Population health management: Enhancing the value chain
Population health management value chain (PHM) - Understanding the PHM value chain:

Total population health management (TPHM) is an overarching strategy used by health plans and provider organizations to improve processes and outcomes, as well as reduce costs. The sense of urgency around population health management has been accelerated by both the rapid movement to value based payments as well as the enactment of the Medicare Access and CHIP Reauthorization Act (MACRA). Clinical leadership across disparate health organizations must develop strategies that coordinate care across diverse populations by communicating and engaging members and providers to enhance health status. This requires incorporating a significant array of TPHM capabilities into care coordination to strengthen risk identification and engage participants in beneficial interventional programs. A best-in-class approach to TPHM includes optimizing clinical care coordination management, utilizing healthcare analytics, leveraging a care management platform and improving process management. Doing so would result in improved health outcomes and reduced operational costs across multi-product lines.

Health plan leadership must understand the spectrum of challenges across the population health management (PHM) value chain in order to build a quality-focused, cost effective program that is scalable, sustainable and ultimately achieves desired outcomes. This requires a data-driven approach to the development, management and assessment of the Population Health Management value chain and tracking outcomes that validate the success of the program.
The four capability pillars of an effective TPHM approach for health plans and provider organizations are:

- Knowing customers, including disabled or injured workers, disability managers and workers’ compensation (WC) adjusters
- Engaging patients to drive behavioral changes that improve their health status and encourage returning to work
- Involving and aligning providers to take a holistic approach to clinical and occupational status improvement
- Measuring processes and outcomes to identify and avoid adverse clinical or financial event risks, and provide actionable data to proactively manage the TPHM process

The following chart illustrates techniques for approaching these four pillars that healthcare organizations can utilize to facilitate TPHM strategies to support effective engagement and care coordination:

**Enabling Total Population Health Management**

- **Know your customer**
  - Dynamic population health stratification framework
  - Customer segmentation with access to one of largest sets of consumer data bases in US
  - Direct B to C marketing
  - Semantic technology to bridge SQL and non SQL data

- **Engage members to drive behavioral change**
  - Global clinical services footprint: telephonic and back office
  - CareRadius® platform, CareAdvisesm and CareAffiliate®
  - Customer Experience and Healthcare Academies

- **Measure process and outcomes**
  - End-to-end Star rating support
  - End-to-end HCC RAF support
  - HEDIS support
  - Informatics and TPHM dashboarding support

- **Involve and align providers**
  - CareAffiliate®
  - Network management support
  - Provider quality assessments
  - ACO support
Health plan leadership must engage the appropriate analytics resources to identify and determine a value proposition prior to initiating a PHM program.

Based on the inquiries noted in the above chart, the key questions when considering a value proposition include:

1. Is the identified membership illness burden significant enough to benefit from a population health management program?

2. Are existing engagement capabilities sufficient to drive participation from a large enough cohort of the population?

3. Will enough members participate in the program to achieve an effective net participation rate?

The “Ideal” World

- If only you knew ..........
  - Are the right members engaged to drive savings this year?
  - Are both today’s risks and tomorrow’s risks appropriately engaged to achieve and sustain below market trend rates?
  - Are members becoming more receptive to the population health management program?
  - Which members are most likely to engage and sustain behavioral change?
  - Which nurse will most likely be successful with a new patient?
  - Which UM review requests are likely to be the most labor intensive?
  - What gaps can be closed on which members to improve HEDIS or STAR measures?

- Or could measure ..........
  - Productivity at the nurse level adjusted for number of comorbid conditions, English as a second language, and risk score
  - The expected engagements versus actual engagement rates by group
  - The outcomes and potential ROI of participants versus non-participants using a control group approach

If only you knew

Or could measure
4. Based on the percentage of management spending and distribution of annual claim dollars, can the right members be identified to participate in the appropriate programs and interventions?

5. Will the identified members participate and engage in programs long enough to make behavioral changes that achieve improved health status and reduce costs?

6. Are clinical and lifestyle gaps identified early, and can they be closed?

7. Can health improvements be tracked using identifiable and credible biometric data?

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### Biometric Outcomes

One of the primary goals of any PHM program is to improve the clinical health of its members. The changes in the health of most members are best captured by comparing biometric data prior to program participation and at regular intervals thereafter.

**Observations**

- The mean systolic blood pressure of participants has decreased from 132 mm to 126 mm.
- The percentage of members within the recommended range has increased from 40% to 56%.
8. Is utilization positively impacted based on a hierarchy of cost containment results; e.g. office visits and medication adherence increasing with a concomitant decrease in ER use and hospital admissions?

9. Based on its maturity, is the program producing a credible ROI?

Population Health Management Value Chain

- **Can the group benefit from PHM?**
  - Is the group’s illness burden significant enough to benefit from a population health management program?
  - Is the group’s propensity to engage sufficient to drive the needed levels of participation?
- **Are the right members engaged?**
  - Are enough members participating in the program? (Net participation rate)
  - Are the right members participating in the right program? (Percentage of spend under management and distribution of participation by annual claim dollars)
  - Are members engaged in the programs long enough to make behavioral changes?
- **Is the program successful?**
  - Are clinical and lifestyle gaps being closed?
  - Is the group getting healthier? (Biometric data)
  - Is there a positive impact on utilization? (Office visits and RX up, ER and Admits down)
  - Is the program producing a reasonable ROI given the maturity level of the program?

Achieving success and roadmap

Planning and implementing population health management strategies requires innovative approaches that create a market differentiation, enhance clinical outcomes and decrease costs. Each health plan will have a unique roadmap to address differences in geography, provider practices, population illness burden and other factors. Design thinking approaches may be critical when creating this program. More information on this topic can be found in the white paper *A design thinking approach to care and performance for the Chief Medical Officer*. 

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In order to answer the necessary questions and apply design thinking techniques when crafting a population health management strategy, the following areas require analytics capabilities:

1. **Data acquisition and aggregation**

A population health analytics strategy begins by understanding data management. It is important to combine inputs from traditional data sources such as clinical coding with claims data from commercial and government payers, as well as lab and pharmacy data. In addition, newer data sets such as EMRs, wearable devices, and vital sign monitoring should also be examined. EHRs, clinically integrated network information, digital assessments and inputs will be essential for a broad understanding of PHM member characteristics and areas for interventions. It is also of value to consider the use of natural language processing, robotics and machine learning as better ways to mine data for use in effective analysis of the individual members and clinical population traits.

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**Future Trends in Population Health Management...**

- **Total population health management**: The regulatory environment post-ACA requires a different philosophical approach in all areas of the health care market. Plans that can adapt quickly by employing advanced analytics and machine learning to address the following trends will be better prepared for long-run success.

- **Health trackers/wearables**: Multiple health trackers exist on the market today which can monitor and record the user’s physical activity, sleep patterns, calorie consumption, heart rate, etc. These devices have tremendous potential to improve member care.

- **Patient-centered care**: As patients begin to shop for health care in the same way they’d shop for most other services (i.e., research on the internet), health plans will need to improve member satisfaction scores and engage with members outside of the traditional CM framework.

- **Increased data demands**: Inefficiencies in data management persist throughout the health care industry. Developing systems which provide reliable and timely data—a single source of truth—will be critical to optimization efforts.

- **ICD-10 Integration**: The switch from ICD-9 to ICD-10 increased the number of codes from 13K to 68K. How to leverage this more detailed information is an open question.

- **Data security**: Member privacy is a top concern. HIPAA violations can negatively effect an organization.
PHM requires aggregated data accessible by a wide domain of users – including practitioners. It is critical to make data actionable in a PHM setting as clinical management requires coordination by the health plan, care managers, practitioners and those involved in family and community clinical and behavioral support. The data can also be used to help the members support team know their members, not just their patients. This strategy means developing a better understanding of the member’s psychosocial behavior, as well as their preferences for the medium, tone and regularity of communication.

...and how Robotics can help address those trends

- Allow plans to manage the care of many more members with fewer labor hours than traditional models. A robotics-based approach is particularly well-suited to addressing the trends below.

- Analyze health tracker data in real time and leveraging the stream of information for numerous purposes such as tracking intervention efficacy or developing personalized treatment plans.

- Monitor social media accounts, send text messages, and adapt to member responses to serve as front-line member support and care management to allow nurses and other support personnel to spend their time on more complex cases, improving the member experience.

- Manage large quantities of data easily, less expensively and more efficiently by reducing opportunities for human error.

- Identify new patterns and insights using the additional information available through more detailed codes, with a fraction of the effort required in traditional analytics.

- Encryption methods can be more advanced, leading to more secure data and reduced security risks.
Extracting the most value out of data and acting upon it

**Actionable data**

Develop multi-level dashboard to link financial performance and drive proactive decision by incorporating leading KPI indicators

1. **Target drivers**
   - High level financial performance
     - Projected & YTD performance and target
     - Reconcilable to P&L
     - Control ranges (guardrails)

2. **Target sub-drivers**
   - Increased actionability and visibility
     - Clear linkage to drivers
     - Non-financial and financial metrics
     - Comparison to historical trends
     - Defined benchmarks & guardrails

3. **KPIs**
   - Leading and lagging indicators
     - Established correlation to drivers
     - Benchmarked where possible
     - Drill down analysis precepts

**Driving strategic goals**

Develop a performance management framework to leverage data, align strategic goals, and drive accountability

**TARGET**
- Set targets based on business needs and benchmarks
- Identify owners responsible for performance

**REPORT**
- Reporting on performance to targets
- Transparency into ownership to increase accountability

**FORUMS**
- Regular reviews of performance
- Determine actions required with clear ownership and timelines

**EXECUTION**
- Owners drive actions to address gaps
- Track accountability for execution and impact realization

Legal and regulatory compliance of data privacy, security, clinical risk management and institutional quality scoring all require incorporating oversight into data acquisition. The use of integrated displays or dashboards can help facilitate create visualizations of the acquired data that effectively organizes the results and helps coordinate organizational quality and cost strategies. It is increasingly important to have integrated public health, care system and disease registry data available at points of care in order to deliver the highest quality, evidence-based medicine.
2. Identification and stratification

Identification and stratification of clinical and financial risks in PHM is different than traditional predictive analytics. Rather than developing a population or individual risk score based on financial models or claims analysis, PHM assesses patient motivation to participate and comply with interventional programs, and tracks point of care updates to manage gaps in care or clinical management best practices.

How Predictive Analysis and Targeting works

Predictive analytics techniques can uncover root causes of risk and member engagement

**Behavioral/Risk Model**

\[
\text{Member Behavior} = f(\text{Multiple Predictors})
\]

- Member data
- Claims data
- Non-health data
- Engagement in DM/CM programs

**Member Segmentation**

- High financial/health risk – high propensity to engage
- Medium financial/health risk – high propensity to engage
- Low financial/health risk – Low propensity to engage

**Program Design**

- Prioritize members by propensity to engage for program targeting
- Monitor performance using real-time feedback

Health Risk Assessment + Financial Risk Assessment
Identification and Stratification of Members

Although it would be ideal if everyone targeted for care management programs participated, the reality is not everyone is willing to participate. Calculating the likelihood of each member to participate assures optimal utilization of clinical resources. From the group’s perspective, monitoring the aggregate score over time serves as an index to evaluate changes in the group’s readiness to participate.

Observations
- There is a significant overlap between those diagnosed with a condition and those likely to participate. The goal is to get everyone ready to participate in their care in some manner.
- The group’s Likelihood to Participate Index continues to increase over time, indicating the acceptance of care management programs are becoming part of the overall culture.

3. Engagement
Traditionally member engagement targets interventions based on predictive financial risk scoring. This doesn’t measure the effectiveness of the engagement process. Newer digital or “smart” engagements require an in-depth understanding of the benefits of engaging with clients and identifying potential improvements for clinical and financial outcomes. This approach requires new metrics for both initiating and tracking the engagement:
The engagement of members is relies on effective identification and stratification, with a strong focus on what motivates members. Therefore, the success of population health management depends on accurately identifying patients at high risk for poor health outcomes as well as preventable, costly health events. However, risk stratification approaches typically focuses on limited clinical markers. A Commonwealth Fund–supported study explored whether considering a patient’s self-management skills and confidence might help health care delivery systems pinpoint additional risks. A patient’s activation score, or self-management skill level, can help predict future risks for developing a chronic disease and using expensive, avoidable medical services. Growing evidence suggests that it is possible to increase activation levels and help patients become more skilled in managing their health. By stratifying populations by patient activation scores, health care delivery systems can identify and help those patients with limited self-management skills in time to prevent...
poor outcomes and avoidable treatments. When working with patients with low activation levels, health care providers should recommend small steps to achieve behavioral changes since too much information or too many changes at once may be overwhelming.¹

4. Care coordination
Coordinating care between appropriately engaged participants with clinical teams composed of health plan care managers, provider resources and community support professionals is the foundation for success in PHM. The best approach is having the right individuals participating in care management based on clinical factors, as well as the impact on total spend and trend.

Percentage of Spend under Telephonic Management

Care management and wellness programs need to have the right people under management to produce positive financial outcomes and avoid using critical coaching/nursing time that could be better spent elsewhere. The closest proxy to do so is by having a percentage of total healthcare spend under management.

Observations
- All programs are gaining momentum.
- The percentage of spend under management in the most recent quarter is 24%. This exceeds the target of 20% established to assure a strong likelihood that programs generate a positive financial outcome.

An overarching objective is preventing low acuity members reaching higher levels of clinical risk. It is also important for care management leaders to direct case managers to individuals carrying a high degree of financial risk. Higher risk individuals require clinical management.
using the highest level of professional resources in order to reduce costs while enhancing outcomes.

Engagement is also needed at the practitioner level. One of the most important elements of a population health analytics strategy is embedding analytics at the point of care in clinician workflows. Clinicians are already faced with too much information; presenting them with yet another report will not be effective. Clinicians should be provided with additional information presented in their existing workflow, and a tool that can help support clinical decisions.²

**Program Objective: Intervene for High-Cost Patients**

Typical care management interventions are target members based on their current risk.

Observations:
- As annual medical costs increase, patients should be increasingly enrolled in case management and related programs.
- Employers expect are that all high dollar members will be managed. Practically speaking, that is not going to happen.
- Acute issues occur and not all high-dollar claimants require management, for instance the majority of spending for hemophilia patients is prescriptions.
With a focus at the practitioner level, there are a number of opportunities to improve management and prevention of chronic disease:

- Align incentives through carefully designed provider payment reforms.
- Encourage increased coordination, continuity of care, and care management.
- Transition from an acute care crisis model to one focused on prevention, early detection, and managing diseases.
- Embrace care coordination to improve the delivery of chronic and acute care, reduce errors and wasteful spending, and lessen disparities in care delivery and health outcomes.

Empower and motivate people to prevent, detect and manage chronic diseases proactively. Most of the decisions that affect health take place outside the medical system.

Engage people more directly in their overall health and well-being, and addressing health literacy, socioeconomic issues and other barriers to better health are critically important.

Integrate the primary care provider into care management processes, including behavioral health.

Improve coordination between the traditional medical care system, public health, social services, and community resources.

5. Reporting: Measuring population health ROI, utilization and clinical outcomes

There has been a great deal of discussion in regards to determining ROI in care management programs. A unique but credible statistic, actuarial, and clinical approach to ROI is required to assess the cost benefit value of a PHM program. Fundamental shifts in the healthcare market structure have introduced new payment models such as value-based reimbursements, in which risk-bearing organizations assume greater financial risk from a predefined population. However, such undertakings require significant capabilities and resources to achieve a reasonable ROI.
Currently, there are myriad challenges throughout the PHM value chain including population identification in:

- Consumer-driven marketplaces or directories
- Health assessments
- The risk stratification/program continuum
- Operational measures
- Clinical outcomes

Many risk-bearing organizations struggle with one or a combination of these areas, adversely impacting their financial and operational performance. Additionally, a continuing major concern of healthcare CEOs, CMOs and CFOs is the financial viability of their organizations.

Compounding this, the advent of emerging regulations and mandates such as CMS provider directory regulations, wellness program management and quality scores have created additional challenges across the PHM value chain. This further underscores the need for effective and innovative solutions to address each challenge and ultimately improve member health, risk scores, utilization and savings.
ROI determinations in PHM require an innovative analysis model. A high level-overview of such an assessment is noted to the right.

**Conclusion**

As healthcare transitions from volume to value, population health management will become even more critical. Understanding the key components of its value chain will enable more robust planning and a focus on maximizing value. By maximizing the use of PHM data, significant improvements in clinical outcomes and cost management can occur.

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### Approach to Determining ROI for Programs

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<tr>
<td>1. Define the duration of study period – e.g. Analyze CM program engagement efforts between Jan – June of this year</td>
<td>2. Identify factors to determine control group match – similar demographics, disease history and HCC risk score</td>
<td>3. Program Cost – Pre-enrollment costs – Calls, nurses etc.</td>
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<td>2. Test group definition – invited for CM program during the study period and enrolled</td>
<td>3. Assign weights to each factor</td>
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<td>3. Compute “Match score” and pick the best match for each test group member</td>
<td>3. Program Savings – Difference-in-differences of PMPM healthcare cost – Pre and Post enrollment in CM program</td>
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**Output**

- Eligibility criteria for test and control groups
- Valid comparison group identified for each member in test group
- ROI based on savings in PMPM healthcare cost
References


2. [https://blog.caradigm.com/2015/10/four-steps-to-make-population-health-analytics-actionable](https://blog.caradigm.com/2015/10/four-steps-to-make-population-health-analytics-actionable)
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