

MedInsight Healthcare Analytics Brief: Population Health Management Concepts



WHAT IS POPULATION HEALTH MANAGEMENT?

Population health management has been an industry concept for decades, though it has yet to be fully implemented by the healthcare industry. Now the Affordable Care Act has created multiple incentives that may cause wider adoption of population health management concepts.

There are many population health management definitions. The Association of American Medical Colleges (AAMC) defines population health as follows:

A population health perspective encompasses the ability to assess the health needs of a specific population; implement and evaluate interventions to improve the health of that population; and provide care for individual patients in the context of the culture, health status, and health needs of the populations of which that patient is a member.

WHY PERFORM POPULATION HEALTH MANAGEMENT?

Management of the entirety of care for a population is one of the primary concepts of a population health management strategy. This approach includes the assessment of health needs, resource planning and allocation, and implementation and evaluation of interventions.

Adoption of population health management has the promise to:

- *Make Care Proactive* – Population-based care measures outcomes for all individuals, not just those that go to a physician's office. Resources can be more carefully planned and organized at the population level to provide more proactive care to the individual patient.
- *Make Care Better Coordinated* – By analyzing populations, care can be managed across the continuum, reducing fragmentation in care delivery. Reducing fragmentation at the individual patient level leads to a reduction in the provision of unnecessary services and decreases duplication.

- *Make Care More Customized* – Data analysis in population health management can aid in the understanding of the triggers and points on which to focus in order to improve care. Interventions can be tailored to the specific needs of a population, as well as the needs of the individual patient within the population or sub-population.

WHAT DATA IS NEEDED TO SUPPORT POPULATION HEALTH MANAGEMENT?

Many healthcare organizations have access to a wealth of data; however this data has not historically been brought together in an organized manner. An emerging concept in data management is "Big Data," an approach where all data relevant to an individual's healthcare – including those data that may exist outside an individual organization's walls – are gathered and linked for analysis.

To effectively gather and link these data, the enterprise data warehouse needs to be flexible enough to accept data from traditional, as well as non-traditional, sources. Data sources that can be accessed and linked for robust population health analysis include:

- *Insurance Administration Data (Claims, Pharmacy, Enrollment Data)* – Insurance administration data is by far the most commonly used data for analysis.
- *Clinical Data (Electronic Medical Records, Lab Results, Registries)* – Clinical data increases the richness of data available about an individual and a population. This type of data is starting to make its way into the enterprise data warehouse.
- *Medical Management Data (Health Risk Assessment, Authorization, Disease/Case Management Data)* – Most health organizations have medical management data readily available, but most have not yet brought this data into an enterprise database.

- *Provider Administrative Data (Physician Practice Management, Hospital Billing, Admissions Discharge, and Transfers Data)* – Provider administrative data is generally available in a more timely manner, allowing for a nearer to real-time data analysis.
- *Public Data (State Discharge Datasets, Immunization Registries)* – Public data has not typically been accessible in an enterprise data warehouse, yet it can provide additional insight for population health analysis.
- *Demographic and Social Media Data (Lifestyle, Interest)* – With increasing availability, lifestyle and interest data is a largely untapped source of data for population analysis.

WHY INCORPORATE ALL THESE DATA?

When looking at population data, one size does not fit all. Most population health management analyses look at the population from a number of different perspectives. For example, in performing population analysis, one might look at the population of individuals who have the same medical condition, such as diabetes. Alternatively, health delivery to a population can be analyzed based on geography. Or analysis can be performed at the care delivery system by looking at provider groups or networks.

Some examples of how populations are defined include:

Population Grouping	Grouping Examples
• Disease	Cancer, Diabetes, CHF
• Geography/Community	St. Louis Metro Area, Marshfield WI Hospital Referral Region
• Demographic	Pediatric, Women’s Health
• Payer	Medicare, Medicaid, Commercial
• Network/Provider panels	Accountable Care Organization, Clinic

WHAT IS THE FOCUS OF POPULATION ANALYSIS?

The focus of population-based analysis depends on the population being addressed. Common issues are typically found across the individuals within a specific population cohort. These common issues are often what “defines” the population. An understanding of these issues is not only helpful in the definition of the population, but can also help guide the selection of analytic methodologies and metrics to be used throughout the opportunity assessment, implementation of interventions, and outcome evaluation of the population health management initiative.

When looking at populations, it is important to understand issues not only of the population as whole, but also those specific to sub-populations. For example, it is useful to track the immunization rates within the Medicaid CHIP sub-population, but such tracking is less relevant for the Medicaid aged, blind, and deaf (ABD) population.

Issues related to population health analysis can be care related, as well as data related. Examples of care-related issues include quality, treatment disparities, and compliance with evidence based guidelines. Data-related issues include availability of public health or social media data, or availability of day/time data for emergency room utilization analysis.

Some examples of population and sub-population care and data issues are described in the table below.

Population	Issues
Clinical / Disease-Based Populations	
<i>Sub-Population Examples: Diabetics, Active Cancer Patients, Asthmatics</i>	<ul style="list-style-type: none"> • Availability of data, such as immunization records and biometric and lab results data • Non-compliance with evidence based guidelines • Proactive disease management • Coordination of care across the healthcare delivery system
Payer Population – Medicaid	
<i>Sub-Populations: Children’s Health Insurance Program (CHIP), Temporary Assistance for Needy Families and Aid to Families with Dependent Children (TANF/AFDC), Aged Blind and Disabled (ABD), Dual Eligibles</i>	<ul style="list-style-type: none"> • Gathering and compiling all data (dual eligibles) • Importance of public health data, such as immunization records (CHIP, TANF/AFDC) • High emergency department utilization • Access and utilization of quality maternity care (TANF/AFDC)
Payer Population – Medicare	
<i>Sub-Populations: Part A, Part B, Part C, Part D Programs; End Stage Renal Disease, Institutional, Dual Eligibles</i>	<ul style="list-style-type: none"> • Transitions between care settings, such as SNF, rehab, and home health • Acute care management • Polypharmacy • Last year of life
Demographic Populations	
<i>Sub-Populations: Age/Gender, Race/Ethnicity, Lifestyle, Socio-Economic Status</i>	<ul style="list-style-type: none"> • Assessing lifestyle and prevention • Healthcare disparities • Pediatrics – primary prevention • Adolescents – accidents, behavioral health • Women’s Health – maternity
Geographic Populations	
<i>Sub-Populations: Hospital Referral Regions (HRR), Metropolitan Statistical Areas (MSA)</i>	<ul style="list-style-type: none"> • Data available from communities • Price/quality transparency • Care patterns • Care fragmentation
Network Populations	
<i>Sub-Populations: Accountable Care Organizations, Medical Groups, Provider Specialties</i>	<ul style="list-style-type: none"> • Attribution methods extremely important • Risk adjustment necessary to profile sub-populations

ANALYTIC METHODOLOGIES

WHAT METRICS SHOULD BE USED TO ANALYZE A POPULATION?

Much like when defining a population, one size does not fit all for population-based analytic methodologies. One reason to look at populations from a variety of perspectives is to analyze trend. What is driving trend? Is it something clinical? Is it geographic disparity? Or network variations? Differing metrics are needed in order to effectively analyze a population. For example, looking at compliance with recommended HbA1c lab testing is appropriate when looking at a population of diabetics, but the same measure is far less meaningful when looking at a population of cancer patients.

There are several categories of analytic tools for population health management, including measures, service categorization, clinical categorization, and risk adjustment. Each is described below, along with examples of other analytic tools.

Measures are metrics that have defined criteria, both for qualifying individuals for the metric (e.g., age, gender, and/or presence of a condition) and for identifying the service being delivered (e.g., procedure codes). Types of measures include:

- *Primary Prevention Measures* – Disease avoidance, immunization rates, and wellness program participants.
- *Secondary Prevention Measures* – Early detection and treatment of disease, colon cancer screening, and breast cancer screening.
- *Tertiary Prevention Measures* – Reducing the impact of disease and aspirin use in CHF patients.
- *Quaternary Prevention Measures* – Avoidance of unnecessary or unsafe interventions and avoidance of imaging for low back pain.

Service Categorization is a methodology used to analyze resource utilization and cost by service types. Categorization enables the creation of a cost model for population trending, benchmarking, and profiling. Milliman's Health Cost Guidelines™ is a widely-used

methodology used to organize healthcare claims into service categories.

Clinical Categorization, such as Milliman MedInsight's Chronic Condition Hierarchical Groups (CCHGs), helps organize populations by disease cohorts.

Risk Adjustment is a methodology used to assess the overall health of a population or sub-population. Risk adjustment enables comparison across populations by adjusting the health risk of the population. Additionally, individuals within a population can be stratified by risk. There are many risk adjustment methodologies available in the industry, including the Milliman Advanced Risk Adjuster (MARA).

Other Analytic Tools include resource efficiency tools (e.g., Dartmouth Atlas, NYU Avoidable ED Visits, and Prometheus), care management tools, and Milliman MedInsight's GlobalRVUs (a method to measure efficiency across all categories of care).

For a robust population analysis, **Benchmarks** are needed in addition to the analytic tools. Benchmarks enable the comparison of actual population cost and utilization. In order for these benchmarks to be meaningful, they must be customized to the population characteristics (e.g., age, gender, geography, and benefit design characteristics). Benchmarks should allow for adjustment by degree of medical management intervention. Furthermore, benchmarks should be trended. Most benchmark databases contain claims that are at least two years old. Since healthcare cost trend is approximately 8-10% per year, the resulting analysis may look unfavorable if the benchmarks are not trended.

DEVELOPING A POPULATION PROFILE

With access to traditional and non-traditional sources of data in an integrated enterprise data warehouse and the application of a variety of data analytics and methodologies, a new way of looking at populations is evolving. New types of population report cards can be developed for identifying opportunities and measuring performance. Below is an example of a balanced set of metrics for managing diabetes. The example profile focuses on trends but comparison to benchmarks is also important.

Measure Category	2010 Results*	2011 Results*	% Change
Patient Composition (% of entire population)			
- Adult Diabetics	8.3%	8.4%	1.2%
- Pre Diabetics	3.2%	3.1%	-3.1%
Patient Experience			
- Easy to Understand Instructions	75.3%	79.1%	5.0%
- Ease of Making an Appointment	34.8%	41.8%	20.1%
Prevention Measures			
- Blood Pressure Control (<140/90)	63.7%	62.5%	-1.9%
- Eye Exams	58.3%	62.1%	6.5%
- HbA1c Screening	90.3%	91.4%	1.2%
- HbA1c Control (<8.0%)	65.4%	68.3%	4.4%
- LDL Cholesterol Screening	75.9%	77.8%	2.5%
- LDL Cholesterol Control (<100 mg/dl)	49.2%	52.3%	6.3%
- Monitoring nephropathy	86.7%	85.6%	-1.3%
Avoidable Events (per 100,000 diabetics)			
- Diabetes Short-term Complications Admission Rate	1,164	1,138	-2.2%
- Diabetes Long-term Complications Admission Rate	1,546	1,489	-3.7%
- Uncontrolled Diabetes Admission Rate	330	329	-0.5%
- Lower Extremity Amputation Rate among Diabetics	186	174	-6.6%
Costs			
- Total Allowed PMPM	\$866	\$837	-3.3%
- Inpatient Allowed PMPM	\$197	\$173	-12.2%
- Hospital Outpatient Allowed PMPM	\$215	\$224	4.2%
- Physician Allowed PMPM	\$225	\$228	1.3%
- Pharmacy Allowed PMPM	\$184	\$166	-9.8%
- Ancillary	\$45	\$45	0.0%
Utilization Rates			
- Inpatient Admits per 1,000	138.1	117.2	-15.1%
- Emergency Room Visits per 1,000	260.0	252.9	-2.7%
- Office Visits per 1,000	5,861.5	5,980.2	2.0%
- Pharmacy Scripts per 1,000	26,332.9	23,610.1	-10.3%
Program Participation			
- Disease Management Program (of diabetics)	8.5%	8.7%	2.4%
- Diabetes Social Network Visits (per 1,000 diabetics)	15	27	80.0%

* Sample data for illustrative purposes only.

CONCLUSIONS

Population health management is an important method for designing care to improve the cost and quality of care. There are a variety of ways to define populations and sub-populations and each population has unique care characteristics that should be considered. New sources of data are becoming more important to gaining a fuller understanding of populations, and there is a wide variety of analytics and benchmarks needed to analyze populations.

A well-developed population health management strategy starts with a robust and flexible enterprise data warehouse, such as MedInsight from Milliman. A population health management initiative – one that is properly planned, executed and evaluated on an ongoing basis - is a great first step in making care more proactive, coordinated, and customized.

CONTACT

If you'd like to learn more about how MedInsight can assist you with effective population health management, contact Todd Fessler, MedInsight Sales and Marketing Director, at todd.fessler@milliman.com, or visit our website medinsight.milliman.com to get more information.

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