

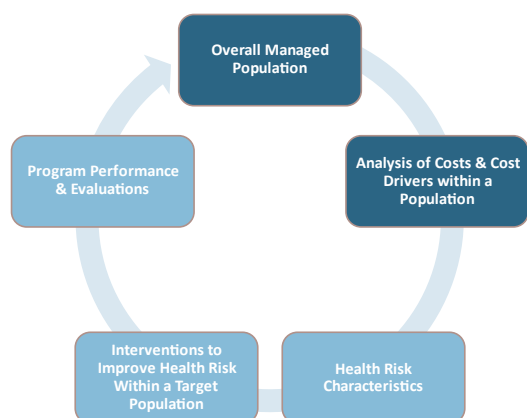
## Using a cost and utilization lens to evaluate and improve health care delivery

Articles in this series will explore various aspects of Analytics in Support of Population Health Management. This article is the second in this series [Analytics for Population Health Management Introduction to Series](#)

As interest in improving care management grows, it is important to establish which models of care are most effective. As described in our first article in this series on “Analytics for Population Health Management”, it has now been over ten years since the Institute for Healthcare Improvement (IHI) introduced the Triple Aim framework, which has served to ignite the realization that quality of care (done right) will not only improve patient experience, but also leads to improvements in overall population health and potential to reduce health care costs. The Triple Aim framework also served to highlight the unintended consequences of cost-cutting without an understanding of potential to put quality at risk. The IHI model represented the idea that evaluation of population health management programs and services should not simply look at cost drivers at the population level but must also take into consideration the drivers of individual level quality and outcomes. This article offers some perspective and suggestions for how to accomplish this.

### Value Creation in Healthcare Requires a Balance of Perspectives

Decision makers in health care often face challenging questions. Should women over a certain age still have an annual pap smear? Should a health plan formulary cover new and expensive drugs? How should vaccines or treatments be provided during a pandemic? Answers to these questions require careful examination of potential trade-offs involving both the benefits and costs associated with policies and/or health care interventions to determine the optimal path forward.



### Population Health Program Development

Ironically, a key barrier to decision making just might be the data itself. To balance multiple perspectives, there is a corresponding need to consider the type of information that is needed to fully develop a new program or vet a potential opportunity. The program development life cycle not only depends upon multiple business perspectives, but also a corresponding set of data to support decision making processes that occur along the way. This article focuses on the second of the five processes in the cycle shown in Figure 1.

Figure 1. Program Development Cycle

As Figure 1 shows, program development work is an iterative cycle of continuous improvement. The assessment of an opportunity often begins with an analysis of cost and utilization drivers. For example, a program to reduce the prevalence of pneumonia within a population might begin with a discussion about the program design and potential options to improve quality of care. Data is used to analyze cost and utilization patterns for the population of people diagnosed with pneumonia. Measures of average unit costs and utilization are the underlying drivers of observed per member per month costs - an overall measure of cost.

While these decisions often begin by a review of cost and utilization patterns (cost and utilization performance as the principal determinant of program success), these measures alone may provide an overly simplistic depiction of what clinical interventions will result in, success or failure. Cost and utilization alone may also present a short sighted or incomplete picture of the needs and experiences of a target population. Population managers are concerned with the clinical characteristics of the individuals that make up the population. To see it from this perspective, the data must be flexible to move from a per member view to a per patient view. However, perspectives about the meaning of the information can be quite different. At times, the differences in data can create an unnecessary divide. The data must support stakeholders in their efforts to reconcile different points of view.

A basic framework to analyze cost and utilization patterns might include the components shown below. There are, of course, other important analytic considerations and methods of processing information to ensure the integrity of the data. Figure 2 shows some examples of the building blocks that are needed to be able to report cost and utilization measures for populations and member cohorts. The work to create a strong foundation includes work to support both financial and clinical views. The work inevitably evolves in sophistication over time, and the cumulative work effort affects the overall maturity of the analytic environment.

	Count People	Aggregate Historical Claims Data	Categorize Claims	Create Cost and Utilization Measures	Trend Analysis
Maturity ↑	Count continuously-enrolled member months				
	Track member retroactive changes	Rules to aggregate claims including adjustments			
	Count member months	Flexibly report on service date ranges	Quality measures		
	Count active members	Build historical claims files	Clinical conditions	Calculate measures of prevalence	Analyze drivers of cost within a defined population
	Count distinct patients, Unique patients with claims	Establish controls on the claims data	Service categories	Measure utilization rates for different kinds of services	Analyze drivers of utilization
	Intake and cleanse eligibility data	Intake and cleanse claims data	Flags, tags, data fixes	Calculate measures of cost	Analyze drivers of cost
	Cumulative Work Effort →				

Figure 2. Analytic Building Blocks - Measures of Healthcare Cost & Utilization

### Crossing the Divide between Financial and Clinical Viewpoints

Population Health Managers will be all too familiar with the need to reconcile the way a clinical versus financial decision maker might interpret cost and utilization data. A CFO is likely to organize and evaluate cost and utilization data and reporting from an entirely different lens than a Medical Director, and it is important for the Population Health Manager to appreciate these differences, and to be ready with information that helps cross that divide. The challenge is to figure

out how to transform claims and medical spend data into a holistic view of cost and utilization to best meet both financial and clinical objectives.

The CFO will largely be focused on more short-term gains and losses associated with decisions about justifying additional spending in support of new health care management programs. In the absence of insights into longer term benefits, it may be challenging for the Population Health Manager to garner support for health management programs that take time to produce positive results (viewed strictly from a cost and utilization perspective).

The Medical Director and clinical decision makers will be in the best position to assist Population Health Managers in assembling, categorizing, and adjusting data in ways that take into account characteristics of both the target patient population and expected outcomes (and timeframes to achieve those outcomes) from both a cost and quality perspective.

While there are differences to reconcile, there is important common ground. First, all measures have value within the context of program development. Together, the financial and clinical perspectives will provide a more solid foundation for both initial and ongoing program evaluation, as it is a better reflection of who is being served and how results are expected to be achieved. The important thing is to use the right data, in the right context, and at the right time. A common understanding of the benefits and value of cost and utilization measures for specific populations is a start. There are also limitations that are especially pronounced if the measures are used out of context.

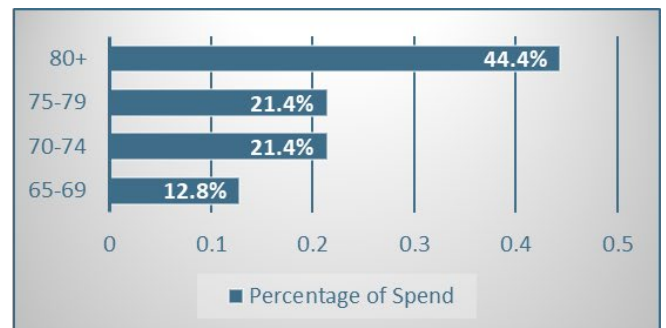
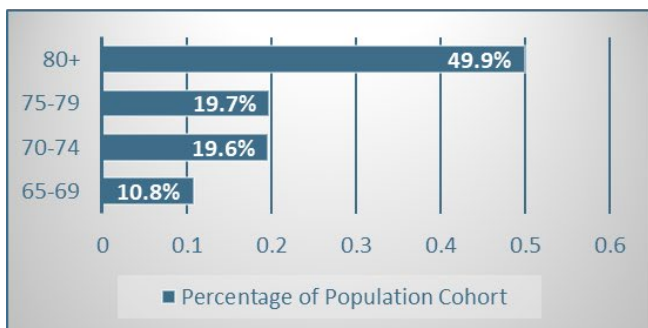
### Benefits/Value of Cost and Utilization Measurement

There are clear reasons for tracking cost and utilization measures, in their most basic terms.

Routine utilization measurement is an important discipline to ensure that programs are providing the right level and type of health care services, and that patients are accessing the necessary preventive, supportive and chronic care management services.

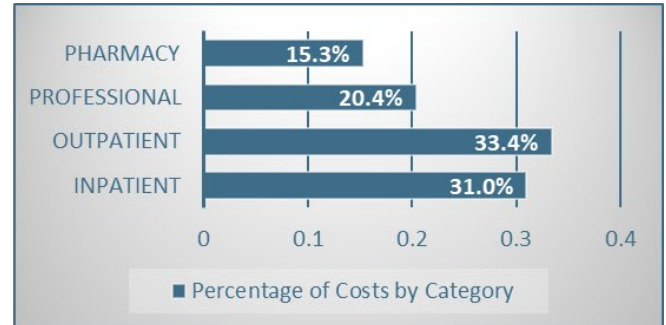
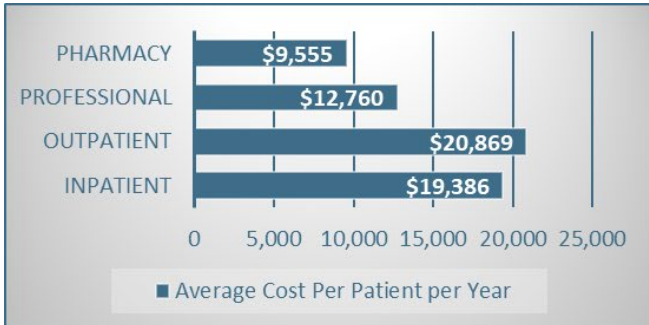
Likewise, routine cost of care analysis is equally important as a proxy measure for program and services efficiency, and a means by which changes in utilization and/or provision of alternative services can be evaluated.

Utilization is typically tracked by measuring units of service (e.g., inpatient visits, outpatient visits, physician office visits, number, and type of prescriptions). In this way, the cost and utilization data can help identify the drivers of differences in total cost and utilization experience between comparison populations.



Consistent monitoring of how individuals use the health care system also provides important clues about patients' needs, as well as strong indicators of where they may be experiencing gaps in care. Evaluating cost and utilization can also support quality improvement and help empower clinicians in prioritizing clinical actions.

The components of healthcare cost and utilization analysis can be readily assembled using both health plan eligibility and claim data. For the Population Health Manager, however, the choice of categories may well depend upon the specific population considered. For example, a Population Health Manager developing a preventive program for pneumonia might want to understand the distribution of costs for pneumonia for the senior population.



### Utilization Rates as Measures of Quality

In addition to calculating basic units of service and their associated cost, establishing measures that align with standards of care for specific clinical conditions under review can also be derived from claims data. The Centers for Medicare and Medicaid Services (CMS) defines clinical quality measurement as “measures of processes, experiences and/or outcomes of patient care, and/or observations and treatments that related to one or more quality aims for health care management of a given population.”

A quality measure can be created to determine whether a health care provider has provided care that supports a clinical process found to be effective in managing a specific disease or medical condition. For example, if the proposed intervention is to increase rates for pneumonia immunizations, the Population Health Manager would consider how many people had an immunization compared to those that had not.

Quality measures can be customized to reflect the nature of the problem and the desired goal for improvement. A quality measure can also be created around specific health care outcomes that are the expected result of clinical processes aimed at improving quality of care. For example, for a population of individuals with a diagnosis of asthma, an assessment of how well that population is being managed can be derived by looking for the absence or avoidance of visits to the emergency room for asthma related services.

### The Role of Unit Price as a Critical Cost Driver

Cost is not only a reflection of utilization, but also a result of pricing and contractual considerations, influenced by a number of factors. These include negotiated payment rates and various mechanisms for aggregating payments beyond the standard fee-for-service reimbursement model. Health care providers may be paid for a defined episode of care, a flat “per member per month” amount for patients assigned to their care, or according to a more complex formula that takes into account the “value” or quality of the services provided. Failing to acknowledge the effects of pricing can distort evaluation of program performance and involves complex adjustments to normalize cost of care so that actual program impacts can be revealed.

The Population Health Manager can work toward normalizing cost of care as part of the analysis by understanding the provisions of health care insurance benefits and covered services, as well as provider payment models represented in the data. Once again, working directly with both financial and clinical decision makers to arrive at a valid and systematic way to normalize cost of care within the data, will yield a better representation for program and services evaluation.

## Interpretation of Cost and Utilization Trends

It is important that decision makers understand that changes in utilization of services must be reviewed holistically to understand their impact relative to the way in which care is best delivered. In certain cases, increased utilization and cost in the short term may actually be desirable when viewed over time and across various aspects of care. For example, if an individual who has been newly diagnosed with type 2 diabetes begins to take insulin as prescribed and schedules more frequent visits to their primary care physician and other specialists involved in influencing how well their diabetes is managed, the cost of care in the immediate term will increase, but the need for more complex (and expensive) services will decrease overtime as chronic conditions are better managed.

A Population Health Manager can organize a discussion including both financial and clinical decision makers to identify prevailing medical care protocols and “standards of care” linked to overall improved health care outcomes for a target population. This information can then be used to assemble reporting that focuses on those metrics (unit of service) that are most critical for viewing resulting cost and utilization experience that are expected to generate the desired result(s).

### EXAMPLE



A good example of this comes from work we recently completed on behalf of a client looking to establish analytics and reporting to demonstrate the overall efficacy of their wound care services.

Our client wanted to be able to demonstrate that effective treatment and management of wounds requires appropriate investment and a structured approach. Nonhealing wounds, left untreated and improperly managed, can result in significant medical issues, including infection sepsis, and/or limb amputation – leading to both poor outcomes and increased cost.

The National Institute of Health (NIH) reports that the lack of regular wound care visits to a wound clinic can increase hospitalization rates by 20 times. (Sen 2021) The analysis showed that patients who have regular wound visits have 25% lower 30-day readmission rates and use 30% less acute care services if the wound care is effectively managed. Thus, increased use of wound clinic services in the short term will appear to increase cost, however over the longer term, the overall cost of care as well as better health care outcomes will be expected to result.

### Works Cited

Sen, Chandan K. 2021. "Human Wound and its Burden: Updated Compendium of Estimates. Advances in Wound Care, 10(5): 281-292."

## Conclusion

In summary, analysis of cost and utilization remains an essential foundation for population health management and program evaluation. However, there is a lot to consider and many elements making up the discipline required for population health managers and others involved in the evaluation. Taking some time upfront to map out characteristics of the population being served and the expected timeframe for observing results from clinical interventions under review will be beneficial and provide more useful and actionable insights.