

## Maturing Analytics for Population Health Management

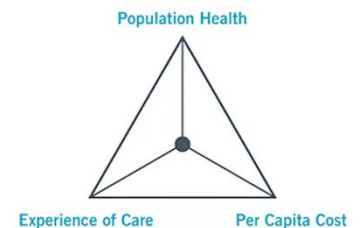
**Building the tools for effective population health management is key to improving outcomes while bending the cost curve, and maturing analytic capability is a means to that end.**

This is the first in a series of articles that will introduce an analytic capability and framework for translating health care data into actionable insights for population health management. Many healthcare organizations struggle to transform available data into viable solutions that improve patient care, while lowering cost of care at the same time. However, the growing emphasis on value-based healthcare has created the imperative for maturing analytics and unlocking insights needed to effectively manage population health and improve individual patient outcomes.

### What Has Changed?

It's now been 15 years since the Institute for Healthcare Improvement (IHI) in Cambridge, Massachusetts introduced the Triple Aim framework. The IHI initiated healthcare reforms in 2007 with the triple aim to improve patient experience and overall population health, and - - at the same time -- reduce health care costs. The Triple Aim framework also served to highlight the unintended consequences of cost-cutting and the importance of factors such as the quality of the care that would be provided, specifically related to the special needs of vulnerable patients. The aspiration to balance costs, quality and patient experience continues today as part of industry-wide efforts to manage population health.

The IHI Triple Aim



Over the last 15 years, there has been constant change and reform in the healthcare industry. Fee for service models of reimbursement (and an associated focus on unit costs) have since been complemented by the addition of value-based payment models.

## What is "Value Based Care"?

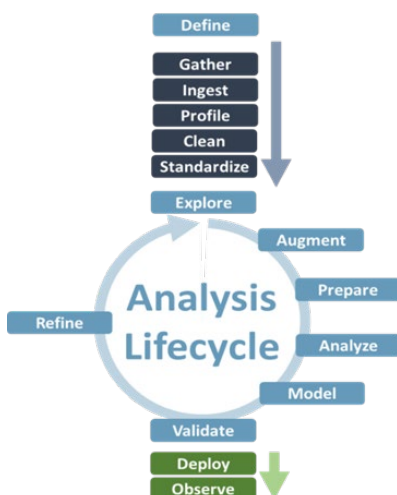
- ➔ Value-based Care (VBC) is a health care delivery model under which providers – hospitals, labs, physicians and others – are paid based on the health outcomes of their patients and the quality of services rendered.
- ➔ Under a value-based contract, providers share in the financial risk for an assigned population along with the health insurer or payer.
- ➔ In addition to negotiated payments, providers can earn incentives for achieving high-quality, efficient care.
- ➔ VBC differs from the traditional fee-for-service model where providers are paid separately for each medical service. Even though providing quality care is the goal under both models, it is the difference in how providers are paid, paired with the way patient care is managed, that establishes the opportunity for health improvement and savings.
- ➔ Team collaboration and data assembled across the health care system is key to VBC success. The traditional health care system is geared toward taking care of people after they are sick. VBC's aim is to improve the health care experience, the health of individuals and populations and to reduce the cost of care. To do this, VBC moves beyond "sick care" and adopts a proactive, team-oriented and data-driven approach to keeping people healthy.

Models of patient care now encompassing assessment of health risk, care pathways, outcomes, and quality. Patients participate with their physicians to choose and prioritize among options for their care. Population health managers talk in terms of the patient journey, points of origin, post-acute care transitions and overall efficiency of care delivery.

Even after years of constant change and reform, the essential creative tension between the three healthcare aims has continued to evolve. The daily challenges of population health managers have seemingly become more complex. On top of it, there is an increasing focus on making effective use of data to not only inform the design of clinical programs and services, but also guide the development of affordability initiatives that will reduce costs for consumers and improve health care performance and outcomes. In this sense, the Triple Aim has driven changes in the way data is utilized by the industry – and the way that data needs to be organized to inform decision making across a broad set of clinical topics.

A day in the life of a population health manager might include the following set of issues, all of which depend on supporting data and analysis:

- ✓ Prioritize among proposed population health initiatives to recommend the level of time and resources that should be invested. The manager will want to examine data, including assessments of health risk (past, present, expected), measures of cost, and focused measures of quality of care for a population cohort of interest.
- ✓ Quantify the performance of health management programs and interventions.
- ✓ Evaluate the level of achievement vs targeted outcomes based on new economic drivers related to managing the overall (population level) cost of care and related shifts in utilization.
- ✓ Develop value-based care and contracting opportunities, including data showing expected costs and quality of care outcomes based on a set of analytics that enable prospective evaluation of provider and health plan performance.



For those working to support population health managers with data and analysis, the challenge is that traditional data management processes and data structures aren't designed to support the analysis that is urgently needed by the population health managers.

**Health care organizations need to mature their analytics (both technology and processes) in ways that establish capability to predict and ultimately manage the total cost and quality of care for the populations they serve.**

## What is Now Required?

Population health management is highly dependent on accessing and analyzing a wide array of health care data to holistically map the health care journey for individuals and/or select patient populations. Having a comprehensive data (analytic) platform in place is an important first step toward that end as it encompasses the overall structure, architecture, and data management for efficient and effective consolidation and preparation of data for analysis. However, there is more effort required to evolve analytic maturity aimed at generating insights to assess, manage and predict health care cost and outcomes.

Some organizations are rethinking everything – from the composition of the team that needs to be involved in data management; the data infrastructure; the way that data is modeled, structured, and organized; the analytic capabilities that need to be developed, and even the design of the organization itself. Although any one of these undertakings is by itself a large work effort, there is also a critical need to ensure that the data environment is secure and that there are robust processes in place to protect the organization’s data and information assets. These forward-looking organizations understand that analytic capability to support population health initiatives depends upon a complementary set of technical.

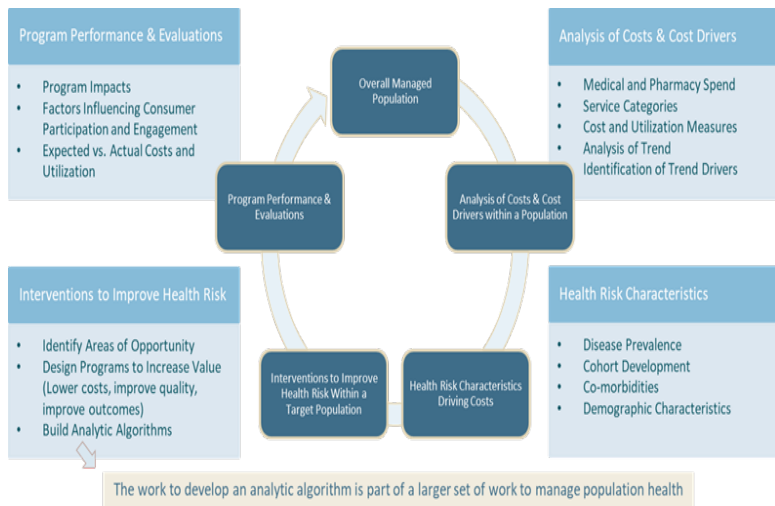
As discussed in our previous article entitled [“Primed Platform Supports More Complex Analytics and Speed to Market”](#) health care providers and organizations will need to invest in comprehensive analytic platforms comprised of contextualized data from multiple sources across the care continuum as the bedrock for generating actionable insights, leveraging more advanced (mature) analytics. Having such a capability in place is table stakes for understanding health risks for a served population and designing effective interventions that best meet their needs.

## Next steps for maturing analytics in support of population health management- once the data structure is in place

Population health management crosses the divide between clinical and business/financial realms. Creating a foundational set of analytic building blocks (definitions, categorizations) provides the basis for analyzing the drivers of health care cost and utilization for a population of interest. Each step in the journey requires access to a variety of systems and infrastructure enablers, including people with the right skills (both technical and analytic). Specialized capabilities are an important catalyst for moving data along the journey.

But before we get to a discussion about the analytic building blocks themselves, it is important to consider all the various sources and types of data potentially available and ideally resident in the analytic database. Understanding data needs first requires a good understanding of what questions will be posed and what types of insights are desired.

### What are the current set of questions that need to be answered?



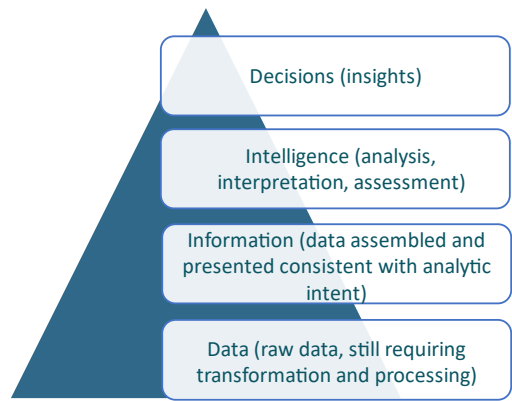
As the focus of attention shifts from managing the immediate health care needs of individuals to improving the overall health and wellbeing for a population, understanding the current drivers of cost and utilization of services coupled with measures of health risk for that population allows for a more targeted identification of opportunities to improve future outcomes.

Supporting data and analytics also need to be able to reliably predict what the expected change in cost and utilization performance will be if programs developed to better manage population risk are successful.

The resulting information needs to be organized and reporting in a way that is compelling and directly actionable.

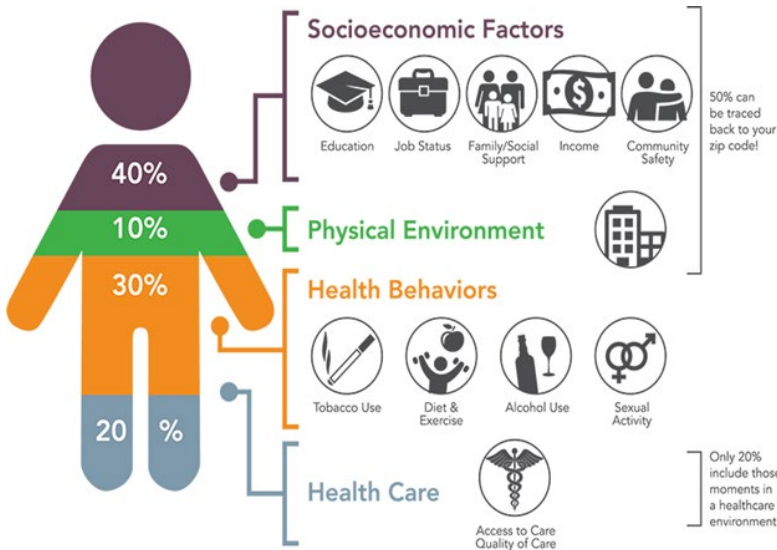
We have all seen examples where the data-to- decision journey has fallen short. Consider the many reports produced that distill huge amounts of data into graphics, charts and tables which leave you thinking “so what.”

Working hard to process data which does not link to a decision constitutes a huge waste of time, effort, and resources. To avoid producing analysis that does not inform decision-making, care must be taken to determine what data is needed as well as what it will take to transform raw data into meaningful units of analysis.



### What Data is Important?

Healthcare organizations have access to an unprecedented amount of patient and health-related data. Effective population health management practices depend on identifying available sources of health information and understanding how this data can be used to improve outcomes. While every piece of information can contribute a new dimension to the detailed picture of a patient’s health, not all data is created equal – and not all of it is equally accessible.



Only 20% of an individual’s health status and/or health risk is attributable to interaction with health care services and delivery.






It stands to reason that identification of the health status/risk for a given population will be improved via the inclusion of data and insights pertaining to health behaviors, physical environment, and socio-economic factors, along with what we can learn from individual’s use of health care services.

Source: Institute for Clinical Systems Improvement, Going Beyond Clinical Walls: Solving Complex Problems (October 2014)

Being able to **proactively** address the health and risk for a target population will benefit from the development of analyses and data models that identify which combination of attributes across a broader spectrum of inputs and sources provides the best opportunity for early identification.

Providers and health care organizations who wish to succeed with population health management might benefit from focusing their initial data-gathering efforts on the following types of information:

Please see our previous article [“Deriving Value from Payer Data, March 2022”](#).

Type of Data	What is it	Why useful	Limitations
 <p><b>Medical Claim Data</b></p>	<p>Medical claims include patient demographics, diagnosis codes, date, place and cost of services utilized - all of which provides the basics of who people are, what health conditions they are facing, and their current health care utilization and cost.</p>	<p>Claim data is the starting point for healthcare analytics due to its standardized, structured data format, and relatively easy availability. It provides a snapshot in time of the overall cost and utilization experience for a population of interest.</p>	<p>The data is retrospective, usually 30-60 days old – which reduces its utility for forward looking population health management. Claims do not include many important clinical details, and do not directly reflect the process of care, only that which is billable.</p>
 <p><b>Prescription and Medication Adherence Data</b></p>	<p>Information on which medications are prescribed, and whether or not patients are taking them.</p>	<p>Information about which medicines have been prescribed can lend further insight into health status, beyond that which is provided via medical claims.</p> <p>Further, medication non-adherence is at the root of many chronic disease management issues and can help zero in on future risk for adverse health outcomes.</p>	<p>Prescription and pharmacy data is difficult to standardize and contract (payer) terms with third party pharmacy benefit managers (PBMs) often restrict access.</p>
 <p><b>Social Determinants of Health (SDOH) **</b></p>	<p>Factors such as income, employment status, education, language barriers, availability of healthy food choices, transportation access, other aspects of an individual's life circumstances.</p>	<p>SDOH data when combined with medical and pharmacy claim data are important predictors of patient outcome.</p> <p>Knowing about factors outside of the direct health care experience that are correlates of overall population health paint a more complete picture of what is driving risk for that population.</p>	<p>Unfortunately, health records do not always have fields that allow providers to collect information on these determinates at the point of care, as they are not required for purposes of reimbursement.</p> <p>There are also challenging interoperability barriers for accessing it, even when available.</p>
 <p><b>Electronic Health Records (EHR)</b></p>	<p>In addition to information later coded for reimbursement, EHRs contain details about the care process, and self-reported patient details. They also include vital signs, medications, imaging reports, lab data, and immunizations.</p>	<p>As is true for SDOH, EHR records are a rich source for predicting patient outcomes, because they contain information that lends insights into a broader range of risk factors directly and indirectly related to patient's overall health and medical condition(s).</p>	<p>EHR systems typically include free text fields, and other unstructured data that can be difficult to extract and prepare for analysis.</p> <p>EHRs may also store lab results, imaging reports, and other documents as PDF files, which can not be analyzed without additional processing.</p>
 <p><b>Patient-generated health data</b></p>	<p>Valuable patient-generated data comes from a variety of sources, including patient satisfaction surveys, messages sent to provider through patient portals, and statistics from self-monitoring sensors such as fitness trackers.</p>	<p>Data from these sources can be used proactively to identify patients who are at elevated risk for various lifestyle diseases and medical conditions - and predict outcomes for a population of interest.</p>	<p>Data from wearables and other "internet of things" devices are difficult to integrate with other health information.</p>

\*\* There are several promising efforts aimed at collecting and disseminating socioeconomic data for population health management. In November of 2016, CMS issued its Equity Plan for Improving Quality in Medicare, which prioritizes the collection and analysis of SDOH data.

As the industry continues to embrace the vital roles of all the aforementioned sources of information for population health management, these available datasets are likely to become more robust and more easily accessible.

For additional insights into the use of SDOH data, please access the link provided here for our previous article [“Enhancing Healthcare Analytics with Consumer Data, November 2020”](#).

In any case, once all available data has been acquired and assembled within an analytic data platform, an important next step is to establish the building blocks that will comprise an effective evaluation framework in support of population health management.

In our next article in this series, we will illustrate and discuss what some of the foundational components of a population health evaluation framework are, taking the underlying data platform and supporting analytics to the next level.