update notes 11-8-18:

have updated the map with (hopefully safe/stable) technology and service offerings, but the chapters include more. Need guidance re: what to include/exclude.
Driven by unsustainable costs and mediocre health outcomes, the nation is moving toward new payment models that create incentives for improved care. Data and analytics have emerged as a critical part of the toolset that healthcare organizations need to adapt and thrive, and this handbook focuses on how to embed such tools in the context of an overarching population health effort.

This handbook aims to provide practical and flexible guidance for your organization’s journey toward population health management, with a specific focus on the analytics to support this effort. We believe—and have seen among our client partners—that when financial, clinical, analytic, and operational leaders work in an aligned way, they can succeed in achieving the promise of population health management: better care at lower costs, a stronger organization, and a healthier community.

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Introduction

This introduction provides context and definitions for population health management (PHM), outlines what PHM requires of organizations, and summarizes the main elements of our approach to achieving it. Because PHM is cross-cutting work that must be carried out in a coordinated way, this introduction also explains how leaders in various domains may use this handbook to guide collaboration for this transformational journey.

The emergence of population health

The U.S. spends more on healthcare than any other high-income nation—yet has a lower life expectancy and delivers worse health outcomes. Furthermore, healthcare costs continue to grow at an unsustainable rate for government and private businesses, creating significant pressure for change.

As a result of these pressures, the government has led an effort to drive the concept of value-based care, shifting the way they pay hospitals by moving away from incentives for volume (fee for service, or “FFS”) toward payment mechanisms that reward attention to quality and cost containment (fee for value, or “FFV”). The result? The burden of risk associated with managing the health of a population is increasingly shifting from payers to providers—prompting healthcare leaders to shift their focus from what is happening within their facilities to the patient’s experience across the continuum.

This shift is already reshaping the market. The U.S. Department of Health & Human Services (HHS) has set ambitious targets to tie Medicare fee-for-service payments to quality or value, with increasing percentages of those payments tied to alternative payment models (like bundles or Accountable Care Organizations (ACOs)). Many commercial payers and health systems have followed suit in pursuing these models. And while some healthcare organizations have moved aggressively—particularly those that dominate their markets or are associated with health plans—most currently bear a relatively small amount of financial risk associated with these new models.

The term “population health management” (PHM) is the common industry vernacular for the programs, departments, tools, and services that have sprung up in hospitals and health systems to manage this new mandate. For many organizations, population health has two distinct, but interrelated meanings:

- The efforts an organization makes to manage contractual requirements—these define the organization’s near-term priorities
- The long-term aim of population health, which is to improve the quality of care across the continuum, while bending the cost curve of providing that care

The focus of this book is on creating the data and analytics platform that underpins a successful population health initiative, with the goal of succeeding on near-term imperatives while laying the foundation for long-term transformation.
**Prerequisites for transformation**

Data alone isn’t sufficient to drive successful population health transformation. For example, the lack of a working governance structure can easily derail an effort, resulting in lost time and resources. We believe that organizational competencies in the following areas are prerequisites to leveraging data and analytics to drive improvements in quality and reductions in cost, and encourage you to consider and fill gaps in these areas from the outset.

**Governance**

PHM governance is not limited to the analytics effort, but is critical to its success. Organizations need effective leadership to manage competing priorities, reconcile PHM plans with overall strategic goals, and provide the resources and accountabilities to drive the work forward. Ensure you have a working governance body that can build engagement, alignment, and focus among leaders in both the inpatient and ambulatory settings as well as in financial, clinical, operational and analytic areas.

**Consistent improvement methodology**

Much of the focus of this book is on the specific types of analyses, tools, and staffing that an organization should invest in to build the analytic infrastructure for population health. But the fact is that organizations often surface great opportunities to advance population health efforts—only to fail to operationalize them. To help our partners avoid this common pitfall, we advocate adopting a single, common improvement methodology for the organization. Health Catalyst’s 7-Step Framework is one possible approach, but any sound, consistently used methodology will do. The goal is to create teams that can efficiently generate insights and innovation—and to foster a culture to ensure that improvements are reliably adopted and sustained.

**Change leadership**

Change leadership is the science and art of driving organizational change. Population health management, by design, is transforming the way that we provide care and requires significant attention to this competency. In our experience, even the best-laid plans can take far longer (or fail) because of lack of attention to the sheer challenge of moving an organizational culture.

To ensure your organization has these essentials in place to support your population health effort, consider the resources listed at right.
Introduction

This handbook as your guide

With a focus on building and optimizing investment in your analytics platform, this handbook aims to guide leaders on the transformational journey to PHM. It offers a framework: a set of considerations and observations to support your own thinking and planning. While many other PHM frameworks exist, they seem to create more confusion than clarity about the path forward. Here, we’ve aimed for a simple and pragmatic approach that can be tailored to your organization’s needs by emphasizing:

• How data and analytics can help light the way toward population health management, such that you are meeting short-term imperatives while building toward long-term aims.

• A broader set of programmatic considerations for the journey—categories of work that must carried out in a strategic and coordinated way to advance the goals of population health: improving quality and reducing costs for care across the continuum.

The programmatic considerations structure the framework and this handbook, with each major chapter exploring a different (but interrelated) category of work. Note that while PHM leadership and even analysts will find value in reading this book end-to-end, each chapter is geared toward a particular blend of audiences, as shown below.

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Focus</th>
<th>Primary audience</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data Transformation</td>
<td>Building the analytics infrastructure to support a successful PHM engagement</td>
<td>• PHM leadership&lt;br&gt;• Analytics leadership</td>
</tr>
<tr>
<td>Analytic Transformation</td>
<td>Investing in the analytics team and processes that will help identify and prioritize next steps</td>
<td>• PHM leadership&lt;br&gt;• Analytics leadership</td>
</tr>
<tr>
<td>Financial Transformation</td>
<td>Balancing fee-for-service and fee-for-value imperatives, the analytics that underpin these efforts</td>
<td>• PHM leadership&lt;br&gt;• Financial leadership</td>
</tr>
<tr>
<td>Care Transformation</td>
<td>Transforming care models to support value-based care, the analyses that can optimize this work</td>
<td>• PHM leadership&lt;br&gt;• Clinical leadership</td>
</tr>
</tbody>
</table>

In addressing these topics and questions, we emphasize their interrelatedness and interdependency. As you chart your course forward, your analysts, financial leaders, operational leaders, and clinical leaders must all come together to support a single organizational vision of population health management.

Growing toward PHM

Population health management requires organizations to evolve—and this takes time. How can you know if you’re moving forward?

Each chapter of this handbook begins with a list of near-and long-term “success signs.”

Look to these to orient yourself and gauge progress as your organization grows toward PHM.

What we see

These callouts provide observations, lessons, and tips based on our work with organizations who share your ambition for PHM.

Technology

These callouts list Health Catalyst data and analytics offerings relevant to the activity in the main text.

Services and resources

This space mentions resources you may find helpful as you undertake a particular activity.

What we see

These callouts provide observations, lessons, and tips based on our work with organizations who share your ambition for PHM.

Technology

These callouts list Health Catalyst data and analytics offerings relevant to the activity in the main text.

Services and resources

This space mentions resources you may find helpful as you undertake a particular activity.
Executive Summary

Leaders must strike a balance between striving for near-term success in existing contracts and building toward a long-term vision of population health. At the highest level, to create a high-functioning analytics organization to support PHM, you must 1) invest in infrastructure, 2) analyze and prioritize opportunities, and 3) take steps to begin transforming care and financial models. Keep the following in mind:

**Prerequisites**

Working governance is a prerequisite to successful transformation. PHM efforts are often hindered by competing priorities, poor fit with the organization’s overall strategic goals, and a lack of resources and accountability to drive the work forward. An effective PHM governance body—representing the inpatient and ambulatory settings, as well as finance, clinical, operational, and analytic domains—will help you avoid these pitfalls by supporting prioritization, focus, and accountability. A clear statement of vision, championed by the governance body, will help align the organization around key goals.

**Data Transformation**

Population health management is made possible by a strong analytic foundation. In addition to investing in tools, organizations should support staffing and processes needed to fully leverage these investments. Plan for the fact that eventually your PHM analytic efforts will require you to mature beyond the capabilities of out-of-the-box solutions and augment them with custom analyses, reports, and applications that give a window into your unique populations. Build your platform and team to support this work.

**Analytic Transformation**

This foundation gives you the means to identify opportunities to transform. One of the key roles that your analytics team will play in supporting PHM is identifying opportunities to improve quality and reduce costs. While data is essential, remember that it is not sufficient. Opportunities must be contextualized in broader organizational priorities, and interventions must be successfully implemented. This is where governance plays a key role, assigning accountability and monitoring progress. Note that this analysis is a continuous effort, allowing you to continuously surface new insights and opportunities.

Early PHM efforts should pave the way for organizational transformation. Too often, early PHM efforts are conducted as pilots, without much executive oversight or collaboration across relevant teams (financial, clinical, analytics, operational). It’s critical for functional leaders across all relevant areas to work together to not only identify, but implement, prioritized initiatives.

**Financial Transformation**

Finance will set the pace and tone for successfully balancing FFS and FFV initiatives. By design, fee-for-service and fee-for-value initiatives create competing incentives. Financial leaders, therefore, must guide the organization’s strategy regarding the amount of risk the organization can safely take and the pacing of the transition to fee-for-value. They will also work in conjunction with clinical and analytic leadership to model the impact of value-based efforts and identify a sustainable path forward.

**Care Transformation**

Clinical leaders must chart the course for care transformation efforts. There’s no one-size-fits all approach to care transformation. Clinical leadership must take the lead in not only choosing the most appropriate initiatives to drive value-based efforts, but in driving the tremendous change leadership effort required to shift the organization’s focus toward population health. Analytics can ease the burden of this transition by giving you a means to prioritize, monitor, and optimize your work.
Growing toward Population Health Management

a framework for transformation

To provide the highest quality, most appropriate, and most cost-effective care for patients, healthcare organizations must transform. This framework supports your growth toward PHM by providing:

- A practical set of programmatic considerations for the journey—categories of work to undertake in a strategic and coordinated way
- Suggestions for how data and analytics can help organizations meet short-term imperatives while building toward long-term aims

Data Transformation

PHM leadership lays groundwork for a high-functioning analytic platform

**KEY ACTIVITIES**

1. Prioritize data sources according to business needs, starting with claims data
2. Educate stakeholders about the benefits and limitations of your available data
3. Define supporting logic—like attribution—that will facilitate quality improvement efforts
4. Invest in the staffing to optimize your investment

Analytic Transformation

Analytics leadership builds a structure to identify and evaluate opportunities

**KEY ACTIVITIES**

1. Ensure a baseline understanding of existing requirements and organizational goals
2. Interview key stakeholders for organizational context
3. Assess available data to identify both early wins and potential areas of long-term focus
4. Synthesize and prioritize opportunities in line with overall strategic aims
5. Plan for ongoing evaluation and analysis

Health Catalyst Technology and Services

- Data Operating System (DOS)
- Data sources (150+), DOS Marts (11+)
- Atlas and Measures Manager
- Services to optimize data infrastructure: data acquisition consults, technical training, support for data enhancement (e.g., attribution, risk, and registries), data governance assessment and consulting
- Population Health Foundations Solution
- Patient Stratification
- PHM strategic consulting: evaluate current programs, infrastructure, contracts, and priorities—then devise a roadmap that includes advice on sequence, pace, and scope for your PHM journey
- Value-based care analytics consulting: support for analytics infrastructure design, planning, and implementation
- PHM opportunity analysis: data-driven analysis by service line, risk cohort, and contract
How do you measure SUCCESS?

Near term
- Meet contractual requirements in fee-for-value contracts
- Remain successful in fee-for-service business

Long term
- Better quality of care across the continuum
- Lower costs
- Stronger organization
- Healthier community

Financial Transformation
Financial leadership balances risks and helps set a sustainable course forward

KEY ACTIVITIES
1. Align your PHM effort with your broader financial plan
2. Look to your benchmark to help set expectations and plans
3. Make sure you’re getting paid for the value you’re providing
4. Pace utilization management efforts carefully
5. Increase your ability to understand the actual cost of care

Care Transformation
Clinical leadership identifies and implements appropriate changes in care delivery

KEY ACTIVITIES
1. Streamline your approach to quality measures
2. Optimize your care management program
3. Shore up your primary care infrastructure
4. Seek opportunities for inpatient transformation
5. Ensure patients are directed to—and can access—the most appropriate site of care
6. Develop a patient engagement strategy

- PMPM Analyzer
- HCC Insights
- Bundled Payments
- CORUS Suite: Activity-based Costing, Cost Insights
- Value-based financial consulting: ACO, bundled payment, and government payer strategic and operational support; CIN operational planning and implementation; consults to optimize billing and increase revenue capture
- Community Care
- Care Management Suite
- 50+ analytic accelerators in high-opportunity areas (readmissions, sepsis, COPD, joint replacement, labor & delivery, diabetes, etc.)
- Care management readiness assessment, strategic planning, and operational support
- Care redesign services; identify and close gaps in care, support quality improvement across the curriculum. manage change and build culture and leadership
Data Transformation

This chapter focuses on laying the groundwork for an analytics infrastructure that will support both near- and long-term population health priorities.

Who?

PHM governance, analytics leadership

These leaders have strategic and technical expertise to identify appropriate investments to bolster your analytics function.

What?

Invest in analytic infrastructure to support near- and long-term PHM goals

Data transformation refers to the tools, staff, and processes you’ll invest in to build an analytics platform to support PHM. An analytics platform is essential to PHM, as it supports the following work:

- **Data aggregation**: Organizations commonly begin by aggregating myriad claims data sources; advanced efforts may include additional sources like clinical, costing, and socioeconomic data.
- **Data enhancement**: Supplemental information (such as risk scores, attribution models, and patient matching capabilities) and advanced capabilities like machine learning can enhance the data and make it more actionable.
- **Data access**: Diverse use cases and users with varied skill sets require a portfolio of approaches to accessing information; this can include prebuilt applications, ad hoc queries and analysis, custom applications, and custom reports.

Critically, you also need to invest in the staff capable of mining this data, drawing insights, and presenting it optimally to improve care.

Health Catalyst’s Data Operating System (DOS)

Health Catalyst’s analytic and application platform is an example of a solution that provides the range of functionality described above: data aggregation, enhancement, and access.
Why?

PHM requires a cross-continuum view of your population and support for advanced data analytics

In the fee-for-service paradigm, healthcare systems had little incentive to look outside the four walls of their institution. Yet as organizations move toward fee-for-value, new payment models create incentives to think about populations over longer time-frames (90 days to a year) and require more sophisticated and comprehensive analyses, for example:

• Utilization. What kinds of services are your patients accessing within, across, and outside your system? For example, what is your MRI utilization in and out of network, and what drives it?

• Patient and population risk. What are your patients’ needs today—for all of their conditions and circumstances—and what are they likely to be next year? For example, what percentage of your population has prediabetes? What is the likelihood that these patients will need treatment for diabetes or DM complications? By when?

• Quality and the cost of quality. Are your patients receiving the most appropriate care at each point in the continuum—e.g., from hospital to skilled nursing facility to primary care—in the most cost-effective way?

These new use cases underscore the need for robust analytic solutions that provide access to different and broader data sets, allow for enhancements that make data more actionable, and support diverse user needs.

However, analytic solutions by themselves won’t deliver the outcomes you’re aiming for; you also need a working governance structure and capable teams to optimize these solutions. Because it takes time to build this technical and human resource infrastructure, we advocate early planning and investment here.

How?

Undertake key activities to make data available and leverage insights for improvement

The activities listed below are intended to kickstart the development of your analytic function. The following pages discuss these key activities.

KEY ACTIVITIES

1. Prioritize sources according to business needs, starting with claims data
2. Educate stakeholders about the benefits and limitations of your available data
3. Define supporting logic—like attribution—that will facilitate quality improvement efforts
4. Invest in the staffing to optimize your investment
1. Prioritize sources according to business needs, starting with claims data

As you begin an analytics effort, you’ll need to prioritize the data sources that you aggregate in the EDW. For population health efforts, we recommend that you begin with claims data. While claims data is limited in clinical depth, it’s essential for population health management (PHM) analyses because it provides a cross-continuum view of the care provided to patients managed in your risk-based contracts.

But which claims sources should you integrate first?

As a general rule, it’s best to first integrate claim sources that represent populations for which you’re at greatest risk, based on the size of the population or the terms and magnitude of risk.

You should also consider the quality of these data sources. Medicare files, for example, are standardized and are therefore relatively fast to load into the platform and access for analysis; this gives you the opportunity to identify quick wins. You may find, however, that other claims sources are not of similar quality. In this case, it may be wise to delay loading these sources until you can work with your payer to secure a more complete file.

High-quality claims data has these characteristics:

- **Comprehensive**
  - You have access to claims:
    - Of all members
    - For all services
    - Regardless of where the care was rendered

- **Complete**
  - You have the full claim, including:
    - All financials
    - A list of providers
    - The enrollment file

- **Optimally formatted**
  - You receive data in a format that reduces load times into the electronic data warehouse

- **Timely**
  - You receive files each month, at a minimum

It’s unfortunately common for payers to send files that fail to meet the standards outlined above. Low-quality files can significantly limit the analysis you’re able to do; in the worst cases, it can render the data unusable. Common issues include:

- Files that lack either member names or provider information
- Incomplete financials
- Incomprehensible file formats

For this reason, we recommend proactively discussing data quality with relevant payers as soon as possible. Ground the conversation in your common goals of improving quality and reducing costs for the at-risk population.
Data Transformation

2. Educate stakeholders about the benefits and limitations of available data

When launching a new data and analytics initiative, organizations often aren’t aware of the benefits and limitations of particular data sets. Because of this, they tend to ask too much of the data or don’t know what questions to ask; this leads to the kind of churn that wastes valuable time, resources, and executive attention. To sidestep these issues, set expectations with stakeholders from the start, making sure they know the capabilities of the data and the scope of the analysis possible.

To help set expectations, we suggest you share the information in the table below with your stakeholders.

<table>
<thead>
<tr>
<th>Benefits of claims data</th>
<th>Limitations of claims data</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Gives you a cross-cutting view of an at-risk population, providing a window into in- and out-of-network care</td>
<td>• Lacks some of the detail of clinical data (for example, lab payment data is available, but lab results are not)</td>
</tr>
<tr>
<td>• Provides visibility into utilization and volume, allowing for assessment of trends and variation across multiple care settings</td>
<td>• Has a lag time (typically at least three months)</td>
</tr>
<tr>
<td>• Offers insight into key areas of performance such as length of stay and payment for care by provider and setting</td>
<td>• Doesn’t provide information on true costs (only payments)</td>
</tr>
<tr>
<td></td>
<td>• Is only one factor used by CMS and payers to perform their calculations (including risk and PMPM), so can’t be used to replicate their calculations</td>
</tr>
</tbody>
</table>

These caveats shouldn’t undermine the value of claims data. Rather, the point your stakeholders should take away is that claims data is best used for directional guidance (versus, say, specifically matching a payer PMPM). Use your claims data to explore the care that a patient is receiving across the continuum and to identify trends and patterns that yield insight at the population level. For most organizations, this cross-continuum perspective represents a very meaningful step forward. The following chapters discuss specific types of claims data analysis you might pursue.

Note that this expectation-setting exercise—early discussion with stakeholders about the benefits and limitations of a particular data set—will be important for whatever sources you use. Sharing this context can prevent the team from becoming mired in extensive (and futile) validation efforts and allow you to move more quickly toward improvement work.

Services and resources

- Claims data guidance.
  If you have questions about the quality of your claims data files or the kinds of analysis possible with this data source, consider reaching out to Health Catalyst claims experts for advice.

What we see

The more sources you leverage, the more powerful your analysis.

While claims data is an essential starting point, part of the power of an EDW is the ability to aggregate data from multiple sources. Keep an eye out for opportunities to combine sources and pursue advanced use cases like these:

• Care management (clinical + claims data).
  Claims data provides insight into trends across a population, while clinical data offers actionable detail that is far more timely, which improves risk calculations and personalized care.

• Financial analysis (costing + claims data).
  Claims data allows you to analyze utilization; adding costing data allows you to see the profitability of services.
3. Define supporting logic—like attribution—that will facilitate quality improvement efforts

Beyond your source systems, there are many pieces of supplemental information that you’ll want to use to enhance your analysis. It’s worth considering these early on, because topics like risk and attribution are bound to be sticking points in conversations with clinicians about how to best use data to improve quality of care. We recommend starting these conversations early on to seek clinician buy-in and support for your organization’s approach to the following enhancements.

**Risk modeling**

Risk models use patient demographic and health information (such as diagnosis, procedures, encounters, age, etc.) to predict specific health outcomes. When selecting a model, it’s important to identify the associated outcome measure (e.g., utilization of services, 30-day readmissions, mortality, etc.); you want to ensure that the risk model has been designed to predict the specific outcome you’re interested in. It’s also important to understand the strengths, limitations, and purpose of different models. Below are some of the publicly available models and associated resources:

- **Charlson-Deyo**: This model evaluates 10-year survival rates for patients based on their age and the presence of key comorbid conditions. It can also be used to predict relative financial costs to the system, compared to a baseline. It uses diagnosis codes for a patient for the previous three years and provides an index score derived from comorbidity and age.

- **HHS-HCC**: HHS-HCC stands for Health & Human Services-Hierarchical Condition Categories. This model assesses a patient’s financial risk to the system, based on cumulative diagnosis codes and demographic factors. It looks at patient diagnoses in the previous year and generates a total score based on the HCC score, the HCC Groups score, and age and gender.

- **Elixhauser**: This model predicts in-hospital mortality and risk beyond 30 days of hospitalization. It uses a scoring system that accounts for diagnosis codes for 30 specific comorbidities.

Keeping in mind how you will use the data, consider whether there’s an available model that you’ll want to use as your system standard across populations or for subsets of your population.

**Provider attribution**

Attribution is the process of assigning physician accountability for patients in the at-risk population. This designation is absolutely critical for population health; an accountable physician is the best way to make sure that the patient you identify for intervention will actually receive it.

Health Catalyst uses the Dartmouth Patient Attribution Model as a starting point. (Learn more via the ACO Toolkit available at [tdi.dartmouth.edu](http://tdi.dartmouth.edu).) The model is based on the following:

- Attribution is based on an analysis of the patient’s claim data for the last two years.

- Primary care providers are given the highest priority, followed by medical specialists and surgical specialists.
• If the patient had at least one visit to a primary care provider, s/he will be assigned to a primary care provider. If the patient visited multiple primary care providers, s/he will be assigned to the one s/he visited the most.

• If the number of visits were equal, the patient will be assigned to the one with the greatest number of days between the first and the last visit.

• If the patient had only one visit with multiple primary care providers, s/he will be assigned to the one with the most recent visit.

Given the importance of this designation, the logic driving physician attribution is often a topic of considerable discussion (and debate). Some common points of consideration are presented in the table below.

<table>
<thead>
<tr>
<th>Considerations for Identifying a Provider Attribution Model</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Prospective versus Retrospective?</strong></td>
</tr>
<tr>
<td>Prospective attribution (as in the Dartmouth model) uses historical claims data to assign patients prior to a performance period. Advance knowledge of assigned patients can help clinicians manage and coordinate care, potentially affecting performance on cost and quality metrics.</td>
</tr>
<tr>
<td>Retrospective attribution assigns patients based on actual claims data from a specified previous period. Assigning patients retrospectively can encourage more comprehensive, fundamental practice transformation (as opposed to targeted improvement during a specific performance cycle.)</td>
</tr>
<tr>
<td><strong>Patient versus Episode?</strong></td>
</tr>
<tr>
<td>Patient-based attribution assigns each patient to a provider. This approach deems providers accountable for the entire spectrum of care.</td>
</tr>
<tr>
<td>Episode-based attribution assigns each episode to a provider. This approach deems providers accountable for discrete episodes of care.</td>
</tr>
<tr>
<td><strong>Single versus Multiple?</strong></td>
</tr>
<tr>
<td>Single attribution assigns the patient to a single provider.</td>
</tr>
<tr>
<td>Multiple attribution allocates the patient to more than one provider.</td>
</tr>
<tr>
<td><strong>Majority versus Plurality?</strong></td>
</tr>
<tr>
<td>Majority attribution assigns the patient to the provider receiving more than 50% of care or costs.</td>
</tr>
<tr>
<td>Plurality attribution assigns the patient to the provider with the largest proportion (most) of care or costs. This approach is better at capturing high-cost patients.</td>
</tr>
</tbody>
</table>

**Master data management**

A third consideration for supporting meaningful analysis is your approach to master data management. Your enterprise data warehouse gives you the ability to aggregate data from multiple data sources—but unless you can relate all of the data back to the patient it pertains to, you can’t do any real analysis, and it’s difficult to make meaningful, system-wide improvements in care.

Knowing this need will emerge sooner than later, plan from the beginning to invest in a master data management system or eMPI (enterprise master patient index) to crosswalk all of the various IDs your patient has acquired.
Data Transformation

What we see
Advanced users rely on custom analysis to supplement out-of-the-box applications and solutions.

Early in their PHM journey, many of our client partners use out-of-the-box analytic tools and point solutions. Clients with more advanced population health and analytics functions may use these applications as well—but they also go beyond them. Leveraging their analytic platform and analysts’ skills, they supplement those solutions with an array of custom analyses, reports, and even applications.

4. Invest in staffing to optimize your investment

As you invest in your platform, don’t overlook staffing. In our view, data stewards and data analysts are two must-have resources. Stewards will help you understand the ins and outs of your data sets, while analysts will help you drive insights. We go into more depth on these job descriptions below. In our experience, without these skillsets you’re likely to end up with a lot of data and very little insight.

Over time, you’ll want to build a much more sophisticated team that supports capabilities like machine learning, but this is the place to start.

Data stewards

The first necessary, and potentially new, role to add to the organization is data steward. A data steward is a person accountable for determining, describing, and enforcing the business rules and definitions for data in a particular domain.

In many organizations, PHM efforts will drive the first large-scale evaluation of claims data, and there’s usually not much existing in-house expertise on these data sets. This is a significant liability, since each claims data set represents a unique population and more than likely will have inconsistencies that limit the analysis and interpretation of the data. For this reason, it’s essential to assign a person (or persons) to start building and maintaining knowledge of these files. They’ll be the first to spot an inconsistency in a monthly file and to help think through nuances of the data set. These stewards don’t necessarily need a background in claims data to get started, but an understanding of healthcare data is important. While this is not a full-time role, it’s important enough to the success of your initiative to merit dedicating time.

You need similar accountability and expertise for each type of data, helping the organization establish a consistent set of definitions and business rules.
Data analysts

A second critical role is data analyst. Data analysts are responsible for exploring the data for opportunities to improve in the context of risk-based contracts. They'll likely begin working with claims data, but eventually their responsibilities will expand to include analysis using clinical and costing sources as well.

Early on, your data analysts will focus on helping your leaders identify organization-wide PHM priorities. Over time, however, your analysts can drill into specific chosen initiatives, supporting your improvement teams with more granular information. Even when working with out-of-the-box applications, your data analysts are invaluable resources who can:

- Conduct ad hoc analysis to decide where to deploy applications to start
- Drill beyond the information provided in the application to ascertain details relevant to a project
- Help draw insights across efforts
- Monitor progress and maintenance of improvement

Given the important and ongoing nature of this work, we advise organizations to create dedicated analyst positions to support the PHM effort. Your best data analysts will not only be able to make sense of the data, but will be true “data detectives” able to uncover the “why” behind what’s happening and connect those insights to broader strategic priorities. They’ll be people who can present findings clearly and concisely to senior organizational leaders, helping them translate data into strategic action.

What we see

Data analysts need a range of skills and attributes.

What should you look for as you staff the data analyst positions? The list below presents our view of what analysts need in order to make meaningful contributions to outcomes improvement:

- Technical skills: SQL, data modeling, visualization and reporting skills; the ability to work outside of vended solutions
- Analytic skills: the ability to explore the data, see connections, and draw out actionable insights
- Communication skills: the ability to present data insights in a clear and compelling way for various audiences
- Learning skills: the ability—and the ambition—to continually deepen and leverage an understanding of healthcare data, workflows, and the business as a whole

How do organizations find people with this complement of skills and attributes? At Health Catalyst, we don’t so much find them as we develop them, by providing them with the tools, processes, team relationships, and opportunities that allow them to contribute to—and in many ways, to shape—our shared goals. Your organization can do the same.

Services and resources

- **Sample job descriptions.** Health Catalyst can provide job descriptions, team charters, and other resources to help you acquire structures and skills to support PHM.
- **Analytic services.**
  - Consider working with Health Catalyst’s analytic engineers for help evaluating your analytics system—tools, people, skills, and structures—and planning a strategy to leverage it more effectively for PHM.
  - Health Catalyst analytic engineers can support your team in a variety of ways by providing expertise in data analysis, architecture, and visualization.
This chapter offers a systematic approach to gathering and evaluating information to guide your leadership as they prioritize population health initiatives.

**Who?**

**PHM governance, analytics leadership**

Pairing these leaders will help ensure that your PHM strategy is guided by the best available quantitative and qualitative information.

**What?**

**Identify principled starting points for your PHM journey**

Analytics transformation refers to the people, governance, and processes that you’ll put in place to maximize your investment in data and analytics. From the perspective of population health, specifically, opportunity identification is one of the analytic team’s earliest and most important contributions. Opportunity identification encompasses activities that allow you to:

- Refine your understanding of the current state. Reviews of existing contractual requirements and strategic priorities, coupled with conversations with stakeholders, are key.
- Leverage data to quantify opportunities for improvement. This helps to ensure efforts are focused in areas with a likely return.
- Check the fit between potential PHM opportunities and other organizational efforts and priorities.

As an output of this process, your governance team will be able to identify PHM priorities that are principled: grounded in current realities, informed by a careful accounting of likely ROI, and aligned with the overall strategy of the organization. This initial level-setting exercise also sets the stage for more targeted analyses in the future.

In addition to opportunity identification, the analytics team will play a critical role monitoring and providing detailed information to improve ongoing improvement initiatives.

**Why?**

**Early PHM efforts are critical—so your priorities should be informed by the best available information**

Your organization’s early PHM efforts are strategically important within the organization, for several reasons:

- You have dollars at risk in current contracts. Although the amount is probably modest compared to the magnitude of risk on other types of contracts, your organization’s performance here will be highly visible.
- You’ve made outlays for infrastructure investments. This sunk cost raises the stakes during this phase.
• You have a lot of stakeholders—and a lot of varying interests in play. PHM initiatives typically have a broad scope, so you need to proceed thoughtfully to lay the groundwork for initial involvement and continued support for the transformational work.

These pressures make it critically important to arrive at PHM priorities using a demonstrably sound and systematic process that gives your leaders the best available information and ensures that the organization is aligned around key initiatives and goals.

How?

Pursue key activities to analyze and prioritize opportunities

The list below presents recommended activities for your initial opportunity analysis. PHM leaders planning this work should note that data is necessary, but not sufficient, for a thorough analysis. Thus the activities below encompass a variety of inputs, from requirements of existing contracts, to cultural considerations, to available data on past performance. The following pages discuss each of these activities.

KEY ACTIVITIES

1. Ensure a baseline understanding of existing requirements and organizational goals
2. Interview key stakeholders for organizational context
3. Assess available data to identify early wins and potential areas of long-term focus
4. Synthesize and prioritize opportunities in line with overall strategic aims
5. Plan for ongoing evaluation and analysis

What we see

Organizations know where they want to go, but aren’t sure where to start.

The long-term goal of population health management is visible for all to see: improved quality and lower costs for populations of patients. However, the immediate steps are often far less clear. What efforts—and in what sequence—should your organization undertake now to move toward that goal?

Prioritizing near-term population health investments and initiatives in the context of fee-for-service is one of the most challenging tasks in your journey to population health management. Taking a systematic, comprehensive, data-informed approach—like the one outlined in this chapter—can help overcome this hurdle.

Where are your priorities?

Consider the potential value of improvement, the likely effort to achieve it, and the overall mix

As you analyze and select opportunities for focused improvement work, aim for a mix of initiatives: quick wins and long-term efforts, in a range of areas (clinical, operational, financial). This approach promotes broad engagement and helps identify areas where you have traction and momentum for further work.
1. Ensure a baseline understanding of existing requirements and organizational goals

To help establish an accurate picture of your organization’s current state, start by reviewing key internal documents and information. (It may be wise to identify a sub-team to gather and synthesize this information; you want a group that can evaluate the existing commitments that substantially define your current state.) Typical sources include:

- **The organization’s strategic plan.** What priorities have already been established for the organization? What are the scope and timing of various initiatives, and what resources have been—or will be—allocated to these efforts? When you begin to evaluate opportunity areas, you’ll want to ensure they’re aligned with existing priorities.

- **Existing contractual requirements.** Compile details such as the populations affected (including their size) and the terms of the arrangement with the payer (dates, structure of risk and reward, etc.).

- **Available benchmarking data.** Your organization may have acquired benchmarks from an external vendor, or may also receive this information from payers on a contract-by-contract basis.

- **Information on historical performance in risk-based contracts.** For organizations that have taken on risk in prior years, reviewing shortfalls is a common way to identify near-term opportunities.

- **Overall financial information for the organization.** This will inform decisions about your organization’s capacity to support risk—and thus how quickly your organization should pursue initiatives like utilization management. (Chapter 3 discusses the role of financial leadership in creating alignment between PHM efforts and the organization’s overall strategy for financial sustainability.)

- **The organizational chart.** Review to ensure that you engage all key stakeholders in opportunity analysis. You’ll want a broad range of informed perspectives on your current risks and improvement areas.

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**Technology**

As you assemble the details of risk-based contracts, determine how you will store, review, and evaluate relevant details. Consider:

- **Measures Manager.** Aggregate key details about your measures and contractual commitments to create transparency and inform prioritization efforts.

- **Touchstone.** Assess performance against available benchmarks. Tool comes pre-populated with benchmarks for CMS claims and several state all-payer claims databases. External benchmarks can be loaded.
2. Interview key stakeholders for organizational context

This activity allows your leadership team to assemble collective intelligence regarding your current state, on potential early wins, and on possible pitfalls for the PHM work ahead. Additionally, these interviews are a powerful way to engage key stakeholders, identify potential champions, and begin to build buy-in for future work. A suggested approach:

- Identify the types of information that you hope to gain from interviewees. (Sample categories and questions appear in the table below.) Note that while it’s helpful to have a framework to guide conversations, sometimes the best insights are those that are least anticipated. Be flexible and follow up to explore interviewees’ perspectives.

- Create a list of the various stakeholders you want to interview. As a starting point, consider people from each of the functional areas represented by your PHM governance function. Seek a balance of leadership and operational perspectives. As you reach out to stakeholders, ask if there are others who are knowledgeable on important topics; expect your initial list of participants to expand.

As you begin the interviews, remember that in addition to gathering insider views on your current state, you’re also collecting valuable historical perspectives. Most organizations already have some degree of experience with PHM initiatives. In this case, it’s helpful to make inquiries that will help you understand which tools or processes have been effective for driving organizational change and how data has been used to support these efforts.

### Organizational Context

- **Governance and Leadership:** Is there a governance structure? Are there clear lines of authority within the group and the organization?
- **Culture:** How will the organizational culture support or hinder the transition to value-based care?
- **Analytics:** How has data been most effectively used to drive change in the past (centralized, decentralized)?
- **Physician Landscape:** What structures (employment, physician organization) exist to drive physician accountability? Is there a working incentive structure in place today? Which physicians are best positioned to serve as champions?
- **Staffing/Org. Structure:** What staff are available to support PHM efforts and what are their backgrounds? Are they dedicated?

### Financial Transformation

- **Financial Variability:** Is the balance sheet strong enough to support risk-based contracts (sufficient cash, profitability, liquidity)? What is the organization’s appetite for risk?
- **Market Factors:** How aggressively is the market moving toward value-based purchasing? What are competitors doing?
- **Historical Performance:** Looking at past attempts, what has gone well? What could be improved?
- **Efforts to Date:** How do existing PHM efforts fit into the organization’s broader strategy for financial sustainability?

### Care Transformation

- **Quality Measures:** What is the scope and financial impact of these requirements? Is there a mechanism for streamlining requirements and driving clinician accountability?
- **Care Management:** What’s the state of the care management program? How is it structured and which patient populations does it focus on?
- **Primary Care:** How does primary care strategy support PHM goals?
- **Inpatient Care:** Have you focused on specific outcomes (e.g., LOS, readmissions) or made efforts to drive systematic improvement in specific patient safety or clinical processes (COPD, CHF)? Have these succeeded?
- **Specialty Care:** Are out-of-network referrals a concern? Has the organization led any efforts to increase in-network access?
- **Care Continuum:** Is there an effective strategy for ensuring appropriate site-of-care use (such as ED avoidance, urgent care strategy, and post-acute care usage)?
- **Patient Engagement:** What tools, resources, and approaches are being used to support patient engagement efforts?
At least initially, the quickest way to query your data may be through the kind of ad hoc analysis described on this page.

However, you may prioritize deployment of one or more analytic applications to allow you to evaluate high-priority areas in more depth. Consider:

- **PMPM Analyzer.** Assess global trends and volumes in at-risk contracts.

- **Bundled Payments.** Evaluate areas of spend in episodic arrangements.

- **HCC Insights.** Identify patients overdue for visits and areas with high proportions of unspecified coding.

- **MACRA Insights.** Review performance on key quality measures to identify improvement opportunities.

- **Patient Stratification.** Create stratified lists of patients requiring intervention based on modifiable variables.

- **PatientRegistry Suite.** Quickly review performance based upon nationally and locally defined population specifications.

### Services and resources

- **Opportunity analysis guidance.** Health Catalyst experts have an efficient process for analyzing your data for insights into improvement opportunities.

### Technology

**3. Assess available data to identify early wins and potential areas of long-term focus**

Data is the third and final key input to your opportunity analysis, and as mentioned in the previous chapter, we recommend that you use claims data as a starting point. Claims data fulfills the most foundational requirement for this phase of your journey: the ability to review where your population receives services in and out of your network.

The goal of this activity is to engage with the data to look for risks and opportunities that will likely shape your initial PHM strategy. Recommended best practices are described below.

- **Review overall performance in the context of your risk-based contracts.** You will want to look at performance against key performance indicators (KPIs) such as 30-day readmissions rate, ED visits, admissions per 1000, and post-acute care spending. You’ll also want to look at trends and areas of high variation. Consider condition-specific opportunities (discussed in more depth in the care transformation chapter). Where possible, compare to available benchmarks.

- **Scan for highly actionable opportunities that may serve as starting points.** Typically, the areas listed below are highly actionable and a good focus for early efforts, as they produce patient-level lists that are within the control of your health system to impact. Deploying full applications can allow for deeper analyses in any of these areas, but short-term ad hoc analyses can help identify places to start while you lay the broader infrastructure for that work.

  - **Performance on quality measures.** Identify measures with the greatest dollars attached and clear opportunities to improve performance.

  - **Identification of high-risk, high-cost patients.** Determine the high-risk, high-cost patients in your existing contracts; identify your “frequent fliers.”

  - **Coding accuracy.** Review the data for overuse of general codes and to identify patients who, based on last year’s data, indicate a level of risk that may require a visit this year.

  - **Leakage of services out of network.** This is another popular early area of focus; however, in our experience it’s often less immediately actionable than the initiatives listed above. Still, it’s worth doing a quick review of services provided out of network to see if there are any areas that emerge as good candidates for immediate focus.

As you conduct this activity, beware of “analysis paralysis”—the tendency to hold up decision-making and progress until you have perfect data or comprehensive, detailed answers to all your questions. Instead, aim to get enough information for directionally correct decisions.

Even without the complete data picture, you’ll likely learn enough to begin tackling quick-win opportunities and building valuable expertise.
4. Synthesize and prioritize opportunities in line with overall strategic aims

The previous activities—the document review, stakeholder interviews, and data analysis—generate a great deal of information. The work of this activity is to synthesize this information to determine next-step priorities. In doing this, the team will likely consider a range of emergent opportunity areas:

• Quick wins are opportunities that are highly actionable and relevant to near-term contracts. Because they often help your organization succeed in both FFS and FFV contracts, it’s relatively easy to secure buy-in and support to move forward.

• Bigger opportunities for your organization, by contrast, are likely those that will take more time and effort to bring to fruition. For example, an area of high variation in the inpatient setting may represent a huge opportunity to reduce costs and improve quality, but may not lead to a “quick win.” It could require significant time to align financial incentives, build buy-in, and design interventions to drive improvement.

Your PHM governance committee should conduct or oversee the prioritization process, with significant input from financial and clinical leadership. The goal is to emerge with a set of immediate priorities and, ideally, a sense of some mid- or long-term goals. At this stage, we also suggest developing a dashboard with KPIs relevant to the success of your overall PHM initiative.

5. Plan for ongoing evaluation and analysis

The opportunity analysis described in this chapter represents a starting point for the transition to population health management. But it’s not a one-time activity. Opportunity analysis must be an ongoing, iterative function—a central part of a thoughtful, data-driven approach to PHM.

How often should you revisit your analysis? It varies. Much of the initial level-setting work will only need occasional updating so you can:

• Stay apprised of any changes to organizational priorities
• Update key contractual information as often as needed
• Augment stakeholder interviews to flesh out details related to specific PHM initiatives

By contrast, you’ll want to do data analysis on a more regular basis. For this, we suggest assembling a dedicated team. Key responsibilities of this team include:

• Incorporating findings from new and updated sources to determine if they substantively impact current analyses
• Creating a pipeline of new vetted ideas for future initiatives
• Providing additional levels of detail to support current efforts
• Assessing the effectiveness and return on ongoing efforts (e.g., asking are they proceeding as planned; do they require redirection; are they so successful that they merit expansion?)

What we see

It’s important to pursue a range of opportunities—and ensure that insights lead to action.

One common pitfall is for organizations to skew their opportunity prioritization toward one kind of opportunity (all easy wins, all clinical efforts, etc). We’d suggest a mixed portfolio that includes some quick wins and some efforts with a long-term focus. Make sure that they span key areas (financial, clinical and operational). This gives everyone a chance to participate and allows you to see where you gain traction.

A second common pitfall: operationalizing findings. We sometimes see that once opportunities have been prioritized, very little is done to pursue them; often no one is made accountable for the work or provided the appropriate resources.

Your governance team can anticipate and help avoid these issues by pursuing a systematic approach to opportunity analysis and by ensuring an owner and process for driving forward prioritized initiatives.
Who?

PHM governance, financial leadership

Financial leaders have a key role to play in guiding the organization's strategy regarding the amount of risk the organization can safely take and the pacing of the transition to fee-for-value. Working with PHM governance, they can help ensure a sustainable path forward.

What?

From the start, balance near- and long-term PHM goals

Financial transformation refers to the adjustments your organization makes to respond to new payment models. It’s not a standalone effort; financial and care transformation are inextricably linked, as your main levers to drive down costs are likely in the hands of your clinical leaders via care model changes.

Because of this link, we recommend that financial leadership partner with other leaders to craft the organization's approach and pacing for PHM initiatives. Chief contributions include:

- Ensuring that the organization's aspirations for population health map to broader considerations regarding financial sustainability, leveraging data to make informed decisions about the organization's strategic priorities and next steps.
- Providing crucial guidance to your board members, executive leadership, and operational leaders, helping them make sense of the competing incentives presented by fee-for-service and fee-for-value and empowering them to navigate these pressures successfully.

Why?

PHM represents a major shift in the way you do business —you need financial expertise to safely navigate it

New payment models intentionally establish a competing set of incentives to the existing fee-for-service model. While your fee-for-value contracts encourage you to drive down utilization, for example, your fee-for-service contracts do the opposite.

To navigate in this split world, your organization requires guidance and support from financial leadership. Specifically, your financial team can:

- Set the pace for accepting certain kinds of risk and provide expertise in setting such contracts up for success
The economics of value-based care should influence your PHM strategy

This chart* outlines the major drivers of an organization’s financial success in a capitated contract. For many organizations, contracted utilization rates are already set, leaving them with the three levers to the right—utilization, cash received, and cost to deliver care—to modulate their performance. This chapter offers strategies for moving the dial in each of these areas, so that your organization can move forward in value-based contracts while remaining financially viable in a predominately fee-for-service environment.

1. **Align your PHM effort with your broader financial plans**

An important initial activity is to evaluate how your PHM strategy rolls up to the organization’s broader plans for financial sustainability.

While risk-based contracts aren’t likely to comprise a substantial part of your patient population or revenue—at least not yet—they represent an opportunity to build competencies in contracting models that will likely be dominant in the future. Important roles for financial leadership in this process include:

- **Advising the organization on the level of financial risk and magnitude of losses you can reasonably sustain, as well as the pacing of transition to fee for value.** It’s possible (perhaps even likely) that the organization will lose money as it takes on risk in the first several years. Organizations that are not otherwise financially healthy may not be able to support this kind of risk. Financial leaders should advise on the amount of risk to take and the appropriate pacing as it aligns with overall organizational aims—and once the organization decides on an appropriate pace and path to fee-for-value, financial leaders can help ensure the organization stays on course.

- **Helping to align internal incentives and focus leaders on key priorities as they balance the competing requirements of fee-for-service and fee-for-value.** Because you’ll have both FFV and FFS incentives in play at the same time in the organization, leaders and physicians may find themselves in a difficult position and unsure how to prioritize efforts. Financial leaders should take steps to reconcile misaligned incentives and provide clarity on new goals, particularly during efforts to prioritize potential opportunities.

- **Ensuring that pilot projects are a bridge to broader strategic aims, not isolated academic efforts.** The value of taking financial risk is to learn and build new competencies as an organization. If these efforts are conducted as walled-off pilots disconnected from broader strategic oversight, there’s a risk that this effort will be wasted and that the organization may lose ground during a critical transition period.

- **Partnering with clinical leadership to model the impact of care transformation efforts.** Finance leadership will play an essential role in partnering with clinical leadership to assess the financial implications of their efforts and overall effectiveness on the transition to fee-for-value.

- **Approving and releasing funds to drive forward critical efforts.** Recognizing that PHM efforts often require an initial investment, financial leaders are likely to be called upon to approve funding.
2. Look to your benchmark to help set expectations and plans

Early in their PHM efforts, organizations often enter into risk-based contracts without a good sense of their likelihood of success. This is understandable; after all, the ability to predict performance in risk-based arrangements is one of the competencies your organization will need to build over time. But in the meantime, what can you do today to understand your position?

We recommend that organizations review their starting point—their benchmark with CMS, or their established PMPM with commercial insurers—to project their performance. The truth is, regardless of your organization’s efforts in the context of these contracts, your chances correlate to this starting point: they’re favorable if your benchmark is high, but there’s probably little you can do to beat the odds if it’s low. Data from the Health Affairs review of CMS Accountable Care Organization (ACO) performance (see the chart below left) underscores the link between this starting point and the likelihood of success.

Does this mean that your organization’s efforts to deliver on these contracts don’t matter? No; as you can see in the chart, organizations do succeed at each benchmark level. Also note that, as shown in the second chart, organizational performance significantly improves over time. This suggests that regardless of where you start today, you can expect to do better as you gain experience. Ultimately the value of reviewing your benchmark consists of the following benefits:

- It **suggest the lengths you may need to go** to succeed in current contracts.

- It **helps set near-term performance expectations**, so leaders can plan for likely outcomes. (Note, too, that it’s important for leadership to acknowledge unfavorable odds from the onset, as it’s potentially demoralizing for your team to work towards what may feel like an impossible goal.)

- It **can inform your contract decisions going forward**, as you seek to negotiate terms and make arrangements that improve your chance of success.

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What we see
Right now, most organizations don’t have a good way to set PMPM targets.

As they come to understand the influence of the initial benchmark on their chance of success in risk-based contracts, organizations frequently ask us: how can we use claims data to help us set the PMPM at a more informed level?

Claims data is a great tool for reviewing historical performance against a target—but not for predicting PMPM in future contracts. Over time, access to good costing data will help you with hospital rates, but for many of our partners, this access is years away.

So what to do in the meantime? We advise leaning heavily on your payer contracting team for their expertise—and also simply comparing PMPM to help you choose one contract versus another. Use the claims data you do have to recalibrate areas like risk scores and quality measures where possible.

3. Make sure you’re getting paid for the value you’re providing

Although much of the initial work in your PHM journey requires you to manage tension between fee-for-service and fee-for-value incentives, not all of it does. In fact, focused work in some areas can pay off in both contexts. We recommend that you actively pursue these “win-wins,” which essentially boil down to a simple concept: ensure that you’re getting paid for the value you provide.

In the context of your financial plan, “getting paid for the value you provide” will likely lead you to work on your revenue cycle. With rising deductibles and co-insurance rates, initiatives that improve your cash position take on increasing importance for reasons entirely separate from value-based care. Moreover, it continues to be essential to an organization’s financial success, regardless of population health efforts.

In this section, we discuss focusing on two areas—coding and quality measure performance—as ways to augment revenue cycle improvement work in the fee-for-value environment.

Coding

Coding is a longstanding focus for most organizations, and it becomes even more critical in the context of government-driven, risk-based contracts. Here, a population’s risk score—determined by billing codes—is a proxy for the intensity of care delivered and, therefore, for payment required. Even small adjustments in CMS’s assessment of a population’s overall risk score can have meaningful impact on an organization’s payment.

Of course, medical overcoding is fraud. However, accurate coding is essential for fair reimbursement and for safe and targeted patient care. In reviews of their data, many organizations find they’re not representing the care they’re providing and the true risk of the populations they serve. Two areas to check your organization’s coding accuracy:

- Are there complex patients who haven’t been seen in the last year, but should be? Patients covered by risk-based programs must be recoded annually. A review of codes to see what patients you’d expect to see with significant chronic conditions is a good way to ensure you get the right patients in for wellness visits.

- Are there areas where you consistently see general codes used, rather than more specific—and more accurate—diagnosis codes? This is a common issue in many organizations, usually caused by education gaps or the burden of learning and assigning these codes. (Choosing a general code at the top of a list may simply be the easiest thing for a clinician to do at the end of the day.) Identifying areas where this “overgeneralization” is common in your data allows you to target follow-up for improvement.
Quality measures

Quality reporting requirements are not the typical domain of the finance team. However, given the significant dollars attached to these measures in your at-risk contracts—not to mention the significant administrative burden of the requirements—you can’t simply push these requirements onto your clinicians and expect them to comply. Rather, your financial and PHM leaders need to be involved to give this area the attention it deserves. Specifically, they should prioritize efforts to improve performance against key measures.

A few tips:

- Identify the measures tied to the largest contracts (largest in terms of population and financial risk). Work here can have a significant impact.

- Look for measures that occur frequently across contracts. Even if their definitions are slightly different, it’s likely that improvement work focused on the measure level will raise your performance across contracts.

- Think about how you can narrow your vast web of requirements to more manageable, transparent, and “incentive-ready” standards for your practices and clinicians. Focusing on the vital few may yield more improvement than trying to drive improvements everywhere, all at once.

Technology

- HCC Insights. Identify patients overdue for visits and areas with high proportions of unspecified coding.

- Measures Manager. Review performance on key quality measures to identify improvement opportunities.
**4. Pace utilization management efforts carefully**

Bringing cash in the door requires discipline, but is not a fundamentally new competency. By contrast, managing utilization—an effort central to success in value-based contracts—does represent a new skill. As your organization develops this skill via experiments with value-based care, you’ll need to take care to pace your “experiential learning” in a strategic way. Moving too aggressively to reduce utilization can have serious financial consequences.

The tools you’ll use to manage utilization are largely care transformation tools, as utilization management is inextricably tied to quality and to providing good care for patients. However, financial leadership also plays an important role in helping choose focus areas for these efforts. Improvement work requires a tremendous amount of effort, and you can only tackle so many initiatives at a time; let your financial leadership help make sure you choose the right ones. Some questions to consider:

- What are the greatest opportunities to improve utilization in the context of existing contracts? Analytic tools can get you started.
- How will driving improvements in these contracts impact your overall book of business? To understand this, you’ll need to consider the unique terrain of your contracts and payer mix. In cases where you believe the impact will likely to be significant, it’s worth spending some time modeling out the effects of improvement efforts in some detail.

There’s no one-size-fits-all approach to choosing opportunities to improve utilization; certainly every organization needs to review opportunities in light of its contracts. Still, it may be helpful to consider these common starting points for improving utilization:

- **Reducing utilization in areas where there are existing fee-for-service penalties**, like all-cause patient harm or readmissions, and therefore aligned incentives. (Note that improving quality—doing the right thing for patients—is usually the most efficient way to reduce utilization.)
- **Better service to high-risk, high need populations in at-risk contracts**, typically via care management.
- **Better management of “site-of-care” costs associated with suboptimal use of high-cost settings in your system**, e.g., skilled nursing facilities versus home health.
- **Monitoring the appropriateness of high-cost specialty care**, e.g., surgery versus conservative management.

Efforts to reduce leakage, or services provided to an ACO beneficiary outside the network, are also common. For example, if your organization can provide these services at a lower cost, it helps the organization reduce utilization. Further, increasing volume to in-network facilities also benefits the organization in the context of fee-for-service contracts, making it a popular area of focus.
5. Increase your ability to understand the actual cost of care

People without a financial background often use the terms “payment” and “cost” synonymously. As financial professionals know, the difference between the two is meaningful:

- Payment—reflected in claims data—indicates the amount that an insurer pays your organization for a provided service.
- Cost refers to what your organization spends (on labor, supplies, etc.) to provide the service.

While payment information is a necessary and helpful starting point for PHM efforts, it has limitations. Specifically, if your organization intends to proactively renegotiate its benchmarks based on an understanding of margin in specific service areas, you’ll require more detail than claims data can provide.

You’ll need to think about investing in a more accurate costing system, such as activity-based costing. An accurate costing system can help you contain costs inside—and outside—value-based contracts, and so is a rational investment regardless of the pace of your PHM strategy. The scenario in the box below illustrates the impact of your costing system on your ability to understand and manage your costs.

An investment in costing data of a quality sufficient to support decision-making takes time; in some cases, it requires years. For this reason, if your organization is seriously considering a trajectory toward value-based care, we advise you to begin planning now to lay the groundwork to acquire costing data for deeper analysis.

**Why costing matters: a scenario from primary care**

- **Patient A: Toddler with an ear infection.** Scheduled for “possible ear infection”; physician removed earwax, identified infection, and prescribed antibiotics. Total visit time was 10 minutes; physician billed a 99214 visit and 69210 for ear-wax removal.

- **Patient B: Teenager with ongoing headaches.** Scheduled for “headaches”; physician performed an extensive evaluation and spoke with parents for 20 minutes. Total visit time was 30 minutes; physician billed a 99215 visit.

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<th>Comparison</th>
<th>RCC</th>
<th>RVU</th>
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<td>$95</td>
<td>$96</td>
<td>$90</td>
</tr>
<tr>
<td>toddler with ear infection</td>
<td>$99</td>
<td>$99</td>
<td>$63</td>
</tr>
<tr>
<td>teen with headaches</td>
<td>$90</td>
<td>$92</td>
<td>$117</td>
</tr>
<tr>
<td>Variance</td>
<td>$9</td>
<td>$8</td>
<td>$(54)</td>
</tr>
<tr>
<td>% Variance</td>
<td>10%</td>
<td>9%</td>
<td>-46%</td>
</tr>
</tbody>
</table>

The average cost for these patients is similar for all three methodologies. Only activity-based costing (ABC) accurately highlights the variation between the resources required to care for each patient.

In this scenario, the potential impact on a million visits each year amounts to a $54 million variance. The takeaway? To make the right strategic decisions about improving care and lowering costs, you need data that surfaces the real cost of care delivery.

**Technology**

**CORUS Suite (Clinical Operational Resource Utilization System).**

A next generation cost management system consisting of:

- Activity-Based Costing
- Cost Insights
- In development: Activity-Based Budgeting

**What we see**

Your costing methodology matters.

Today most healthcare organizations use costing systems that rely on RCC and RVU-based methodologies (ratio-of-cost-to-charges and relative value units). Such systems are relatively easy to implement, but they have a significant limitation: they don’t give insight into the variation in resources used by each patient. By subsuming fixed and sunk costs into the equation, it’s easy to make the wrong inferences about the economics of your business.

For organizations serious about gaining access to costing data that informs better decision-making, we recommend an activity-based costing (ABC) approach. This method tracks expenses at a level of detail that allows you to differentiate the costs of providing the same services to different patients. While implementing ABC takes more time, it better serves your long-term goals for PHM.
Care Transformation

This chapter discusses the role of your clinical leadership in effecting care transformation. It highlights key programmatic considerations for population health and the analytic tools that can help optimize these efforts.

Growing toward PHM
In the near term, success means...

• Clinical and operational leaders have determined how to best manage the highest risk, highest cost groups.

• The organization has a working quality measure and care management strategy, optimized by analytics.

In the long term, success means...

• The organization has moved beyond the high cost, high risk group to consider sustainable population-wide strategies for improving care. This might include an increasing focus on the inpatient setting as well as partnerships with public health.

Who?
PHM governance, clinical leadership

To navigate the transition from fee-for-service to fee-for-value—a transition grounded in providing higher quality, safer, and more effective care—your organization requires guidance and support from clinical leadership.

What?
Create a strategy for care transformation

Key responsibilities for your clinical leadership include:

• Identifying clinically relevant and appropriate opportunities to ensure organizations are delivering the right care, at the right time, at the right site of care—with an emphasis on the highest-cost, highest-need patient cohorts and an eye towards improving quality and efficiency for the entire population being managed.

• Playing a visible role supporting physicians as they transition to value-based care, which often represents a significant cultural shift and drives new focus on primary care, quality improvement, safety, and even technology. Value-based care affords opportunities to provide higher quality, more targeted, and more appropriate patient care—and thus is ultimately aligned with physicians’ desire to do well by their patients—but clinical leadership must help minimize disruption and manage challenges during the transition.

• Ensuring that the organization’s early investments build toward broader strategic goals, with a specific focus on leveraging analytic tools to assess areas of priority, monitor progress, optimize clinician efforts, and assess effectiveness.

• Creating alignment across inpatient, ambulatory, post-acute, and virtual initiatives.

Your clinical leaders will need support for this work. They’ll need help from your PHM governance committee to help chart the course forward, and they’ll need to partner closely with financial leaders and data analysts to model and evaluate the impact of pursuing various paths. The work of care transformation will also require technology support; the sidebars in the following pages highlight relevant data and analytic tools.

Why?
PHM requires significant care delivery model changes

New value-based care models create incentives for hospitals and health systems to provider safer, better care. Besides figuring out where to start—a topic covered in the Analytic Transformation chapter—one of the main near-term challenges is to stay focused as you respond to newer incentives. Organizations often struggle to move forward as they contend with early turbulence, build skills, and adjust to new structures and ways of working.
Your clinical leaders play a unique and important role in meeting this challenge. Their perspective and focus can ensure that early PHM efforts are selected and managed strategically, as investments that lay the groundwork for larger shifts to come.

As new care delivery models are adopted—which may require hiring new team members, developing new partnerships, and even potentially shuttering existing facilities—your clinical leaders can help lead this significant cultural change. And finally, since many clinicians are overwhelmed by their existing responsibilities under fee-for-service, your clinical leadership will play an essential role as advocate for providers’ needs. Leadership can ensure new strategic initiatives are balanced with existing mandates.

How?

Use these activities to focus efforts on critical areas

We encourage clinical leaders to consider the tactics below.

KEY ACTIVITIES

1. Streamline your approach to quality measures
2. Optimize your care management program
3. Shore up your primary care infrastructure
4. Seek opportunities for inpatient transformation
5. Ensure patients are directed to—and can access—the most appropriate site of care
6. Develop a patient engagement strategy

What we see

Care transformation isn’t one-size-fits-all.

Although there are some popular and promising strategies to consider as you plan care delivery improvement (this chapter presents a few), each needs to be evaluated in the context of your organization’s circumstances.

Factors that should influence your decisions include the needs of your patient population (and specifically the patient population at risk), your areas of clinical excellence, and how fast you expect to make the transition to value-based care. Cultural factors, too, are important: how ready are providers and patients for a particular change in care delivery?

Given this complexity, clinical leadership is invaluable in evaluating and executing strategies.

Leveraging analytics for population health: the right care, in the right place, at the right time

A successful population health strategy will serve patients across the care continuum—connecting settings and services, enabling your organization to know and predict the needs of populations, and engaging patients and families to collaborate with providers to manage their health.
1. Streamline your approach to quality measures

As you begin to plan your care transformation strategy, consider first looking at your approach to quality measures. While the government and payers select these measures with the best of intentions (millions of dollars have gone into research to support their development), the administrative burden of meeting and tracking them can be significant, forcing clinicians to make trade-offs with other tasks. Furthermore, your various contracts may have different definitions of the same quality metric (e.g., the definition of an elevated HbA1c or the required frequency of BP screening and recording) or may have specific quality metrics that aren’t seen in other contracts (for example, the completion of approved pediatric screening tools are often identified only in Medicaid contracting). This variation adds complexity to providers’ efforts to keep up with standards.

As discussed in the previous chapter (Financial Transformation), we recommend identifying a streamlined set of quality measures for clinicians to focus on. Rather than being responsible for all of the quality measures, all of the time, clinicians can be directed to a few carefully selected performance targets. While financial leaders can provide perspective on the measures associated with the greatest financial risk, clinical leaders must provide perspective on clinical appropriateness.

Once you’ve identified a streamlined set of measures, the next step is to effectively translate it into better practice at the point of care. The goal is to reduce the administrative burden of quality measures to the point where clinicians feel that these measures help them provide better care, rather than interfere with it. Here, analytics tools can be hugely helpful, by allowing you to answer questions such as these:

- At the practice or clinical level, are there particular measures consistently below thresholds?
- Are there particular patients with consistent measure gaps?

Insight into these questions can be powerful, helping clinicians and team members concentrate their efforts on the patients most in need of clinically-appropriate support.

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Technology

- **Community Care.** Review population health data to identify opportunities for improvement in tracking, monitoring, and meeting the needs of high-risk patients.
- **MACRA Measures & Insights.** Analysis and monitoring of MACRA-MIPS measures and more.
- **Measures Manager.** Aggregate key details about your measure and contractual commitments to create transparency and inform priorities.

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Services and resources

Care transformation guidance.

- **Analytic services:** Health Catalyst experts can help you identify the most promising areas for care transformation improvement work.
- **Subject-matter expertise:** Health Catalyst can support your organization in all of the activities described in this chapter, by providing for example:
  - Guidance for optimizing your care management program (activity 2, page 35)
  - Advice for improving care across the continuum, from shoring up your primary care infrastructure (activity 3, page 36), to pursuing inpatient care improvements (activity 4, page 37), to identifying ways to increase patient access and engagement (activities 5-6, pages 38-39).
2. Optimize your care management program

Most hospitals and health systems have care management programs that focus on the small group of patients with very complex care needs. The rationale for this focus—improve quality for this cohort to drive down costs—is reasonable today and will become even more critical under value-based contracts. The problem? Many organizations struggle to understand whether their resource-intensive care management programs are effective or how to improve them. For this reason, we encourage organizations to focus on optimizing their care management programs for measurable improvement and success.

The Health Catalyst handbook, *A Guidebook for Implementing Care Management*, covers this topic in some depth. At a high level, our advice is that organizations should consider the following:

- **Governance and organizational structure.** Do you have a working governance structure in place? Are the right people involved in setting strategic direction and providing implementation guidance to the program? You’ll need not only key program operational leaders, but representatives from nursing, clinical care, IT, operations, and finance.

- **Patient stratification.** Are you engaging the populations where you can have the most impact? This will vary depending on the focus of the program. For example, the target population of a complex care management program embedded in primary care is quite different from the patients you’d choose for short-term care transitional care management or end-stage renal disease care management. Regardless of focus, it’s important to make sure you have tools to find the right patients.

- **Program processes and design.** Is your care management program optimized to achieve your overall population health goals? Key processes to evaluate and improve include: assignment, assessment and care planning, coordination, and engagement.

- **Care team development.** Do you have the right people supporting the care team? In addition to care managers, do you have access to pharmacists, social workers, and community resource specialists who can be called upon to address specific issues?

A helpful starting point is to make sure you’re leveraging analytics to get the right patients into these programs (those who will be most helped by the intervention). Analytics can also allow you to monitor your performance in key metrics over time.

A final note: program leaders should also be aware that CMS is now providing reimbursement for some care management services through its new Chronic Care Management (CCM) Services codes. This will help organizations foot the bill for investments in these programs.

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**Services and resources**
- **Guidebook for Implementing Care Management.** Guidance for developing or improving care management programs to meet population health management goals.

**Technology**
- **Care Management Suite.** Support for the care management cycle.
  - **Patient Stratification.** Patient population identification and stratification for enrollment in care management.
  - **Care Team Insights.** Performance reporting for care management.
3. Shore up your primary care infrastructure

While many organizations tackle early forays into risk-based contracts with care management, these programs aren’t a sustainable way to manage entire populations as you take on more risk. For this reason, we recommend that organizations bolster their primary care infrastructure. Investment here can not only support your high-risk, high-cost patients, but will also serve the rest of your population as part of the organization’s long-term strategy for PHM. The goal? To make primary care the site that a patient engages with most regularly and views as the coordinating hub of their healthcare world.

To understand why primary care is important for your long-term PHM strategy, consider this analogy: your primary care infrastructure is like a bookshelf. Through specific primary care improvement projects—increasing patient access, adopting a more team-based approach, providing more patient-centered care, and so on—you reinforce that shelf to support a wide array of items (in this case, new initiatives). Initially, your primary care infrastructure is likely to support your focus on care management and quality measures. Down the road, you may expand your efforts to focus on initiatives relevant to your population, like mental health services or end-of-life goal setting.

Some early decisions to weigh as part of an effort to shore up primary care fundamentals:

- **How should you structure your primary care improvement effort?**
  Does it make sense to invest in a Patient-Centered Medical Home certification—which can be costly, but has benefits under MACRA—or develop some alternative model?

- **Do you have the right ratio of primary care providers to specialists?**
  This will depend on the needs of your community and the organization’s overarching strategic plan; findings may require the organization to adjust imbalances through affiliation or employment.

- **How will you handle provider attribution?** We discussed the importance of attribution in the section on Organizational Investments. Patients without an attributed provider are at risk, not only from a financial perspective (in the context of current contracts) but clinically as well, because they’re not reaping the benefits of an enhanced primary care infrastructure.

- **What tools could facilitate your focus on primary care improvement?** Registries are a particularly valuable analytic tool for identifying populations that you may want to engage with in any variety of campaigns to support your PHM efforts.

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**Technology**

- **Population Builder.** Builds standard population definitions for use in quality improvement, research, and reporting registries.

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**What we see**

CMS mechanisms can amplify your efforts.

Some CMS reimbursement mechanisms create opportunities that may support improvement work related to population health. For example, CMS fully compensates annual wellness visits. They can be conducted by nurse practitioners and are a great time to address care planning and advanced directives, ensure patients are compliant with quality requirements, have an attributed provider, and are properly coded.
4. Seek opportunities for inpatient transformation

While many organizations focus on lower-cost sites of care (primary care and other outpatient settings and services) in their initial PHM efforts, we recommend that organizations also include strategies to transform care in the inpatient setting. This setting is your most costly site of care, provides high clinical value for patients, and is not going away anytime soon.

Initiating strategic change in the inpatient setting, however, can be tricky. Currently organizations face competing financial incentives that make it difficult to pursue deep transformation. To navigate this complexity while pursuing improvements for patients, it’s wise to start with areas that represent “win-wins” in both the fee-for-service and fee-for-value contexts. Possible areas to consider:

- **Readmissions reductions**: Readmissions reflect poor quality care, are difficult for patients, and impact the bottom line in every payment model you operate within. Working to reduce them is a popular, patient-centered, and rewarding early focus for improvement.

- **Patient safety improvements**: Like readmissions, patient safety also aligns with incentives in both the fee-for-service and fee-for-value contexts. More importantly, it’s the right thing to do for patients. This makes patient safety a great, low-risk place to focus early care transformation efforts. For example, hospital-acquired conditions are penalized under fee-for-service but also very costly and thus disincentivized under fee-for-value.

Over the long term and as the organization gains skills and experience, you’ll want to pursue additional transformation in inpatient care. In addition to general campaigns focused on reducing ED and LOS utilization, initiatives targeting these populations are common and may afford opportunities for improvement across both inpatient and outpatient settings:

- COPD
- Sepsis
- End-stage renal disease
- Stroke
- Disabled / dual eligible patients
- Heart failure, coronary artery disease
- Diabetes mellitus
- Depression
- Palliative care

These inpatient populations all represent groups with high risk, and commonly very high cost. The goal of initiatives targeting these populations is to identify and reduce inappropriate utilization. Doing so would be no small gain; according to recent research published in Harvard Business Review, clinical waste is estimated to account for approximately 14% of total US healthcare spending.*

To identify your most promising focus, we suggest you use data to look for variation; variation (even in billing data) often signals a lack of standard clinical processes or an inappropriate use of care. In our experience, some of the best opportunities to drive down cost can be found in this way.

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5. Ensure patients are directed to—and can access—the most appropriate site of care

As you work to optimize the care that you provide in different settings, you should also think about whether your patients are seeking care at the most appropriate setting for their circumstances.

One of the most common areas to focus, initially, is post-acute care. A 2013 study by the Institute of Medicine found that variation in Medicare spending would fall by 73% if we eliminated variation in the post-acute sector alone.* A major challenge is that post-acute care is administered in a wide array of settings (skilled nursing, outpatient and inpatient rehab, and home health), often without clear guidelines as to their use despite widely varying costs between them.

Research shows that directing patients to the right site is the most important lever for reducing variation (as opposed to, for example, working with high-cost sites to reduce their costs).** To investigate your post-acute care spending, you can easily query your claims data to see the various sites of care, in and out of network, where your patients are receiving services. If you see what looks like disproportionate usage of skilled nursing facilities (SNFs) and rehab facilities, you might consider creating protocols or decision support rules around appropriate use. Another helpful point for comparison is CMS’s Medicare Spend Per Beneficiary (MSPB) benchmark, which can give you a sense of how your spending compares to this national average.

Urgent care is another common area of focus. An effective strategy here can improve the patient experience and help reduce inappropriate ED utilization.

As you develop your site-of-care strategy, keep in mind that patient access is a key consideration. If, for example, you determine that more patients should receive care via home health, are those providers available? Similarly, if you determine that primary care needs to be better utilized, do these practices have convenient hours of operation, timely available appointments, short wait times, and so on? These are important considerations because without adequate access to the preferred site of care, your patients will seek care where it’s more readily available—usually the emergency department.

Here again, analytics can provide valuable support. It can reveal usage patterns that may inform changes in operating hours and also may shed light on ways to optimize resources and reduce bottlenecks in your practices.

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6. Develop a patient engagement strategy

As hospitals and health systems take on increasing risk in value-based contracts, they need to create a portfolio of less resource-intensive strategies that reach the broader population in their care. A patient engagement strategy—one that inspires patients to be more active in preserving and improving their own health—is a logical and promising addition to your organization’s PHM portfolio.

We acknowledge that developing a patient engagement strategy presents challenges. First, although patient engagement is much talked about, there aren’t many large-scale successes to emulate in the healthcare delivery sector. Most organizations have taken relatively small steps in patient engagement initiatives, at least outside the context of care management programs.

Another challenge is that effective patient engagement requires a significant shift in thinking, as demonstrated in fields like public health. Traditionally, healthcare organizations have relied on face-time with providers as the main means of engaging patients. This approach is difficult to scale and requires a high degree of patient activation. Research in the public health domain has demonstrated that the best ways to engage patients are typically systematic, not encounter-based. For example, raising taxes on smoking and banning it in public spaces have had far more impact at a population level than asking every smoker to personally manage their tobacco use.

Our advice for organizations seeking to transform care via patient engagement? Be open to innovative approaches—and let data and analytics inform your decisions. While there’s a variety of new technology that will be worth exploring, we believe that the most promising interventions are collaborations between health systems, public health, and the community. Analytics will help you target patient populations as a focus for such interventions.

Services and resources

Growing toward PHM in an uncertain landscape

This handbook aims to guide you on your organization's journey to population health management. As you weigh the considerations and suggestions offered, keep the following in mind.

Take the first step.
You won’t have all the information you want, but you’ll have enough to begin.

Beware of analysis paralysis as you contemplate next steps toward population health management. Evaluate your opportunities as your data allows, bring your best facts and perspectives to the table—then pick something and get started. Your organization will build skills and capacity through experience.

Foster collaboration.
PHM overlaps traditional organizational boundaries.

Because population health is a cross-cutting effort, the work efforts described in this handbook will ultimately flow together. Your goal, then, must be to undertake them in a strategic and collaborative way—not in silos—while purposefully pursuing alignment across care settings and across clinical, operational, analytic, and financial domains.

Look ahead.
Ensure that today’s efforts lay the groundwork for long-term success.

The reality is that none of us knows what PHM will look like in our markets or in the country in 18 months, never mind in five years. What we can see clearly is our long-term goal of reducing costs and improving quality. Because of this, it’s critical to invest in the staff and tools to support many different use cases which will support your organization’s changing needs.