USING HEALTH DATA AND ANALYTICS TO IMPROVE HEALTH OUTCOMES

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BACKGROUND AND INFORMATION

A number of challenges confound the use of administrative health data to identify and prioritize those who are at the greatest risk of poor health outcomes. Central challenges include the timeliness, quality, and utility of claims and other administrative health data. Additionally, many who work with available health data resources report that they are swimming in too much information, frustrated by their inability to translate it into useful analysis, and this leads them to a sense of drowning.

A key issue in health data analytics is the ability to extract and translate actionable information for care coordination. Many systems attempt to construct analytic platforms that are so detailed and complex that the results generated have limited end-user utility. Additionally, most health analytic systems fail to adequately account for the influences of behavioral health and social determinants in their design. Improving population health also includes the reduction of waste which contributes to excessive cost and poor health outcomes. This includes the waste that occurs from misaligned incentives for reimbursing the volume of services over the value of outcomes (Health Affairs brief, 2017).

InfoMC has adopted a strategy to address the process of health data analytics by focusing the resolution of the lens to identify a few key and actionable items that have practical utility for care coordination and population health management. This includes using readily available sources of cost; utilization; quality of care; and adverse outcomes data among physical and behavioral health experience, and integrating them with social determinant of health factors. In all cases the true test of population health tools for the identification, stratification, and outcomes analytics is the extent to which they are guided by three central principles. These include: 1) use simple and readily available population data such as claims and other administrative sources; 2) applying analytic and stratification tools designed to have maximum practical utility for all end users including care coordinators; and, 3) the most important guiding principle of all is that these tools must be person-centered and focused on improving the health and well-being of individuals.

> InSpotlight is the identification, stratification, and analytics module within the InfoMC Incedo suite. It is based on a series of ten stratification indicators that are guided by clinical evidence and rules-based.

This summary provides the background and structure of the InSpotlight tools.

General Stratification Rules

The InSpotlight member stratification score is derived from a collection of 9 standard indicator sets, and 1 target population indicator set. Each indicator set includes a collection of rules, each with their own weighting. Additionally, each rule can have a collection of sub-rules that can add to the weighted score for that rule. The combination of rules within an indicator set determines the final score for each of the ten indicators. Each of the 10 indicator sets carries a maximum score of 100 points, and the total final member stratification score will be between 0 and 1,000 points.

In general, the indicators are separated by either medical, behavioral, or social health factors. This separation is made at the indicator and rules level, and allows for the assignment of different weights based on target populations or a client's needs and preferences. For example, clients managing a behavioral health population may select a higher weighing for these specific population characteristics and priority indicators. Clients who are managing Medicaid populations may select a higher weighting for the complex interactions between physical and behavioral indicators, or targeted social factors. If no distinction is made, then all buckets can have equal weights.

PHYSICAL HEALTH INDICATORS

The Physical Health Indicators are focused on both chronic health conditions, and acute episodes of care as represented by an individual's diagnosis profile and their reported claims. Over 30% of all Americans are currently living with multiple chronic conditions, and account for 70% of all healthcare spending (AHRQ, 2006). Additionally, while projected medical costs for individuals with chronic medical conditions have been established, those patients with comorbid behavioral health conditions will likely be 2-3 times higher (Milliman, 2014).

> Therefore, the Physical Health Indicator sets are designed to account for health care expenditures for those with chronic conditions, acute levels of care, and their pharmacy utilization.

They are also coordinated with the Behavioral Health Indicators as well. The Physical Health Indicators include a series of rules to guide the selection of chronic health conditions that influence health care costs and outcomes. Using evidence based rules it is possible to determine which chronic conditions have the greatest influence in health care costs, and which combinations of these (or total number) targeted conditions should constitute low-medium-high risk rankings. Specific conditions are weighted as defined in the condition map. The number of services associated with the treatment of these conditions also influence the severity ranking. Acute episodes of care are also included in the physical health indicators and account for both facility based and targeted health services.

The analysis of an individual's physical health status through a review of their chronic conditions and acute medical illness costs, provides an effective overview their health status. Research suggests that there is a high likelihood of individuals with multiple chronic illnesses having lower health care activation for self-care and management. Established ranges service costs for different health conditions helps predict expected expenditures across populations. Variances in costs can in part be caused by either ineffective care teams that are not well coordinated, gaps in care planning and information sharing, or poorly engaged and activated patients. Therefore, the ability to stratify

those with multiple chronic health conditions and acute episodes of care provides guidance for effective care coordination and established work flows.

BEHAVIORAL HEALTH INDICATORS

At some time in their lives about half of all Americans will experience and meet the diagnostic criteria for a mental health or substance use condition (Kessler, et al., 2005). Also, in any given year, about 1 in 4 Americans will experience a diagnosable mental health disorder, and this is most commonly either anxiety or depression (Goodell, S., Druss, B. G., Walker, E. R., & MAT, M. 2011). Additionally, mental health conditions are the fourth most costly illnesses in the United States (Clancy, AHRQ, Medical Expenditure Panel Survey, 2005). For employers and insurers, behavioral health costs are major drivers of all health care costs, absenteeism, presenteeism, and suicide (Murray, et al., 2013).

For patients with chronic medical conditions who experience comorbid behavioral health disorders, their overall health care costs are likely to be as much as 2-3 times higher than those with just chronic conditions. However, many of the individuals with chronic medical conditions and co-occurring behavioral health disorders are never diagnosed and treated for these conditions. And, Individuals diagnosed with Serious Mental Illness are likely to have both higher costs for both behavioral health care and comorbid chronic conditions (Melek, Norris, and Paulus, 2014). According to CMS, behavioral health conditions are very common among those who have high medical costs over multiple years (Boyd et al., 2010).

> The Behavioral Health Indicators are designed to identify individuals whose conditions have a clear influence on the costs and outcomes of their care.

These indicators seek to identify: 1) those who have comorbid chronic illnesses (detected or undetected); 2) those who experience the condition without adequate diagnosis and treatment; or, 3) those who may receive inadequate or substandard behavioral health care for their behavioral health condition. Understanding the role of behavioral health conditions and their treatment patterns is a key determinant of all population health analytics. The linkage between these indicators and the physical health and social determinant indicators helps better define and understand the interactions between behavioral health conditions, chronic conditions, and the patterns of care (Inpatient, outpatient, and acute) that are provided to those individuals. The rules for this indicator are designed to assess and inform all of the other indicator categories of InSpotlight.

SOCIAL DETERMINANT INDICATORS

There is a growing recognition that many of the most significant drivers of health care costs and outcomes are found outside of clinical settings. These include the quality of life that individuals experience in their communities and families. A number of barriers to health have been identified and includes factors that may not be well documented in claims and other administrative data sets. Therefore, the identification of these challenges is difficult for most health care data analytic tools. However, while these factors and influences are just as significant as the physical and behavioral health indicators, they can be collected through other sources.

Identifying social determinant of health data and trends is difficult and is too often made more complicated than is necessary. This includes trying to get to very granular data on zip codes, income

levels, and other social attributes. Simple data can be collected in Health Risk Assessment (HRA) surveys, and multiple tools exist (Page-Reeves et al, 2016 and Billioux et al, 2017). Actionable data helps inform the presence and likelihood of social determinant risk at the individual and population level and helps guide workflows for care coordination and management.

> The Social Determinant Indicators are designed to coordinate with and inform both the physical and behavioral health indicators.

These indicators target a range of social factors that include health behaviors; access to and quality of care; social and economic factors; and physical environments. Together the rules used in this indicator form a framework to assess health determinant risk, and when paired with physical and behavioral health indicators allow InSpotlight users to develop effective risk profiles to inform care coordination workflows.

Conclusions

There are a number of challenges that impact the design and implementation of health care data and analytics tools. Most identification, stratification, and analytic frameworks are built on large aggregate data sets and lack utility for targeted population health evaluations, and the health management of selected individuals. These approaches frequently lack the sufficient granularity to have utility for the design and implementation of health care-coordination and management strategies. Actionable data exists, but it is often not well understood or utilized to support condition specific health indicators and their management. Additionally, Behavioral health conditions and their influences on health outcomes are not well understood and accommodated within most population health data analytic systems. Custom analytics are also difficult to use and challenging to implement. InSpotlight tools are designed around the principles of utility and user value.

ABOUT INFOMC

InfoMC is a leading provider of cloud-based healthcare management and care coordination software designed to help close gaps in health care systems. InfoMC offers a suite of rules-based workflow, data exchange, and analytics products to health plans, managed care organizations, health systems, state, county and community health centers and programs, and Employee Assistance/WorkLife Programs. The InfoMC Coordinated Care Solution provides tools for optimal care coordination of complex or chronic physical and behavioral health conditions and populations, resulting in improved quality and cost of care outcomes.

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