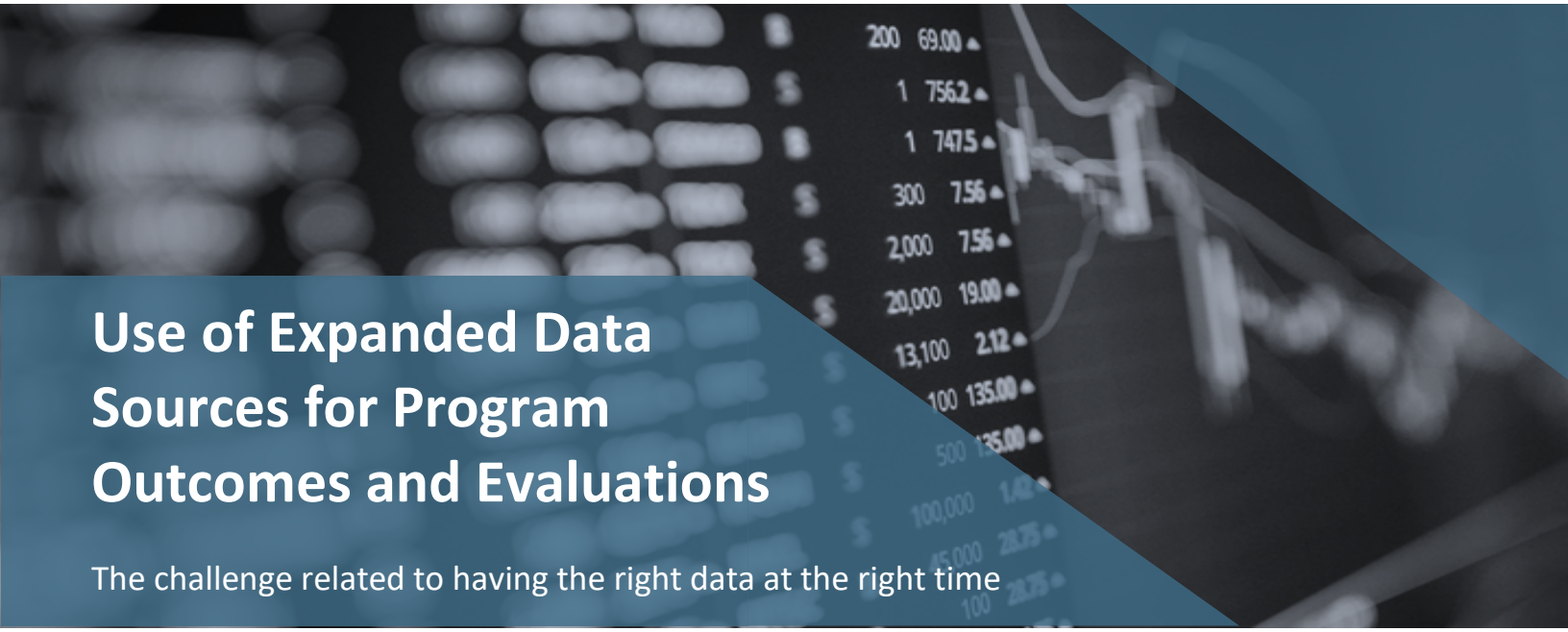


Use of Expanded Data Sources for Program Outcomes and Evaluations

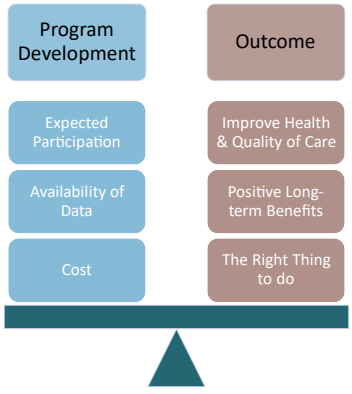
The challenge related to having the right data at the right time

This is the fifth and final article in our series on Population Health Management.

Development of population health programs is a key responsibility of population health managers and within a health plan setting, investments associated with these programs typically involve a large investment of time and resources. The scope of work to design health interventions can also become cross-functional as these programs will often impact operational processes, systems design, provider network contracting, staffing levels and pricing.

Before programs are put in place and investments are made, there can be iterative reviews of the cost and benefits associated with proposals. While the focus of the population health manager is on the benefits of the program and the way that it could improve health and quality of care for specific populations, the manager must also balance information about program benefits with information about program costs.

Leadership discussions about the cost and benefits of proposed changes are confounded by the availability of data to support the business case. While the benefits of making changes that will promote quality of care might be clearly articulated in literature and based on research that is highly controlled and rigorous, the expected impacts for a broader health plan population may be harder to quantify. For this reason, population health managers sometimes start by developing broad initial estimates that show the number of expected program participants and expected rates of engagement, along with expected impacts on measures of cost, utilization, and quality. Positive impacts to any one of these measures are sometimes used as estimates of program benefits.

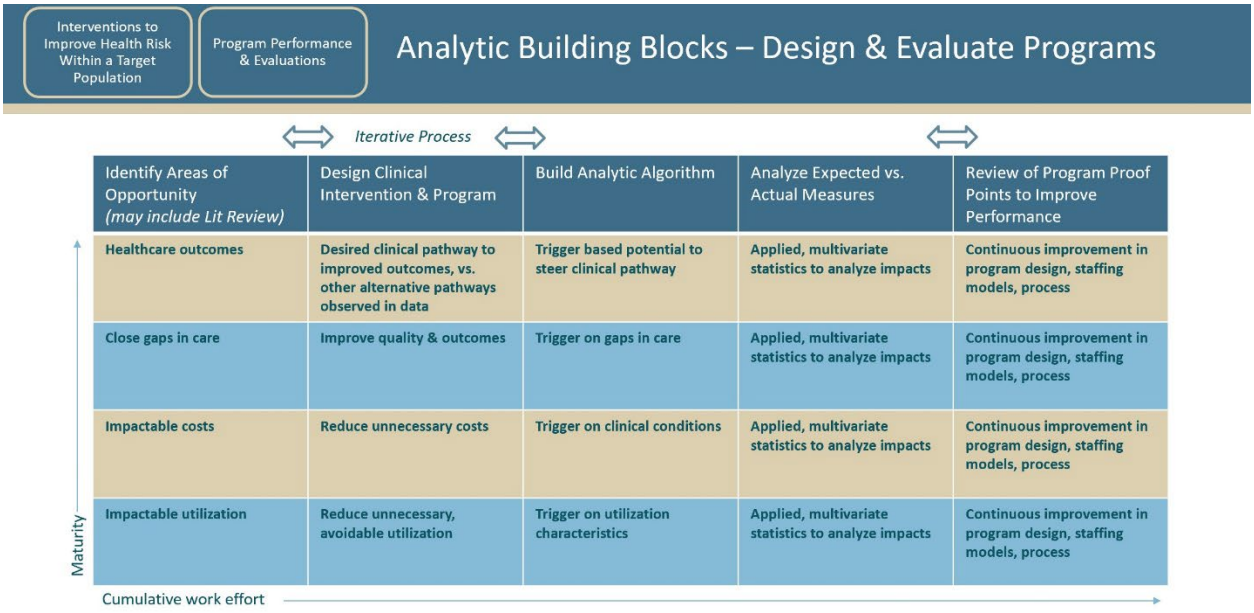


While the expected benefits of a program may be compelling from a clinical perspective, there is also the need to consider offsetting costs related to the administration of the proposed program. Program administrative expenses may include factors such as the costs for additional staffing, costs for system changes, or other new technology. Return on investment (ROI) is determined by comparing the expected benefits of the program to the overall costs to administer the program. Presumably, program benefits would outweigh costs in order for program development to proceed; however, there can be many other business factors considered. For example, improvements in quality of care can have many positive long-term benefits, but costs may be more difficult to justify in the short term. Even in situations where costs exceed benefits, the program may be put in place because it is deemed by managers as the right thing to do.

The initial estimates of program benefits and costs are only a starting point to gain consensus that a program should be put in place and the appropriate investments can be made. Once the program is operational and underway, there are reviews of actual program benefits vs. costs - ideally followed by a rigorous focus on program outcomes once there is sufficient data. The problem for most population health managers is that there can be a delay between the time that the program is implemented and the time that sufficient data is available to evaluate performance. One key reason for the delay is that there is a need to compare measures of cost and utilization between cohorts of patients impacted by a program – and then compare that data to information for the members who were not impacted by the intervention. It takes time to accumulate a sufficient amount of data because program participation ramps up before it stabilizes at a new level.

To accurately make the comparisons between cohorts, researchers must carefully control for variables that may influence the various measures of interest. Sometimes there are so many confounding factors that it might be tempting to simply give up. Despite the difficulties, it is also true that many health care researchers and population health managers are dedicated to their work – and do all that is necessary to create meaningful comparisons in the data supported. Some impacts are also supported by statistical tests of significance. Evaluation of program performance provides meaningful information about healthcare outcomes as well as ways that care delivery might be changed to improve patient care. The differences in expected vs actual cost and utilization informs a continuous improvement cycle of data collection, review and analysis and program enhancements, as outlined in the table below.

Overall, the table below conveys the complexity of data that can inform program design and analysis – and may help to explain why formal outcomes research and evaluation is generally done at regular intervals throughout the program development and evaluation cycle.



Integration of Disparate Data Sources

Evaluation of program outcomes is further complicated when there is a need for integration of disparate data sources such as those listed in the table below. The work to integrate data sources can also be difficult because the level of granularity across data sources very often does not match up. In our last article in this series *Analytics in Support of Population Health Management - Article 4 (Expanding Data Sources for Identification of Risk)* we reviewed additional sources of data that, when combined with cost and utilization measures derived from claims data, can provide information about how existing health care management programs are performing -- and at the same time serve as the

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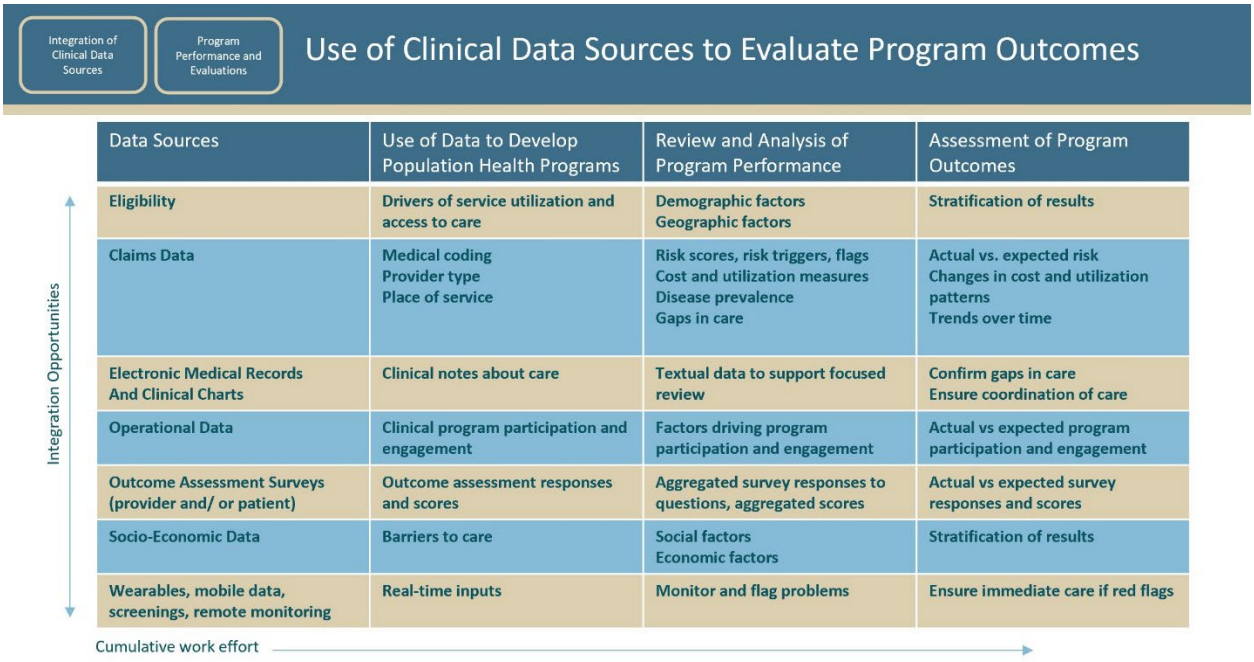
baseline measures used to monitor changes in program design. The table below shows some examples of the ways that different data sources can be leveraged to create additional measures and insights.



Data Sources	Use of Data to Develop Population Health Programs	Review and Analysis of Program Performance	Assessment of Program Outcomes
Eligibility	Drivers of service utilization and access to care	Demographic factors Geographic factors	Stratification of results
Claims Data	Medical coding Provider type Place of service	Risk scores, risk triggers, flags Cost and utilization measures Disease prevalence Gaps in care	Actual vs. expected risk Changes in cost and utilization patterns Trends over time
Electronic Medical Records And Clinical Charts	Clinical notes about care	Textual data to support focused review	Confirm gaps in care Ensure coordination of care
Operational Data	Clinical program participation and engagement	Factors driving program participation and engagement	Actual vs expected program participation and engagement
Outcome Assessment Surveys (provider and/ or patient)	Outcome assessment responses and scores	Aggregated survey responses to questions, aggregated scores	Actual vs expected survey responses and scores
Socio-Economic Data	Barriers to care	Social factors Economic factors	Stratification of results
Wearables, mobile data, screenings, remote monitoring	Real-time inputs	Monitor and flag problems	Ensure immediate care if red flags

While integration of data sources may seem like an ideal state, the use of the additional data sources by themselves may have the potential to take an organization's health management programs to the next level. Some sources can support development of value-based care delivery models and overall improvements in population health risk and outcomes.

Practical Applications of Additional Sources of Data

Population health managers find that while formal research is an ideal way to analyze program performance, there is also value in other, less formal approaches because the analysis can be repeated more often – and use of the data sources as stand-alone sources can be practical given time and resource constraints. Some examples below.

Claims Data: Focused Review of Gaps in Care

Before the advent of value-based care delivery, the patient healthcare experience did not inspire much motivation to change behavior. It was largely up to the patient (consumer) to determine when to see a physician. Typically, the patient would be examined, diagnosis made, and path to treatment determined. Patients initiated the contact and the physician's job was to provide what care is needed, once the patient was in the system. Today, the healthcare journey can look quite different. Data can be used to provide a more complete picture of the patient's journey. The data can show gaps in care of interest to the clinical team. The data can also provide a way to focus time and resources on those patients that most need the support.

For example, both health plans and health care delivery systems actively work to engage patients in the need for a mammography, colonoscopy, or other preventive care. More recently there have been many forms of communication about immunizations for the flu, RSV, pneumonia -- and of course COVID-19 and its variants. Sharing quality measures and related information can empower clinicians in prioritizing clinical actions by illuminating where the 'impactable' cost and utilization opportunities reside.

Claims Data: Track Population Cohorts

When a program is defined, there can also be associated work to assign patients to a population cohort. This effort can be enhanced by tracking the duration of time or start date in the program. Cost and utilization data can be tracked for those members specifically. While the data probably can't be used for rigorous comparisons, establishing program cohorts can be helpful in setting up for the work to evaluate outcomes. In addition, new cohorts can be established if there are shifts in program design or other operational changes. Evaluation of cost and utilization patterns for specific population cohorts can also be used to investigate new program needs that arise or inform decision making about how best to influence program participation and engagement. In addition, operational data can show the degree to which the patients have participated and engaged in the clinical program design and highlight changes in the way that individuals use the health care system.

Operational Data: Program Participation, Engagement, and Algorithms

Analytic algorithms that identify patients at high risk of developing chronic diseases, or data that shows a lack of adherence to medications for effective chronic disease management, is absolutely fundamental to value-based care delivery. Unmanaged chronic disease can lead to costly hospital admissions, readmissions, or visits to the emergency room. In some instances, a well-established need in the patient population will inform the data that is needed. In other circumstances, the ideal population health entry point will depend on which data is already easily available, accurate, timely and trustworthy. In either case, population health management initiatives should start with the same foundation: information about patients that highlight health risk factors. Some chronic diseases follow a progression, and it is important to avoid further deterioration of health. Historical data can be used to find patterns in data where risk scores are likely to increase or have already increased. Analytic algorithms can provide a way for clinical staff to focus time and attention on those most at risk.

Outcome Assessment Tools and Surveys: Information Collected from Patients

For some clinical interventions, it can be helpful to capture information provided by the patients themselves. There are many outcome assessment tools that are broadly used and validated. Those tools can be very helpful and can inform comparisons to research that is publicly available. For example, a pain management initiative may be enhanced by data showing outcome assessment survey responses and scores. The degree of pain that a patient is in is not captured in claims data, and the patient's own assessment of care outcomes may be meaningful. Perhaps even more compelling, the patient's assessment of pain could be shown alongside the provider's assessment of outcomes. Of course, there can be issues with the approach since people naturally have varying reactions to questions about pain at different time intervals. However, even the varying responses can be directionally helpful. If the patient's feedback is collected at regular intervals, the data can show that small, targeted interventions can have a surprisingly profound impact. For example, some patients experiencing musculoskeletal pain can find relief from regular visits with a physical therapist, especially when combined with targeted exercises in between visits.

Remote Monitoring

A patient's vital signs, and other indicators of health status that can be derived from lab and other test results (such as input from remote monitoring devices) can be used in real time to identify changes in health status. People are increasingly relying upon wearables to monitor their heart rate and sleep patterns. Similarly, many patients already self-test glucose levels or monitor blood pressure readings and know when it is appropriate to seek care from their doctor. Of course, this level of monitoring requires cooperation and adherence from the patient. Some patients may prefer the option of remote monitoring over onsite visits to their clinic.

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Clinical Charts

Provider generated data (such as progress notes) are one of the richest sources of data for patient care, but also one of the most complex. Organizations with specific population health management protocols in mind may choose to develop specific templates that collect standardized data elements that are relevant. Progress and visit notes usually include active conditions as well as resolved diagnoses. The clinical chart information can also identify bottlenecks in the patient's journey. When combined with other historical claims data, the chart information can provide valuable insights into the next steps envisioned for patient care, and support ongoing coordination of care.

Conclusion

Clinical data has been the focus of industry efforts to re-architect administrative claims data from a focus on the claim to a focus on the patient. This means that the data is transformed to be 'patient-centric.' This change in focus means that instead of data architecture based on the claim and claim attributes, data structures are based on patients and clinical attributes derived from claims. From a population health management perspective, data re-architecture supports more efficient processing of population data, and cohorts can be defined based on clinical attributes. Given the focus on clinical attributes, the availability of other clinical data sources can greatly enhance the scope of analysis that can be done. Population health managers can select among many options to analyze program performance and outcomes – and at the same time provide information to support ongoing decision making and planning for clinical interventions.

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