Using Analytics to Improve Community Health

Using SAS® Analytics for a Data-Driven, Whole Person Approach to Health

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Problems With Access and Outcomes

Many people in the United States fail to receive necessary health care – especially those with complex care needs or behavioral health conditions. Many care providers and plans label these people as non-compliant or resistant to treatment (or simply unmotivated to follow through on care plans).

But research indicates that there are often other explanations for people's behavior. Perhaps they lack transportation to treatment facilities, or they need help remembering to take their medication or perform exercises at home. A child may live in a home that lacks sufficient structure to meet her care needs. Whatever the root cause, when patients don't adhere to their medical treatments, the outcomes are less than optimal. This leads to repeated expensive treatments, like emergency visits and hospital admissions – and in some cases, law enforcement must be involved.

Broadening the Definition of Health

This story plays out millions of times across the United States each year. Why? Because traditional health care systems 1) define health and wellness too narrowly, and 2) are designed for the convenience and operational efficiency of health care institutions and providers – not individual patients. While these systems excel in handling a higher volume of care (and sometimes at less cost per intervention), they fail to account for and address the conditions that shape health in the environments where people live, work and play. And as we'll see, this is critical to improving health outcomes, reducing per capita costs and improving patient experiences.

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Research has increasingly exposed the bidirectional impacts of the social determinants of health. Structural and demographic drivers like socioeconomic status, housing, economic development and education heavily influence the community conditions and patient engagement that determine health. The correlations on the impact of these types of determinants is so strong that a person's zip code can be a more reliable predictor of their health status and life expectancy than their genetics.[1]

Failing to address these social determinants of health appears to be a root cause of people disengaging from care, resulting in non-adherence, poor health outcomes and even earlier deaths. This is particularly true for disadvantaged segments of the population and people with severe mental illness, who often die an average of 28.5 years earlier than the general population.[2]

Whole Person Health Care: Enabling Better Outcomes, Experiences and Costs

Clearly, federal, state and local governments; managed care organizations; and policymakers must redefine and reconceptualize:

- *Health* to be more holistic by including social determinants, strengths and non-health outcomes.

- *Treatment compliance* as *treatment adherence*, becoming more person-centered, recognizing the legitimate barriers to care and focusing on the health system's role in treatment activation.

- *Value* and *return on investment* to include multiple health and non-health systems as well as the human impact of all services (strengths-based performance outcomes) on individual lives and the community.

One of the leading ways to achieve these goals is use of a "whole person care" framework. This framework creates a more complete and accurate understanding of people's needs (and barriers to care) by looking across information from physical health, behavioral health and non-health systems, including social services and criminal justice. A more holistic understanding of needs and barriers supports action at both individual and system/policy levels.

At the individual level, care coordinators and providers can have a more complete view of a patient's needs and overall risk. This view is particularly valuable when working with vulnerable populations, which are uniquely complex, and thus frequently require tightly coordinated interaction across multiple systems such as hospitals, social services and housing to improve an individual's health. Furthermore, access to individual-level information can raise awareness of barriers to opting into health care and other services, which

1 https://www.hsph.harvard.edu/news/features/zip-code-better-predictor-of-health-than-genetic-code/ and https://jamanetwork.com/journals/jamainternalmedicine/article-abstract/2626194

2 https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1563985/ and https://www.nasmhpd.org/sites/default/files/Mortality%20and%20Morbidity%20Final%20Report%208.18.08.pdf

increases empathy from providers and empowers care teams to connect people in need with appropriate supports.

At the system level, whole person analytics can identify opportunities for quality improvement, monitor performance improvement and demonstrate a more accurate assessment of service impact. Providing evidence for system-wide services helps inform policies – for example, by demonstrating the value of critical, but often unappreciated, interventions. When health (and partnered non-health) systems have a more complete view of the people they serve and how these systems affect the population they serve, decision makers can identify how systems and policies themselves are contributing to poor treatment engagement and adherence. These insights can drive data-informed policy-making, better leadership and changes to benefits packages, ultimately improving access to care.

Whole Person Health Approaches at Work

SAS is already seeing the impacts of early whole person health programs at work. Several initiatives (including several within Medicaid) are transforming and restructuring health systems to prioritize holistic outcomes over volume and care coordination, as well as integrated care over siloed care delivery. The Centers for Medicare and Medicaid (CMS) health care improvement programs, particularly 1115 Demonstration Waiver projects – such as Delivery System Reform Incentive Programs (DSRIP) and Whole Person Care in California – are a proving ground for whole person care models. In addition, value-based funding models, like Accountable Care Organizations,

Medicaid Health Homes, Certified Community Behavioral Health Clinics and Patient-Centered Medical Homes, are providing additional examples grounded in longer-term payment arrangements.

Implications for Health Policy and Technology

A whole person care framework has huge implications for **health policy** and the **technologies** that state and local governments use to operationalize population health management.

Policy and Health Benefits Impacts

Federal, state and local governments as well as public and private health plans have the responsibility to oversee and administer a variety of health and social services programs that provide services to our most vulnerable populations. Currently, public health care systems are undergoing ambitious delivery system transformations designed to maximize health care value and outcomes for high-need beneficiaries.

As they embrace more whole person definitions of health, their policies, programs and even benefits packages will need to change accordingly – starting with what they value. **What is valued in policy is what is measured, and what is measured ends up driving individual actions, treatment plans and interventions.** If, for example, reducing hospital stays is most valued, then all treatment focuses on avoiding major problems that would lead to immediate hospital stays, often to the exclusion of other important factors, such as resiliency and social determinants. But if organizations valued reducing hospital stays and enhancing

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How might policies and health benefits change if we valued and measured whole person outcomes such as strengths and social determinants?

relationships and social support for the patient – which is proven to improve treatment adherence and health outcomes – it would drive adoption of interventions that would achieve both outcomes. Patients would be understood and managed in the context of their daily lives, have more social determinants of health addressed as part of their treatment plans, and have a greater chance of better and lasting health.

Further, focusing on outcomes that are more holistic promotes better person-centered care. It encourages care providers to see individuals as more than just health care burdens who fill up hospitals, overuse emergency departments and waste law enforcement resources. Rather, **people in need must be seen as valued members of the community, like veterans and volunteers, mothers and fathers, and neighbors and friends who need some resources to help them navigate complex health systems**. Adopting this perspective can have a powerful effect on the nature of traditionally negative-focused stakeholder, provider and policy dialogue. This is particularly important given the existing stigma and discrimination associated with behavioral health conditions.

IT System Impacts

For these programs and other transformational efforts to improve outcomes, public entities will need new capabilities to collect, integrate and analyze data from a wide variety of sources to compile a whole person view of each individual. This enables a better understanding of their health and wellness challenges, barriers to compliance and more, so care providers

can address physical and social determinants of health. In addition, to drive ongoing quality improvement in care coordination and system integration throughout these transformational initiatives, IT needs new kinds of metrics and insights into performance outcomes. This requires more functionality than even the leading care coordination and management software packages on the market today.

Such tools will inevitably be limited by the constraints of the original package design, which typically was not built with mature data quality, aggregation and generalized ad hoc reporting and analytics capabilities. Gartner Research refers to this reality in a recent paper, saying, "Healthcare payers pursuing technology support for a comprehensive population health management program will not find it in a single vendor in today's market…. This makes it even more essential to rigorously evaluate care management workflow vendors' abilities to participate in an ecosystem of applications within the department, across the enterprise and often outside of the enterprise."[3]

For this reason, organizations will need to look beyond their current software provider for a solution that delivers sophisticated data management, reporting and analytic functionality, as well as a strong data foundation with a singular focus on analytics; this foundation must be flexible enough to be used with various care delivery tools and adjust to meet changing reporting and analytic needs.

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[3] Gartner, 2016 Market Guide for Healthcare Payer Care Management Workflow Applications

An alternative IT approach is to build a strong data foundation with a singular focus on analytics that is flexible enough to be used with care delivery tools and can be adjusted to meet changing reporting and analytic needs. This approach creates an infrastructure with a data warehouse/repository for both program reporting and evaluation and long-term systemwide planning and policy development.

SAS understands what's needed to deliver on the whole person health vision; we use our predictive analytics and visualization capabilities to improve outcomes and reduce costs for public agencies and private plans. We can combine our state-of-the-art visualization and cutting-edge analytics capabilities of SAS, such as artificial intelligence and machine learning functionality, to calculate risk with clinical and behavioral data, identify population risk changes in real time, and alert care teams to priority issues and actions. In addition, using new visualizations on dedicated dashboards, teams can expand population views and drill down into conditions, subgroups, geographies and demographics. For example, public agencies can predict and understand future trends for population risk to better forecast costs and service utilization. For the first time, public agencies can seamlessly transition from analyzing patient trends to acting in real time on targeted, effective actions.

SAS® Solutions at Work

SAS analytic solutions are already being used by state and local governments to enable whole person health care approaches. Here are just a few examples:

A large county behavioral health department in Southern California partnered with SAS to develop an enterprise data warehouse and analytics solution. This solution was foundational to quality improvement and program evaluation work. It also provided insights into behavioral health outreach and engagement services that the county used to inform its 1115 Whole Person Care Waiver project. In addition, it was also used in its Whole Person Care project to integrate physical health, behavioral health, public health, housing and jail health data sets – and ultimately provide a customized risk scoring and stratification system to identify high utilizers of multiple systems. For more on this solution, see sas.com/en_be/customers/san-bernardino-county-health.html.

One of the nation's largest counties and health agencies has used SAS to develop an integrated, agencywide enterprise data warehouse, data management and analytics solution. This solution was recently enhanced to support health agencywide analytics and evaluation. The system is now used for population health planning and evaluation, including identifying ways to help member departments best collaborate. It is also being used to evaluate their 1115 Whole Person Care Waiver project.

Access to integrated, whole-person information can raise awareness of barriers to opting into health care and other services, which increases empathy from providers and empowers care teams to connect people in need with appropriate supports.

A North Carolina county engaged with SAS to match data across systems of service to understand the characteristics and utilization of its most frequent users (or "familiar faces") of these systems in an effort to break the cycle of recidivism and provide more cost-effective services and interventions. This project focused on jail, emergency medical services and homeless services to provide a more complete picture of the "familiar faces" and understand the patterns of unproductive and unhealthy behaviors. By better understanding its "familiar faces," this county can now ensure they are proactively targeting programs, such as subsidized housing, to the appropriate, at-risk individuals.

A Bay Area county health agency in California partnered with a think tank to explore and develop new risk scoring methodologies. Using a tool built with SAS technology, this group created a risk stratification approach customized for high utilizers of multiple public systems who are homeless. A key element of this development was not relying just on traditional cost or utilization counts, but rather using existing data to identify "revolving door" patients or people not appropriately utilizing health care services. This methodology has been presented in multiple venues and replicated by others seeking to better serve those with the highest needs.

A state department providing a variety of social services, including support to children and youth, used SAS to gain a better picture of the children and families who have been abused and/or neglected. By looking at 18 factors

How SAS® Analytics Can Facilitate Whole Person Care

- Holistic picture of people being served through integration of a wide range of health and non-health data sources, including sophisticated entity resolution to create "golden records," even with incomplete data sets.

- Standard and custom reporting and analytics to meet regulatory, contractual, stakeholder and quality improvement needs.

- Descriptive and predictive modeling, including cost-effectiveness and impact, such as "what if" analysis for different interventions and benefit structures.

- Support for one-time and continuous formal research and evaluation, as well as continuous quality improvement, performance improvement plans, and plan-do-study-act cycles.

- Usable insights at all levels, from individual patients to systemwide views, including patient-reported outcomes and target population identification/characteristics.

- Facilitation of data-driven conversations for any audience via intuitive analytic visualizations.

- Predictive modeling capabilities to guide quality improvement, such as optimal times to provide outreach and engagement and "what if" analysis for different interventions and benefit structures.

- Artificial intelligence and machine learning capabilities to constantly learn and improve, ensuring the solution adds value on its own.

ranging across health and social determinants, this department now has a better and more complete understanding of family needs, which enables staff to recommend the best treatment and interventions. The department uses text analytics to determine which services families are receiving that may only be documented in case notes. Using SAS

Analytics, the state can also estimate the cost of publicly funded services for the larger population.

Learn More

To learn more about how SAS can help you implement a whole person care approach, please visit sas.com/en_us/industry/health-care-providers.html.

About SAS

SAS is the leader in analytics. Through innovative software and services, SAS empowers and inspires customers around the world to transform data into intelligence. SAS gives you THE POWER TO KNOW®.