

Data Analysis Considerations to Inform Medicaid Health Home Program Design

As a first step in developing a health home program through Section 2703 of the Affordable Care Act, states should analyze their Medicaid claims data to inform key program design decisions. States can identify the eligible beneficiary population through various characteristics including diagnosis, geographic location, and age. States can also explore data more strategically to identify where provider relationships do or do not exist; which providers could be well-positioned to serve as health homes; and where opportunities are to manage complex care more efficiently and effectively.

Whether a state analyzes data internally or through a contractor, the task can be daunting, costly, and time-consuming. This technical assistance brief was developed to help guide state discussions and decisions around claims data analysis. It outlines considerations that states will need to address and practical recommendations for conducting such an analysis.

Considerations in Medicaid Claims Data Analysis

The data analysis recommendations described in this brief can be used to inform both program design and service delivery. The better a state understands the needs of its beneficiaries and the way in which they currently receive services, the greater the likelihood that the state will design and implement a program with the desired impact on cost, quality, and patient experience.

It is important to note that the list of strategies on the following pages is not exhaustive, prioritized, or sequential. Depending on its unique circumstances, a state might decide to use some or all of the strategies in this brief. To leverage data most effectively, the state can stage its analyses to further examine subsets of the potential health home beneficiary population. For example, a state might initially identify high-cost beneficiaries, then determine the top diagnoses for this subpopulation, and finally pinpoint potentially avoidable service use. There are many possible permutations of analyses.

IN BRIEF: Analyzing Medicaid claims data is an important first step for states developing health home programs under Section 2703 of the Affordable Care Act. This technical assistance brief outlines considerations that states will need to address before they begin, such as phasing their analysis and using relationships with health plans to leverage their analytic resources. The brief also makes practical recommendations for conducting data analysis. States may decide to use some or all of the strategies in this brief depending on their unique circumstances.

While a state should mine claims data to identify target populations, it should keep in mind that beneficiaries are ultimately eligible for health homes based on their: (1) chronic condition(s); and (2) geographic location. Thus, a state cannot define eligibility by delivery system, cost, or Medicaid eligibility category. However, a state could use one or all of these factors to prioritize outreach and enrollment efforts.

Where relevant, states can leverage the knowledge and data analysis skills of contracted health plans. Health plans have a core competency in analyzing data to identify populations at risk for costly and avoidable care that might benefit from care management. For example, plans often use predictive modeling to stratify their members into risk groups and target services accordingly.

Finally, data analysis will likely be an iterative process conducted in conjunction with a budget or resource analysis. The size of a health home program's target enrollment should take into account available state funding, existing and needed infrastructure, and the available provider network, among other factors. A state can model different program designs to fit different resource expectations. One publicly-available tool to help states forecast program costs and potential return on investment is the *Return on Investment Calculator for Health Homes*, an online tool developed by the Center for Health Care Strategies.¹

TIP: Identifying a target population with a specific chronic condition entails checking for a primary diagnosis on at least two ambulatory visit claims on different days *OR* one inpatient admission claim.

Recommendations for Medicaid Claims Data Analysis

States should consider using the following strategies when analyzing Medicaid claims data to guide the design of a health home program. Depending on the state's unique environment, not all of the recommendations will apply. States can use these recommendations as a starting point for designing data analysis approaches.

1. Cast the Net Widely

As a starting point, identify all beneficiaries who meet the eligibility requirements under Section 2703. States are not limited to the conditions listed in the statute, so if there are other diagnoses with a high prevalence, consider including them in the analysis. Identify the number of eligible beneficiaries, current health care costs/expenditures, average per member per month (PMPM) expenditures, total Medicaid expenditures represented by the targeted population, cost to administer the program, and other statistics. This will provide a helpful reference point as the program design is further refined. Laboratory and radiology claims should ideally be excluded from the initial round of analysis as diagnoses on these types of claims are often less than reliable.

2. Stratify Beneficiaries into Sub-Populations

The eligible population will be very heterogeneous. Stratification of the population can develop more homogenous subgroups including individuals with serious and persistent mental illness (SPMI), developmental disabilities or specific chronic conditions; frequent service users (e.g., frequent emergency department (ED) use, high-rates of admissions and readmissions within 15 or 30 days, users of long-term care services or behavioral health services); individuals dually eligible for Medicare and Medicaid; and other high-cost categories of beneficiaries. Stratification can also help define the array of services that need to be included in health home design for each subpopulation.

3. Understand High-Cost Beneficiaries

Analyze service use and cost patterns for beneficiaries who comprise the top 5, 10 or 20 percent of Medicaid costs. Identify what services they are receiving, who is providing their care, and how much opportunity there is to avoid high-cost services with strong care management supports. One way to assess potentially avoidable costs is to measure hospitalizations related to ambulatory care sensitive conditions for this subpopulation. Services that are potentially avoidable or preventable (e.g., ED visits, admissions, and readmissions) offer opportunities for cost savings through better care management, care coordination, and care transitions. The *Prevention Quality Indicators*, a measurement set developed by the Agency for Healthcare Research and Quality, offers a starting point for identifying such opportunities.²

4. Identify Beneficiaries Who Have a High Medical Risk

If available, use risk scores or predictive modeling to identify the population at high medical risk and likely well-suited for enrollment in a health home. Risk scores can also help to prioritize enrollment. The *Predictive Modeling Guide for Medicaid Purchasers*, an online toolkit, can be a useful tool in developing predictive modeling approaches.³ If a state does not use predictive modeling, it can identify individuals with several diagnoses and sort the population by the number of conditions or utilization or cost metrics. Data from health risk assessments are also valuable in identifying people at high risk.

5. Understand Where Beneficiaries Reside

Identify "clusters" where a sufficient critical mass of eligible beneficiaries resides. Not only can this help identify where a health home program could be targeted geographically, but it can be useful information for health home providers/teams as they work directly with patients and families within their local areas. Depending on beneficiary distribution, it may be more feasible to launch health homes in more

TIP: The SAMHSA chartbook, "Mental Health and Substance Abuse Services in Medicaid, 2003" (<http://store.samhsa.gov/product/Mental-Health-and-Substance-Abuse-Services-in-Medicaid-2003/SMA10-4608>) can help states identify beneficiaries with serious and persistent mental illness as well as milder forms of mental illness. Relevant information from the chartbook is provided Appendix A.

The Chronic Illness & Disability Payment System (<http://cdps.ucsd.edu/>) is a publicly-available software application that can be used to identify diagnoses associated with chronic conditions. It can help states create a hierarchical list of which chronic conditions are particularly expensive for Medicaid programs.

populated areas of a state and then phase them in over time in less populated areas.

6. Consider Including Sub-Populations

When stratifying and targeting eligible subpopulations, identify the: (1) total number of beneficiaries in each subpopulation; (2) total Medicaid expenditures; (3) average PMPM costs; and (4) rate of potentially avoidable and costly services. This can help prioritize whether and how subpopulations are enrolled into health homes. For example, starting by providing health home services to a more costly and less managed patient population may generate savings that can then be used to expand health home services to a new patient population.

7. Differentiate Emergency Department Visits

Outpatient ED visits may lead the health home to focus on building a connection between the patient and his/her primary care provider (PCP), while ED visits that result in inpatient admissions may demand a strong focus on care transitions, discharge planning, and follow up with the PCP. It is also important to stratify and analyze these services by subpopulation. How and how often subpopulations utilize these services will vary as will the appropriate care management support required.

8. Define Care Providers Used by the Target Population

Identify whether the target population has a usual source of care and whether that source of care is appropriate. Identify who is receiving care through ambulatory providers versus more expensive, less appropriate settings such as emergency departments. Assuming the usual source of care is appropriate (i.e., not an ED), the state may want to engage those providers to be health homes. That said, identifying providers serving the target population can be a complex undertaking because of the intricacies of provider identification numbers. Adoption of the National Provider Identifier should help; until then, this type of analysis may be challenging.

9. Identify Missing Links to Primary Care Providers

It is important to identify and address missing linkages to primary care, particularly for health homes programs that “reside” in the behavioral health care delivery system. The state can identify individuals with an SPMI diagnosis who have had a primary care visit through evaluation and management codes, and those who have not. States also can identify if there is an existing “loyalty” to a certain ambulatory care provider. States can do this by identifying which provider has rendered the most and/or most frequent services to the beneficiary. If there is a relationship with a primary care provider, it would be important to include that practice as part of the health home. If no relationship exists—e.g., the most recent and/or frequent provider setting is the ED—it will be critical to link the individual with a primary care provider.

10. Understand Who Manages the Care of the Target Population

If a patient has an existing relationship with a care management program, the state should build on those services, replace them, or target health home services to a population not already receiving care management. This analysis is important to conduct in order to avoid duplication of care management services, which is prohibited by the CMS.

Conclusion

Although Section 2703 clearly outlines health homes eligibility criteria, states have ample opportunities to further stratify and prioritize services for specific beneficiary subgroups to best target limited state health care dollars. The strategies outlined in this brief can help states to better understand and respond to the needs of individuals served in emerging health home delivery models.

TIP: States should consider asking their own mental health agency to identify eligible individuals with SPMI who receive care in state psychiatric hospitals or community mental health centers. These services may not result in a Medicaid claim because they do not qualify for federal matching funds or they are reimbursed as part of a global payment.

TIP: When estimating service needs, remember that the number of individuals receiving treatment for a condition is almost always an understatement of the actual number of people needing treatment.

Appendix A. Diagnosis Codes Useful for Identifying Beneficiaries with Mental Illness⁴

Diagnostic Category	First 3 or 4 Digits of ICD-9-CM Diagnosis Code	Example Conditions Included Within Diagnostic Category
Schizophrenia	295	Chronic and acute schizophrenic disorders
Major Depression and Affective Disorders	296	Manic, depressive, and bipolar disorders
Other Psychoses	297, 298	Paranoid states, delusional disorders, depressive psychosis, and reactive psychoses
Childhood Psychoses	299	Infantile autism, disintegrative disorders, and childhood-type schizophrenia
Neurotic and Other Depressive Disorders	300, 311	Anxiety states; phobic, obsessive-compulsive, and other neurotic disorders; and unspecified depressive disorders
Personality Disorders	301	Affective, schizoid, explosive, histrionic, antisocial, dependent, and other personality disorders
Other Mental Disorders	302, 306, 310	Sexual deviations, physiological malfunction arising from mental factors, and non-psychotic mental disorders due to organic brain damage
Special Symptoms and Syndromes	307	Eating disorders, tics and repetitive movement disorders, sleep disorders, and enuresis
Stress and Adjustment Reactions	308, 309	Acute reaction to stress, depressive reaction, separation disorders, and conduct disturbance
Conduct Disorders	312	Aggressive outbursts, truancy, delinquency, kleptomania, impulse control disorder, and other conduct disorders
Emotional Disturbances	313	Overanxious disorder, shyness, relationship problems, and other mixed emotional disturbances of childhood or adolescence such as oppositional disorder
Hyperkinetic Syndrome	314	Attention deficit with and without hyperactivity, and hyperkinesis with or without developmental delay
Mental Disorders Associated with Childbirth	248.4	Mental disorders of the mother complicating pregnancy, childbirth or the puerperium

Diagnostic Category	First 3 or 4 Digits of ICD-9-CM Diagnosis Code	Example Conditions Included Within Diagnostic Category
Alcoholic Psychoses	291	Alcohol withdrawal delirium, alcohol-induced psychotic disorder or persisting amnesic disorder, idiosyncratic alcohol intoxication, and other alcohol-induced mental disorders
Alcohol Dependence or Nondependent Abuse	303, 305.0	Acute alcoholic intoxication, alcohol dependence, and nondependent alcohol abuse
Drug Psychoses	292	Drug withdrawal, drug-induced psychotic disorders, pathological drug intoxication, and other drug-induced mental disorders
Drug Dependence or Nondependent Abuse	304, 305.2–305.9, 965.0	Dependence or nondependent abuse of opioids, sedatives, hypnotics, cocaine, cannabis, amphetamines, hallucinogens, or other drugs
Substance Abuse Associated with Childbirth	648.3, 760.71, 779.5	Fetal alcohol syndrome, drug withdrawal syndrome, or drug dependence of the mother complicating pregnancy, childbirth or the puerperium

Endnotes

¹ *ROI Forecasting Calculator*. Center for Health Care Strategies, February 2010. Available at <http://www.chcsroi.org/>.

² Prevention Quality Indicators (PQIs) are a measurement set developed by the Agency for Healthcare Research and Quality. For more information, see *Prevention Quality Indicators Download*, Agency for Healthcare Research and Quality, March 2007. Available at: <http://www.qualityindicators.ahrq.gov/>.

³ D. Knutson, M. Bella, and K. LLanos. *Predictive Modeling: A Guide for State Medicaid Purchasers*. Center for Health Care Strategies, August 2009. Available at: http://www.chcs.org/publications3960/publications_show.htm?doc_id=992610.

⁴ US Substance Abuse and Mental Health Services Administration. *Mental Health and Substance Abuse Services in Medicaid, 2003*. December 2010. Available at: <http://store.samhsa.gov/product/Mental-Health-and-Substance-Abuse-Services-in-Medicaid-2003/SMA10-4608>.