented APCDs are also actively working to update their legislative authorities to support new data sharing requirements, including patient level reporting if that was not previously part of their capacity.

Hybrid models also exist. For example, some HIEs are working to add claims data to their clinical information. Further, in some regions (e.g., Oregon), a voluntary payer data collaborative can exist alongside a mandatory state all-payer database. This allows the voluntary participants to explore

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innovative uses of the data to drive change — for example total cost calculations. The state can still act as a strong partner and data supplier to the voluntary collaborative, perhaps avoiding some of the constraints placed on mandated APCDs. Adopting a common data file format eases the burden on data submitters. Ideally a shared infrastructure would accommodate both the voluntary and mandatory data submissions to reduce pressure on sustainability.

The CMS Qualified Entity (QE) Program (also known as the Medicare Data Sharing for Performance Measurement Program) enables organizations to receive Medicare claims data under Parts A, B, and D for use in evaluating provider performance. Organizations approved as QEs are required to use the Medicare data to produce and publicly disseminate CMS-approved reports on provider performance. QEs are also permitted to create non-public analyses and provide or sell such analyses to authorized users. In addition, QEs may provide or sell combined data, or provide Medicare claims data alone at no cost, to certain authorized users. Under the Qualified Entity Certification Program (QECP), CMS certifies QEs to receive these data and monitors certified QEs. By combining federal claims data with private data, entities can help illustrate how providers and suppliers are performing across payers, and can focus on specific issues such as chronically ill or other resource-intensive populations.

Quality Clinical Data Registries (QCDRs). The qualified clinical data registry (QCDR) reporting mechanism was introduced for the Physician Quality Reporting System (PQRS) beginning in 2014 and has been included as a source of reporting for the new QPP in Medicare. A QCDR will complete the collection and submission of quality measures data on behalf of individual eligible professionals (EPs) and group practices. For 2016, a QCDR is a CMS-approved entity that collects medical and/or clinical data for the purpose of patient- and disease-tracking to foster improvement in the quality of care provided to patients. Individual EPs and PQRS group practices that satisfactorily participate in 2016 PQRS through a QCDR may avoid the 2018 negative payment adjustment (-2.0%). To be considered a QCDR for purposes of PQRS, an entity must self-nominate and successfully complete a qualification process. QCDRs can also be used to provide clinical data across all payers for a single provider on specific quality and performance metrics.

EHR and Other Health IT Vendors

Some EHR vendors claim to be able to perform all the needed functionality for advanced data sharing and analytics. However, their standard products only share among providers who use their product. Patients usually see multiple providers who may have different EHRs, and the cost per interface to another EHR can be as much as $30,000.[8] Most leading EHR vendors now belong to one or another major national initiative to promote interoperability. [See Large National Initiatives and Network Resources] Providers need to demand interoperability across EHRs as a fundamental feature of any system they purchase.

Companies specializing in population health management or other aspects of health data management and analytics are proliferating. Some offer full technical solutions; others provide advice and other resources. These companies also need to avoid selling or promoting siloed approaches.

Large National Initiatives and Network Resources

[8] Dave Whitlinger testimony to ONC:
https://www.healthit.gov/facas/FACAS/sites/faca/files/GSG_Testimony_%20DavidWhitlinger_2014-08-22.pdf

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All entities beginning or already implementing APM models should be aware of several large national initiatives that hold promise for improving the ease and effectiveness of data sharing and could, in principle, lower the costs of the required technology. While all are initially focused on direct patient care, their approaches could ultimately be applied to the more complex functions required for successful advanced payment models, and many of their participants are looking in that direction. However, none of the initiatives summarized enable clinical data aggregation. The most robust aggregation of multi-payer claims and clinical data occurs at a regional and/or state level.

Carequality

Carequality was developed collaboratively by providers and key vendors to accelerate progress in health data exchange. It facilitates nationwide interoperability between and among many health data sharing networks and service providers serving diverse user communities, including payer networks, vendor networks, accountable care organizations, and personal health record and consumer services. The Carequality Interoperability Framework (http://sequoiaproject.org/carequality/resources/) provides the necessary legal terms, policy requirements, technical specifications, and governance processes to bridge networks and services.

Commonwealth Care Alliance

Commonwealth was formed around a different group of EHR vendors, not including Epic, that operate a health data sharing network which enables interoperability using a suite of services aiming to simplify cross-vendor nationwide data exchange. Services include patient identity management, advanced record location, and query/retrieve broker services, which allows a single query to retrieve multiple records for a patient from member systems. Commonwealth members that represent care settings across the continuum, including hospitals, ambulatory practices, post-acute and long-term care, imaging centers, pharmacies, and others, subscribe to these services and agree to build the capabilities into their solutions.

Carequality and CommonWell Partnership

As of December 2016, CommonWell is partnering with Carequality to encompass more than 90% and roughly 60% of the acute and ambulatory care EHR markets, respectively. Notably, this collaboration bridges an EHR interoperability gap between Epic and Cerner, so that an organization transitioning from either one to the other should no longer face such enormous challenges, and APM partner organizations that have either of these systems (or systems from CommonWell and Carequality members) should, in principle, have an easier time collecting, aggregating, and sharing data across their diverse technologies. The agreement paves the way for the majority of the country's hospital and ambulatory EHRs, as well as the broad continuum of care, including long-term care, imaging, behavioral health and retail pharmacy, to have the option to connect in a consistent way.

As CommonWell members will now adopt the Carequality Interoperability Framework, their member organizations should be able to exchange patient records, look up locations where the patient received care, and exchange information across those settings using tools and standards built into adopted EHR or HIE technology. Carequality will work with CommonWell to make a Carequality-compliant version of the CommonWell record locator service available to any provider organization participating in Carequality. Additionally, CommonWell and the Sequoia Project, the non-profit parent under which Carequality operates, have agreed to these initial connectivity efforts and will explore additional

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collaboration opportunities in the future.[9] The technical work will be completed in the first half of 2017, and organizations can begin to make connections after that.[10]

These industry efforts have the potential to overcome competitive data exchange barriers and lay the foundation for nationwide interoperability. Some industry experts suggest that the federal government could deem that implementing the tools and strategies developed by one of the existing multi-stakeholder interoperability organizations, such as CommonWell, Carequality, or the Argonaut Project (an open interoperability standards project), would count as sufficient for verifying that the provider or vendor is not blocking information. Experts would like to see the government establish some degree of safe harbor, so that organizations could use their participation in private interoperability initiatives as a defense against charges of information blocking.[11]

Patients as Partners for Data Sharing in APMs

The patient's role in improving outcomes and care is critical: a patient needs to monitor and manage conditions; follow up with treatment and self-care; make decisions about which treatment, if any, is best for them; and select insurance coverage and providers who are best for their budget and health status. All these responsibilities require the patient and/or their family caregiver to have full access to and control over their personal health data to make informed decisions. As such, APMs must advance patients' and family caregivers' ability to access, contribute to, and use their own health information.

Patients also play a critical role in ensuring the accuracy and completeness of their personal data upon which providers are making decisions. Recent studies show significant discrepancies between patient-reported assessments and the official provider record. Only patients can contribute vital missing information such as over-the-counter drugs they're taking, non-clinical health-supporting services they're receiving, and actual outcomes of care. Home-based monitoring devices can provide real time and/or longitudinal data on the status of certain patients that is far superior to the snapshot "in the clinic" data point.

In short, there is increasing recognition that what happens outside the clinical visit is as critical to good health outcomes as what happens within it. This means that patients and their family caregivers must be part of the data sharing equation to support value-based payments.

Providers, payers, and potentially third-party enablers should adopt affirmative policies and procedures for integrating patients into their data sharing activities. These include Improving their channels of communication and data exchange with patients, such as more effective portals and other online tools, secure email, and (for providers) participation in the "Open Notes" program.[12]

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[9] Bernie Monegain, CareQuality, CommonWell to collaborate on health data exchange, interoperability, Healthcare IT News, December 13, 2016. http://www.healthcareitnews.com/news/carequality-commonwell-collaborate-health-data-exchange-interoperability/. Accessed March 14, 2017

[10] Carequality and CommonWell Connectivity FAQs, December 2016. http://sequoiaproject.org/carequality-blog/carequality-commonwell-connectivity-faqs/

[11] 21st Century Cures Act Rekindles Information Blocking Debate, HealthIT Analytics. http://healthitanalytics.com/features/21st-century-cures-act-rekindles-information-blocking-debate/]

[12] The Open Notes Program. https://www.opennotes.org.

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Current problem: Each entity in the APM partnership is likely to have its own patient portal. Patients have no centralized point of access. The data they may receive from one source, which may only be a simple care summary, can't be directly integrated with data from other sources.

Potential solutions: Anytime there is a portal enabling providers across diverse systems to view longitudinal identifiable patient data, there is the possibility of adding individual patients as authorized users of the portal, with access limited to their personal information. Additionally, new Application Programming Interfaces (APIs) can provide patient access to the systems. These efforts should be coordinated with strategies for addressing governance, data sharing barriers, and sustainability.

In addition, state quality reporting entities receiving identifiable personal information should consider offering a tailored view of performance data to patients, rather than only high level aggregated information.

It is very important that all APM organizations take care to support patients in playing the ever-larger role assigned to them, so that they are equipped with information and resources to participate in their health and care. It should be easier for them to access, use, and contribute to their personal information, and have meaningful, actionable information about their health and their role in maintaining or improving it.

> "I'm a clinician, and I am worried. And my worry is that, in pursuit of value, this objective of the health care industry, that we may fall for a perverse incentive built into it, and that is to take the work — the energy needed to create quality and outcomes — and to transfer that work to an invisible and free workforce: patients and caregivers." -- Victor Montori, Professor of Medicine, Mayo Clinic.[13]

Achieving a Nationwide Data Sharing Ecosystem

For APMs to advance nationwide, it is not sufficient for individual organizations to take their own steps toward successful implementation. Much greater alignment across stakeholders and progress on specific issues will be needed. While individual APM implementers may not be in a position to directly influence these issues, they should be aware of activities that have the potential to affect their own operations and, especially, those that may make data sharing easier and more effective. The following high level challenges reflect concerns raised by both "successful" data sharing organizations and policymakers.[14]

- Ensuring seamless interaction between point-of-care solutions and other entities, including using standard APIs.
  - Vendors of EHRs and other enabling systems work collaboratively to make it easier for clinicians to share and access the information they need from EHRs and other applications and services, such as registries.

[13] Victor Montori, The invisible work of the patient, NEJM Catalyst, March 8, 2017. http://catalyst.nejm.org/videos/invisible-work-patient-disruption.

[14] Washington V. and Slavitt A., Building the Value-Based Health Care System of the Future Depends on Meeting Clinicians' Data Needs, HealthAffairs Blog, January 17, 2017. http://healthaffairs.org/blog/2017/01/17/building-the-value-based-health-care-system-of-the-future-depends-on-meeting-clinicians-data-needs/.

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        - Needed: collaborative action through large national initiatives [see the Large National Initiatives and Network Resources section] and national incentives and penalties to eliminate data blocking.
- Growth of third-party entities that can meet provider data access and reporting needs.
    - Trusted entities can facilitate quality reporting to all payers, combine data from disparate sources of care, and present it in a useful way.
        - Needed: a robust market that supports such services at a reasonable cost.
- Use of low-cost shared services necessary for aggregating and linking data.
    - Development and extension of core services such as patient and provider identity management and directories.
        - Needed: collaboration in the development, financing, and governance of such services.
- Greater data transparency and data consolidation.
    - All-payer claims data bases and Medicare Qualified Entities bring together data from multiple payers, giving providers one place to access data and reducing the burden on payers.
        - Needed: Continuing support for these efforts, while identifying opportunities for other entities, like HIEs, to offer this service for a specific region.
- Standardization of key patient data and of formats used in reporting in all relevant functions is critical to ensuring the accuracy and improving the efficiency of data sharing, aggregation, analysis, and reporting.
    - Standardized data for quality measures and the development of related tools, such as libraries of data elements, can allow new electronic measures to be easily captured, calculated, and reported for use by clinicians and consumers.
        - Needed: Renewed attention to these efforts by all stakeholders within data standards organizations and relevant quality measurement initiatives.
- Alignment around how quality is measured and reported across payers.
    - Common quality measures and reporting mechanisms will significantly reduce the burden on clinicians and provide them with more useful aggregated feedback, while increasing the comparability and auditability of measurement results.
        - Needed: Public and private stakeholder collaboration to achieve consensus.

There are clearly roles and responsibilities for all stakeholders in these efforts. Public-private partnership will be essential. Activities already underway hold the promise of progress in these areas.

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Section 6: Detailed Resources

The organizations listed below represent useful examples representing diverse stakeholders, purposes, and activities, but is not an exhaustive list of all the resources available. They are helpful resources for those seeking more detailed information about data sharing issues and approaches. The organizations with an asterisk were interviewed for this product.

Quality Improvement/Reporting Organizations

Organization	Excerpt from Organization's Website
Alliance of Community Health Plans (ACHP)*	The Alliance of Community Health Plans (ACHP) is a national leadership organization bringing together innovative health plans and provider groups that are among America's best at delivering affordable, high-quality coverage and care. ACHP's member health plans provide coverage and care for more than 18 million Americans. These organizations focus on improving the health of the communities they serve and are on the leading edge of innovations in affordability and quality of care, including primary care redesign, payment reforms, accountable health care delivery, and use of information technology.
Minnesota Community Measurement*	MN Community Measurement creates and refines measures, and collects and reports health care data used to drive improvement in health care. We are a nonprofit organization working with partners statewide and nationally to increase quality and value in health care. Strong partnerships are a key to our success. Visit our pages to learn more about our staff and our partners. You can also visit our consumer website, MNHealthScores.org, to find quality, cost, and patient experience information on clinics, medical groups, and hospitals in Minnesota.
Oregon Health Care Quality Corporation (Q Corp)*	The Oregon Health Care Quality Corporation (Q Corp) is an independent, nonprofit organization dedicated to improving the quality and affordability of health care in Oregon by leading community collaborations and producing unbiased information. We work with the members of our community – including consumers, providers, employers, policymakers, and health insurers – to improve the health of all Oregonians. Founded in 2000, Q Corp plays a unique role as an independent multi-stakeholder organization that leads community-based initiatives focused on improving the quality, affordability, and patient experience of health care in Oregon. Q Corp's Board of Directors includes 21 senior representatives of state agencies, health plans, hospitals, employers, and consumer and medical groups. Q Corp's subcommittees include over 150 volunteers who bring their expertise and perspectives to this work. Q Corp also convenes stakeholders and experts around quality and cost issues, aligning efforts to address those issues and conceptualizing and instructing programs using unbiased data and analytics.

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Organization	Excerpt from Organization's Website
Wisconsin Collaborative for Healthcare Quality (WCHQ)*	The Wisconsin Collaborative for Healthcare Quality (WCHQ) dramatically improves the health and increases the value of healthcare for the people of Wisconsin. WCHQ publicly reports and brings meaning to performance measurement information that improves the quality and affordability of health care in Wisconsin, in turn improving the health of individuals and communities. WCHQ builds consensus and drives improvement by practicing these values: trust, participation, inclusiveness, shared responsibility, openness, adaptive self-governance, intellectual output, acknowledgement, and transparency.

Provider Networks/ACOs

Organization	Excerpt from Organization's Website
Aria Jefferson Health*	Aria Jefferson Health is the largest health care provider in Northeast Philadelphia and Lower Bucks County. With three leading-edge community hospitals and a strong network of outpatient centers and primary care physicians, Aria upholds a longstanding tradition of bringing advanced medicine and personal care to the many communities it serves.
Scottsdale Health Partners*	Scottsdale Health Partners, LLC is an organization strategically launched to transform health care delivery in the local community. Over the last four years, more than 1,300 physicians have joined our clinically integrated physician network. SHP is committed to supporting independent, self-employed physicians as well as those employed by HonorHealth. SHP delivers value-based healthcare defined by superior quality and patient-centered services. Formed in 2012, SHP launched with 430 physicians and covered approximately 3,500 patients. Today SHP has contracts with six major insurance companies and covers more than 50,000 patients. Clinical Integration is key to improving healthcare quality while eliminating inefficient spending, and SHP's physician-led network offers the tools necessary to deliver best practice patient care.
Tift Regional Health Systems (TRHS)*	With a reputation as an innovative provider of quality care, Tift Regional Health System (TRHS) is a growing, not-for-profit hospital system serving 12 counties in South Central Georgia. TRHS offers more than 135 physicians with expertise in over 30 specialties. TRHS provides a wide-range of care, including signature services in surgery, oncology, cardiovascular care, women's health, neurodiagnostics, geriatric psychiatric care, radiology, and more.

Payer/State

Organization	Additional Information
Arkansas Medicaid*	Arkansas Medicaid provides Medicaid coverage to eligible individuals in the state of Arkansas.
Tennessee Division of Health Care Finance and Administration*	TennCare provides Medicaid coverage to eligible individuals in the state of Tennessee.

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Organization	Additional Information
UnitedHealth Group*	UnitedHealth Group is a distinctively diversified health and well-being company headquartered in the United States, and a leader worldwide in helping people live healthier lives and helping make the health system work better for everyone. We are committed to introducing innovative approaches, products, and services that can improve personal health and promote healthier populations in local communities. Our core capabilities in clinical expertise, advanced technology and data, and health information uniquely enable us to meet the evolving needs of a changing health care environment.

Health Information Exchange

Organization	Excerpt from Organization's Website
Blue Cross Blue Shield of California (Cal INDEX)*	An independent, not-for-profit organization, Cal INDEX is developing a statewide, next-generation health information exchange (HIE), which will include clinical data from healthcare providers and health insurers. Cal INDEX will allow physicians, nurses, and hospitals throughout the state to share patients' health information to help them provide the safest, highest-quality care possible.
HealthInfoNet*	HealthInfoNet is an independent, nonprofit organization using information technology to improve patient care quality and safety. The organization's core service line is the management of a secure computer system, called a health information exchange (HIE), for doctors, hospitals, and other providers to share important health information and improve patient care. The HIE system links medical information from separate health care sites to create a single electronic patient health record, then allows authorized providers to see that record to support patient care. In an emergency, this helps providers quickly and more accurately diagnose and treat patients. In non-emergency situations, it can decrease ordering of repeat tests and give providers a more complete picture of their patients' care.
Michigan Health Information Network*	In Michigan, a health information network has been created to coordinate and facilitate building a statewide capability to securely, electronically exchange health information. The Michigan Health Information Network Shared Services (MiHIN) is Michigan's initiative to continuously improve health care quality, efficiency, and patient safety by promoting secure, electronic exchange of health information. MiHIN represents a growing network of public and private organizations working to overcome data sharing barriers, reduce costs, and ultimately advance the health of Michigan's population.
MyHealth Access Network*	MyHealth Access Network links more than 4,000 providers and their patients in a community-wide health information system that will help providers better monitor and improve care to: • Reduce health care costs associated with redundant testing, hospital admissions, and emergency department visits • Improve care coordination during transitions between health care settings • Improve patients' experience and ability to take control of their own health • Improve quality care for the state of Oklahoma and its nearly 4 million patients • Bring community leaders and organizations together to utilize health information in meaningful ways to improve community care

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Organization	Excerpt from Organization's Website
Network for Regional Healthcare Improvement (NRHI)	The Network for Regional Healthcare Improvement (NRHI) is a national organization representing over 35-member Regional Health Improvement Collaboratives (RHICs). These multi-stakeholder organizations are working in their regions and collaborating across regions to transform the health care delivery system and achieve the Triple Aim: improving the patient experience of care, including quality and satisfaction; improving the health of populations; and reducing the per-capita cost of healthcare. The RHICs are accomplishing this transformation by working directly with physicians and other health care providers, provider organizations, commercial and government payers, employers, consumers, and other health care-related organizations. Both NRHI and its members are non-profit, non-governmental organizations.
Rhode Island Quality Institute (RIQI)*	Rhode Island Quality Institute (RIQI) is a center for collaborative innovation that advances health and care transformation. We believe that all of us working together are better than any one of us acting alone. RIQI's initiatives align leading-edge healthcare improvement strategies with needs and opportunities in our community. As a catalyst for change, RIQI leverages deep expertise in health information exchange to enable provider interoperability, and in quality improvement science and quality data analytics to drive cutting-edge practice transformation.
The Health Collaborative*	Our three well-respected, long-standing nonprofit health and health care improvement organizations are now working together under a single management structure, which more efficiently aligns our services and more effectively meets the needs of the communities, stakeholders, and members we serve. We are a single organization with three primary functions: • We are a neutral forum for all community stakeholders invested in the triple aim: better health, better care, lower cost. • We provide a robust set of membership benefits to health systems and hospital members, as well as care partners (post-acute and non-acute care providers), and business partners. • We provide fee for service value including consulting, education, convening, technology solutions, and clinical messaging for customers within and outside of our region.

Associations

Organization	Excerpt from Organization's Website
Alliance of Community Health Plans (ACHP)*	The Alliance of Community Health Plans (ACHP) is a national leadership organization bringing together innovative health plans and provider groups that are among America's best at delivering affordable, high-quality coverage and care. ACHP's member health plans provide coverage and care for more than 18 million Americans. These organizations focus on improving the health of the communities they serve and are on the leading edge of innovations in affordability and quality of care, including primary care redesign, payment reforms, accountable health care delivery, and use of information technology.
Carequality	Carequality is a public-private, multi-stakeholder collaborative that provides a national-level, consensus-built, common interoperability framework to enable exchange between and among health data sharing networks. The Carequality

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Organization	Excerpt from Organization's Website
	community, drawn from all parts of the health care ecosystem, uses a consensus-based process to enable seamless connectivity across all participating networks.
National Association of Health Data Organizations (NAHDO)*	The National Association of Health Data Organizations (NAHDO) is a national non-profit membership and educational association dedicated to improving health care data collection and use. NAHDO's members include state and private health data organizations that maintain statewide health care databases and stakeholders of these databases. NAHDO is a cofounder and member of the All Payer Claims Database (APCD) Council, which provides leadership and technical assistance to states implementing APCDs. For more information, please visit the APCD Council website.
Strategic Health Information Exchange Collaborative (SHIEC)*	The Strategic Health Information Exchange Collaborative (SHIEC) is a nonprofit national consortium of statewide, regional, and community health information exchanges (HIEs) and a trade association that assists our member organizations through the exchange of ideas and business practices as well as through public education and advocacy. The member organizations of SHIEC are regional, statewide, and community HIEs that occupy a unique position in many key health care geographic regions or markets across the country.

Federal Programs

- **CMS QE program: https://www.cms.gov/Research-Statistics-Data-and-Systems/Monitoring-Programs/QEMedicareData/index.html?redirect=/qemedicaredata/**

  The CMS Qualified Entity Program (also known as the Medicare Data Sharing for Performance Measurement Program) enables organizations to receive Medicare Parts A and B claims data and Part D prescription drug event data for use in evaluating provider performance. Organizations approved as qualified entities (QEs) are required to use the Medicare data to produce and publicly disseminate CMS-approved reports on provider performance. QEs are also permitted to create non-public analyses and provide or sell such analyses to authorized users. In addition, QEs may provide or sell combined data, or provide Medicare claims data alone at no cost, to certain authorized users. Under the Qualified Entity Certification Program (QECP), CMS certifies QEs to receive these data and monitors certified QEs.

- **CMS QRDS program: https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/PQRS/Downloads/2016QCDRPosting.pdf**

- **CMS, Medicaid Federal Financial Participation for HIT and HIE:** https://www.medicaid.gov/medicaid/data-and-systems/hie/federal-financial-participation/index.html

  Funding for some state Health Information Exchange (HIE) activities is already available to states through the Medicaid Electronic Health Records (EHR) Incentive Program as authorized by the American Recovery and Reinvestment Act of 2009 (ARRA) at the 90% match rate through 2021. Within the parameters set by State Medicaid Director (SMD) Letter #11-004 and SMD Letter #10-016, states may request 90/10 Health Information Technology (HITECH) administrative

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funding for a wide range of HIE activities that support providers' adoption and meaningful use of EHRs.

- **Office of the National Coordinator for Health IT (ONC), State Innovation Model (SIM) Health IT Resource Center: https://www.healthit.gov/providers-professionals/state-innovation-model-health-it-resource-center**

  The SIM Initiative provides financial and technical support to states to design and test innovative, state-based multi-payer health care delivery and payment system reform.

- **ONC-SIM Health IT Resource Center, State Health IT Modular Functions for Value-Based Payment Strategic Implementation Guide Provider Directories: https://www.healthit.gov/sites/default/files/statestrategicimplementationguide-providerdirectories-v1-final.pdf**

- **ONC, Providers and Professionals Resource Center: https://www.healthit.gov/providers-professionals/resource-center**

  This website offers resources on health IT for providers of diverse sizes and settings.

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Appendix A: Templates

APM FUNCTIONS	Data Availability (Claim, Clinical, Rx, Labs)	Technical Resources (People & Systems)	Analytical Resources (People & Logic)	External Resources (Regional Collaboratives/ Other Initiatives)
Patient and Provider Identity Management and Attribution • Deduplicate patients • Deduplicate providers • Link across clinicians/ practices/systems • Identify building and rendering providers • Attribute patients and providers • Maintain and update	__/10	__/10	__/10	__/10
Financial Benchmarking and Management • Access payment, billing, and utilization data. Aggregate for analysis. • Understand and develop key logic for creating benchmarks. Control for risk, sample size, and pricing. • Solicit feedback for ongoing monitoring to accountable entity and payer • Develop system to tie performance to payment	__/10	__/10	__/10	__/10
Care Management and Coordination • Access information across providers, including out-of-network • Build logic to identify vulnerable patients/enrollees and support care strategies • Access patient level information	__/10	__/10	__/10	__/10
Quality Reporting and Feedback • Specify logic for metrics, weighing strategy and interaction with payment • Collect information using detailed specifications • Enact loop to ensure providers review metrics for accuracy • Create mechanism for ongoing feedback • Obtain sufficient information amount and type to establish benchmarks	__/10	__/10	__/10	__/10

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Appendix B: DSRI Leadership Team Roster

DSRI Co-Chairs

David Lansky, PhD
Chief Executive Officer, Pacific Business Group on Health

Angelo Sinopoli, MD
VP, Clinical Integration and Chief Medical Officer, Greenville Health System

DSRI Leadership Team

Shaun Alfreds, MBA
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Christine Cox
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Kelly Cronin, MS, MPH
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David Kendrick, MD, MPH
Chief Executive Officer, MyHealth Access Network, and Chair, Department of Medical Informatics, University of Oklahoma School of Community Medicine

Harlan Krumholz, MD
Director, Center for Outcomes Research and Evaluation, Yale-New Haven Hospital

Keith Shah, PhD
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Amy Zimmerman, MPH
Rhode Island State Health Information Technology (HIT) Coordinator, Rhode Island Executive Office of Health and Human Services (EOHSS)

CMS Alliance to Modernize Healthcare (CAMH) Staff

The MITRE Corporation, as the operator of the CAMH Federally Funded Research and Development Center (FFRDC), convenes and independently manages the LAN on behalf of CMS. MITRE is a not-for-profit operating strictly in the public interest.

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Appendix C: Other LAN Content

The LAN has written a suite of papers to help align payment reform efforts. The first, the APM Framework, describes four categories of alternative payment models. The papers referred to in this appendix include recommendations on the design of two payment reforms, population-based payments and clinical episode payments, from the two most comprehensive categories defined in that framework.

These recommendations are the result of input from a wide variety of persons and organizations with either direct experience with implementing one or the other payment reform or deep experience in the health care field.

CAMH convened two Work Groups, the Population-Based Payment (PBP) Work Group and the Clinical Episode Payment (CEP) Work Group, to develop recommendations for the implementation of population-based payment and clinical episode payment models. Their recommendations focus on specific design elements, many of which overlap and upon which there was much common agreement even as the Work Groups deliberated separately. Each of the four PBP White Papers described below focuses on a separate design element (financial benchmarking, patient attribution, performance measurement, and data sharing) in a PBP context. In a PBP arrangement, an accountable entity takes responsibility for the care for a defined population over a specified period of time (typically a year) for the full continuum of care.

These design elements should be considered as a whole for effective PBP implementation as they interact considerably. For example, to determine the financial benchmark, it is critical to know precisely which patients are being attributed to the PBP model. Further, most PBP initiatives will require performance on certain measures to be one factor in considering whether the accountable entity has met the benchmark. Data sharing is critical for the providers to effectively target their efforts, for payers and purchasers to monitor performance, and for patients to be empowered to be active in their care.

The CEP Work Group also divided their recommendations into design elements, but included several operational considerations along with 10 design elements. The recommendations were organized in chapters in the comprehensive White Paper and applied to three clinical areas where clinical episode payment models would be most effective: elective joint replacement, maternity care, and coronary artery disease (CAD). While the clinical focus is more targeted here, the underlying concepts for setting the episode price (including the level and type of risk), defining the population and services included in the episode, patient engagement and quality metrics, and the data infrastructure are similar to those of the four PBP White Papers.

The following provides links and a brief overview of each of the papers written by the LAN Work Groups. By reading the full suite of products, readers of this paper will be better able to make decisions about the most effective payment model(s) to implement and the key issues to consider when designing those models. Visit our website (https://www.hcp-lan.org) for an up-to-date list of LAN work products and for a glossary of terms. *(Last updated 6/27/2016)*

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Population-Based Payment (PBP) Models:

Accelerating and Aligning Population-Based Payment (PBP): Patient Attribution

The Patient Attribution White Paper describes the method by which patient populations are assigned to providers who are accountable for total cost of care and quality outcomes for their designated populations in a PBP model. The paper recommends that active, intentional identification, or self-reporting by patients, should be considered first. The paper also outlines nine additional recommendations that payers and providers can use when making decisions on attribution in their PBP models.

Accelerating and Aligning Population-Based Payment (PBP): Financial Benchmarking

The Financial Benchmarking White Paper describes approaches for setting an initial benchmark and updates over time, as well as addresses risk-adjustment considerations. The White Paper discusses the need to balance voluntary participation with the movement toward convergence in a market with providers at different starting points.

Accelerating and Aligning Population-Based Payment (PBP): Data Sharing

The Data Sharing White Paper offers several guiding principles and recommendations that highlight the future development of data sharing arrangements in PBP models. The paper also outlines use cases for data sharing which describe particular types of data sharing arrangements, in both their current and aspirational states. The goal is to create an environment where data follows the patient and is available to stakeholders (patients, providers, purchasers, and payers) in a timely manner.

Accelerating and Aligning Population-Based Payment (PBP): Performance Measurement

The Performance Measurement White Paper offers both short-term action recommendations and a long-term vision for accelerating alignment around APMs. The paper offers a way forward that could lead to radical change in how performance is measured across the board in order to enable the implementation of effective population-based payments. The White Paper describes how to evolve from granular measurement systems of the full continuum of care, which focus on narrow and specific care processes, to more macro-level measurement systems oriented on outcomes. The paper also makes strong recommendations for immediate action steps by describing four key performance measurement principles and seven recommendations for building and sustaining a performance measurement system that supports and encourages collaboration among stakeholders.

Clinical Episode Payment (CEP) Models:

Accelerating and Aligning Selected Clinical Episode Payment (CEP) Models

This paper provides high-level recommendations for designing clinical episode payment models. A clinical episode payment is a bundled payment for a set of services that occur over time and across settings. The paper outlines design elements and operational considerations for three selected clinical

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areas: elective joint replacement, maternity care, and coronary artery disease. Recommendations are organized according to design elements and operational considerations. Design elements address questions stakeholders must consider when designing an episode payment model, including the definition, the duration of the episode, what services are to be included, and others. Operational considerations relate to implementing an episode payment model, including the roles and perspectives of stakeholders, data infrastructure issues, and the regulatory environment in which APMs must operate.

Several key principles drove the development of the recommendations across all three episodes: 1) incentivizing person-centered care; 2) improving patient outcomes through effective care coordination; 3) rewarding high value care by incentivizing providers and patients, together with their family caregivers, to discuss the appropriateness of procedures; and 4) reducing unnecessary costs to the patient and the health care system.

The recommendations are designed to speak to a multi-stakeholder audience with the goal of supporting broad clinical episode payment adoption.

Elective Joint Replacement

The elective joint replacement recommendations emphasize using functional status assessments (both pre- and post-procedure) and shared decision-making tools to determine whether a joint replacement is the appropriate treatment for a given patient.

Maternity Care

The maternity care recommendations emphasize the need for patient engagement, education, and parenting support services (in addition to clinical maternity care), to achieve a number of critical goals. These include increasing the percentage of full-term births and the percentage of vaginal births, while decreasing the percentage of pre-term and early elective births, complications, and mortality.

Coronary Artery Disease

The coronary artery disease (CAD) recommendations are based on a CAD condition-level episode, which includes a "nested" bundle for procedures like percutaneous coronary intervention (PCI) and coronary artery bypass graft (CABG). The recommendations emphasize overall condition management designed to reduce the need for procedures, and strong coordination and communication between the surgeons who perform cardiac procedures and the providers who deliver follow-up and long-term cardiac care.

Primary Care Payment Models (PCPM):

Accelerating and Aligning Primary Care Payment Models

Primary care is a critical link in health care delivery. Often patients' first point of contact with the health care system, primary care practitioners make decisions that broadly impact both patient health and total health care spending. The Primary Care Payment Model (PCPM) White Paper views primary care teams as uniquely positioned to serve as catalysts for innovative care as well as effective stewards of health care resources. The paper offers principles and recommendations for implementing PCPMs that can

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help overcome the barriers to effective primary care tied to traditional fee-for-service payments based on the volume of services provided rather than the quality and value of care.

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Appendix D: Principles for Patient- and Family-Centered Payment

The following principles, produced by the LAN's Consumer and Patient Affinity Group, are intended to help guide the development of new payment strategies. They provide guidance and aspirational direction to ensure that we address the needs and priorities of patients and families as we transition to value-based payment. The principles rest on the conviction that consumers, patients, and families are essential partners in every aspect of transforming health care and improving health.

Consumers, patients, families, and their advocates should be collaboratively engaged in all aspects of design, implementation, and evaluation of payment and care models, and they should be engaged as partners in their own care.

The collaboration in design of payment and care models should include oversight, governance, and interface with the communities where care is delivered. At the point of care, patients and families should be engaged in ways that match their needs, capacities, and preferences. Collaborative care should be aligned with patient goals, values, and preferences (including language), and should reflect shared care planning and decision-making throughout the care continuum.

Positive impact on patient care and health should be paramount.

The central consideration in all payment design should be improving patient health outcomes, experience of care, and health equity, while also ensuring the most effective use of health care resources.

Measures of performance and impact should be meaningful, actionable, and transparent to consumers, patients, and family caregivers.

New payment models should be assessed using measures that are meaningful to patients and families. They should prioritize the use of measures derived from patient-generated data that address both care experience and outcomes. Measures should also address the full spectrum of care, care continuity, and overall performance of specific models. Measures should be granular enough to enable patients to make informed decisions about providers and treatments.

Primary care services are foundational and must be effectively coordinated with all other aspects of care.

Payment models should foster this coordination, particularly between primary and specialty care, in order to promote: optimal coordination, communication, and continuity of care; trusted relationships between clinicians and patients/families; concordance with patient goals, values, and preferences; integration of non-clinical factors and community supports; and coordination of services delivered through non-traditional settings and modalities that meet patient needs. Effective delivery and coordination of primary care services should promote better care experience, optimal patient engagement, better health outcomes, and increased health equity.

Health equity and care for high-need populations must be improved.

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New payment models should foster health equity, including access to innovative approaches to care and preventing any discrimination in care. They should collect data that allow for assessment of differential impacts and the identification and redress of disparities in health, health outcomes, care experience, access, and affordability.

Patient and family engagement and activation should be supported by technology.

New payment models should promote use of information technology that enables patients and their designated caregivers to easily access their health information in a meaningful format that enables them to use the information to better manage and coordinate their care. The technology should also enable patients to contribute information and communicate with their providers, and it should foster the patient-clinician partnership in ongoing monitoring and management of health and care.

Financial incentives used in all models should be transparent and promote better quality as well as lower costs.

Financial incentives for providers and patients should be fully disclosed so that patients and consumers understand how new payment approaches differ from traditional fee-for-service models, and how certain incentives may impact the care providers recommend or provide. Financial incentives should be developed in partnership with patients and consumers in order to reflect how patients define value, and to reduce financial barriers to needed care and ensure that patients are not steered to lower-cost care without regard for quality.

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Appendix E: About the CMS Alliance to Modernize Healthcare

The Centers for Medicare & Medicaid Services (CMS) sponsors the CMS Alliance to Modernize Healthcare (CAMH), the first federally funded research and development center (FFRDC) dedicated to strengthening our nation's health care system. CAMH is the convener of the LAN. The CAMH FFRDC enables CMS, the Department of Health and Human Services (HHS), and other government entities to access unbiased research, advice, guidance, and analysis to solve complex business, policy, technology, and operational challenges in health mission areas. The FFRDC objectively analyzes long-term health system problems, addresses complex technical questions, and generates creative and cost-effective solutions in strategic areas such as quality of care, new payment models, and business transformation.

Formally established under Federal Acquisition Regulation (FAR) Part 35.017, FFRDCs meet special, long-term research and development needs integral to the mission of the sponsoring agency—work that existing in-house or commercial contractor resources cannot fulfill as effectively. FFRDCs operate in the public interest, free from conflicts of interest, and are managed and/or administered by not-for-profit organizations, universities, or industrial firms as separate operating units. The CAMH FFRDC applies a combination of large-scale enterprise systems engineering and specialized health subject matter expertise to achieve the strategic objectives of CMS, HHS, and other government organizations charged with health-related missions. As a trusted, not-for-profit adviser, the CAMH FFRDC has access (beyond what is allowed in normal contractual relationships) to government and supplier data, including sensitive and proprietary data, and to employees and government facilities and equipment that support health missions.

CMS conducted a competitive acquisition in 2012 and awarded the CAMH FFRDC contract to The MITRE Corporation (MITRE). MITRE operates the CAMH FFRDC in partnership with CMS and HHS, and maintains a collaborative alliance of partners from nonprofits, academia, and industry. This alliance provides specialized expertise, health capabilities, and innovative solutions to transform delivery of the nation's health care services. Government organizations and other entities have ready access to this network of partners. This includes select qualified small and disadvantaged businesses. The FFRDC is open to all CMS and HHS Operating Divisions and Staff Divisions. In addition, government entities outside of CMS and HHS can use the FFRDC with the permission of CMS, CAMH's primary sponsor.

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