



What We Get Wrong About Predicting Mental Health Outcomes

by Sarah Gunderson | Segal and Lisa Bertola | Segal

Although health plan vendors advertise sophisticated risk stratification and predictive analytics, participant comments like the ones below are common.

“Where were you when I needed you?”

“Thank you, but I already chose my treatment, and my doctors are handling everything.”

“What?! I’ve been diagnosed with cancer for six months, and you’re only checking in on me now?”

“I started treatment, and my nurse at the office has it handled.”

If health plans have all the ingredients that are supposed to lead to improved outcomes, why are they struggling to positively impact participants’ medical and mental health needs?

Health care providers have known for years that a person’s mental health affects outcomes and comorbidities for

all types of conditions. Vendors have come to understand this as well, which is why they have increasingly incorporated mental health into the algorithms of predictive modeling programs, which are often used to identify at-risk participants for targeted interventions. However, the program findings often remain siloed from the plan sponsor’s initiatives and vendor point solutions. As a result, interventions that mitigate the risk are not comprehensive and often are not provided at the right time—or at all.

This was the old role of incorporating mental health in predicting overall health outcomes: Health plans understand that mental health affects outcomes, but the theory often has not translated to improved delivery of health care to individual patients. The new role of incorporating mental health into predicting outcomes, in contrast, is one that focuses on well-executed intervention, not merely identification and awareness. It unifies predictive endeavors with the patient in a timely, relevant manner to address the influence that mental health has on all health care experiences.

AT A GLANCE

- Successfully incorporating mental health factors into predicting health care outcomes requires well-executed intervention, not merely identification and awareness.
- Data suggests that considering the order in which mental health and medical conditions are diagnosed as well as gender differences can improve analyses and recommendations for chronic condition case management.
- Plan sponsors can help influence positive outcomes by following a seven-step strategy that includes determining what mental health resources they have and evaluating mental health spending.

What’s Happening Today

Impact of Mental Health

The COVID-19 pandemic and societal pressures drastically accelerated mental health symptoms and the need for care. Consider the following statistics.

- Nearly one-third (32.3%) of U.S. adults disclosed symptoms of anxiety or depression in 2023.¹

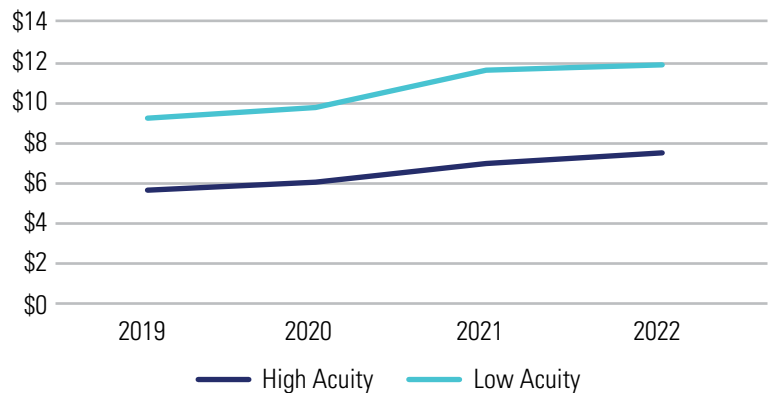
- On average, it takes 11 years from onset of symptoms until a person receives mental health treatment.²
- One in six children in the U.S. (ages 2–8) has been diagnosed with a behavioral health disorder.³
- Suicide rates have increased 16% over the past 12 years.⁴
- In the past year, 11.3% of Americans 18 and over were diagnosed with alcohol use disorder.⁵
- From 2019 to 2020, the opioid-related death rate increased 38%.⁶

This increasing demand for mental health services is visible in health care claims data. Many health plans monitor utilization of services, per capita spending, and unit costs of treatment and outcomes, particularly before and after implementing programs to guide program refinement. The figure demonstrates an increase in median spending on mental health for a large group of health plans in one consultant’s database. Outpatient, low-acuity services have remained more costly throughout, and spending on low-acuity services overall also increased at a greater rate during these years.

No predictive model could have foreseen the unprecedented demand for mental health services during the COVID-19 pandemic, exacerbating existing access challenges, nor could predictive modeling have foreseen the rise of telehealth to help combat the gaps. In recent years, demand for timely mental health treatment has increased. This has been particularly true for personality disorders, mood disorders, impulse-control disorders

FIGURE

Median Mental Health Spend per Member per Month



Source: SHAPE, Segal’s health data warehouse.

and substance use treatment for minors.

In an attempt to improve care, many provider offices have incorporated mental health screenings into their intake processes. However, these screenings are often performed by a medical assistant who asks assessment questions while taking blood pressure readings. In other words, the experience does not involve clinicians trained to assess and react to participants’ responses. A recent study found that 87% of participants who used their regular medical providers for mental health concerns desired additional support from a specialist.⁷ While strategies like telehealth and primary care are beneficial, they can’t compensate for the full scope of mental health needs and levels of care.

What are the implications of these rapid changes in demand and utilization on predicting outcomes? Simply predicting outcomes and reaching

out to high-risk individuals no longer checks the box in this changing environment. A system that identifies an individual as in need of a postdischarge follow-up appointment is minimally effective if no appointments are readily available near the individual’s ZIP code. Solving that problem hinges on clinicians’ ability to create strategies to address emerging gaps in care and wisdom to determine which approaches will make an impact in each individual’s unique circumstances.

The Interaction Between Mental and Physical Health

The impact of co-occurring mental health conditions on outcomes for other conditions has been well-known for years. Predictive models have sought to incorporate the impact of mental health into their analytics, with varying degrees of success. However, the extent of the impact is sometimes not clear to

TABLE I

Impact of Mental Health Conditions on per Member per Month (PMPM) Health Care Costs

Cohort	Percent of Total	Medical		Pharmacy		Total	
		PMPM Cost	Risk Factor	PMPM Cost	Risk Factor	PMPM Cost	Risk Factor
No mental health condition	65.20%	\$340	0.7	\$104	0.7	\$444	0.7
Any mental health condition	34.80%	\$718	1.5	\$216	1.5	\$934	1.5
Anxiety	8.40%	\$833	1.8	\$217	1.5	\$1,050	1.7
Depression	5.30%	\$1,029	2.2	\$272	1.9	\$1,301	2.1
Psychotic disorders	0.90%	\$1,559	3.3	\$420	2.9	\$1,979	3.2
Any substance use disorder	7.20%	\$1,055	2.2	\$265	1.9	\$1,320	2.1
Alcohol use disorder	0.70%	\$1,879	4	\$208	1.5	\$2,087	3.4
Opioid use disorder	0.40%	\$1,839	3.9	\$408	2.9	\$2,248	3.7

Source: SHAPE, Segal’s health data warehouse.

plan sponsors because mental health-related impacts often manifest as inpatient stays or emergency department visits for medical conditions.

Behind these visits, however, are difficulties adhering to treatment recommendations—like taking medications regularly—that stem from mental health issues. While complexity and cost of medication adherence can cause some adherence challenges, many mental health factors can contribute to overall compliance. Nonadherence can lead to hospitalizations, higher cost consumption of medical care and even death. For some individuals, like those with alcohol use disorder, the impact of the mental health condition on medical spending may be more direct. Long-term excessive alcohol use leads to the development of long-term chronic medical conditions, including cancer, digestive

problems, heart disease, high blood pressure, liver disease and stroke.

Table I illustrates the variance in risk factors and impact on the participants’ overall cost when a participant has various mental health conditions. The medical and pharmacy risk factors compare the cost of each cohort with the average plan participant, where a risk factor of 1.0 indicates the cohort has the same cost as the rest of participants. It is apparent that individuals with no mental health diagnoses are significantly less costly than their peers who have any type of mental health or substance use condition.

Examination of mental health conditions combined with other chronic conditions highlights the difficulty in predicting outcomes. Table II illustrates the vast difference in experience and risk between individuals who were diagnosed with diabetes and later received

a diagnosis of anxiety, compared with individuals who had preexisting anxiety prior to a diagnosis of diabetes. Managing diabetes is often very stressful. Anxiety drives nearly twice the rate of health care utilization compared with diabetics without anxiety. Tracking for anxiety as early in the process as possible is a critical step to control excess utilization.

Without treatment for comorbid anxiety, individuals may turn to unhealthy behaviors as coping strategies, including smoking, unhealthy eating and less exercise, which can lead to weight gain and uncontrolled blood sugar levels. The data in Table II shows that individuals diagnosed with anxiety after being diagnosed with diabetes experience notably higher emergency room visits and inpatient admissions, leading to higher medical spending. On the other hand, the higher pharmacy cost for this cohort aligns with higher

compliance rates of the A1c test, suggesting that adherence to medical recommendations is more easily achieved for this group. In contrast, lower pharmacy costs for the cohort that is diagnosed with diabetes first and later diagnosed with anxiety are partially attributable to lower medication adherence for that cohort. In short, the clinical recommendations and approach for a plan participant who has both diabetes and anxiety will vary based on the order of diagnoses.

Table II also shows that women with diabetes experience higher rates of anxiety disorders than men. The difference in anxiety prevalence by gender is also seen with other comorbidities. A possible explanation is that women are more likely to report symptoms of anxiety to health care providers.⁸ Therefore, predictive models should account for the higher diagnosis of anxiety in women, but they should not ignore the lesser understood effect of anxiety on men.

The relationships are similar for individuals with depression, as seen in Table III. A mental health condition like depression greatly influences participant health outcomes, costs and adherence to treatment recommendations. Still, within the cohort that has both depression and diabetes, the order of diagnosis dictates a large variation in emergency room visits, admissions, and medical and pharmacy costs. While adherence to annual A1c testing is about the same in the cohort without depression as the cohort that had diabetes before depression, the cohort that developed depression after the diabetes diagnosis struggles with diabetic best

TABLE II

Diabetes and Anxiety Diagnoses

	Diabetes With Anxiety			Diabetes Without Anxiety
	Diabetes After Anxiety	Diabetes Before Anxiety	Total	
Demographics				
Total members	8,102	17,158	25,260	180,766
Percent of total	3.90%	8.30%	12.30%	87.70%
Average age	44	47	46	51
Percent female	78.30%	72.60%	74.40%	52.40%
Cost per Member per Month (PMPM)				
Medical	\$1,310	\$1,484	\$1,429	\$969
Rx	\$473	\$698	\$626	\$554
Total	\$1,783	\$2,182	\$2,054	\$1,523
Utilization per 1,000				
Office visits	14,137	13,654	13,809	7,355
Emergency room visits	589	657	635	345
Admissions	62	78	73	40
Compliance Rates				
Annual A1c Test	55.4%	67.8%	63.8%	70.4%

Source: SHAPE, Segal's health data warehouse.

practices like medication and laboratory testing.

Table IV finds similar utilization and cost patterns between those diagnosed with hypertension and alcohol use disorder. However, whereas women had the highest prevalence of comorbid anxiety and depression with their diabetes, the opposite is true with hypertension with comorbid alcohol use disorder. Men are more likely to have this combination of conditions.

The relationship between heavy alcohol use and hypertension has been well-established in medical literature.

However, the causation isn't as clear. Numerous physical changes happen as a result of long-term alcohol use, and some will remain permanent even after cessation. One such correlation is the increase in cortisol levels in the body, which can lead to inflammation, a decrease in the immune system response and a reduced metabolism, leading to chronic cardiometabolic disease states. As a result, the clinical presentation of these two cohorts is different. While office visits are about the same between the cohorts with different orders of diagnoses, there is a marked difference in

the number of emergency room visits and inpatient admissions.

This data suggests that health plans should incorporate the order of mental health diagnoses and gender into their analyses and recommendations for chronic condition case management. Investing in mental health support services immediately after individuals are diagnosed with a life-altering medical condition can be a valuable strategy in improving patient care and reducing future plan costs. Unfortunately, this is easier said than done. Typically, predictive models are not sophisticated enough to account for the succession of conditions.

Limitations of Predictive Modeling

Why is predictive modeling unable to account for the order of diagnosis? Predictive modeling is only as good as the underlying data. In industries where employees change jobs often, claims databases struggle to gain a complete picture of the level of risk. Take, for example, the intersection of anxiety and diabetes. An individual who gets diabetes first may then experience symptoms of anxiety, such as excessive worrying about management of a complex disease as well as the possible progression and even mortality. Many may have familial experience that informs their perception of living with a chronic illness. Unfortunately, because this longitudinal detail is not always available to health plans, these individuals are typically omitted from the calculations or analyzed using over-generalized assumptions.

Tables I-IV highlight the opportunity in early intervention for chronic

TABLE III

Diabetes and Depression Diagnoses

	Diabetes and Depression			No Depression
	Diabetes After Depression	Diabetes Before Depression	Total	
Demographics				
Total members	6,004	13,576	19,580	186,446
Percent of total	2.9%	6.6%	9.5%	90.5%
Average age	45	48	47	51
Percent female	78.7%	71.4%	73.7%	53.2%
Cost per Member per Month (PMPM)				
Medical	\$1,381	\$1,764	\$1,646	\$960
Rx	\$527	\$761	\$690	\$550
Total	\$1,908	\$2,525	\$2,336	\$1,510
Utilization per 1,000				
Office visits	15,982	14,833	15,185	7,407
Emergency room visits	619	715	686	348
Admissions	71	109	97	39
Compliance Rates				
Annual A1c Test	57.0%	69.0%	65.3%	70.0%

Source: SHAPE, Segal's health data warehouse.

conditions when mental health conditions or substance use are also present. However, predictive modeling is limited by the health experiences that do not become health care claims. This is especially true of mental health and substance use diagnoses; plan participants hesitate to disclose these struggles to health care providers out of fear their employers will discover and use the information punitively. Until this barrier is overcome, underreporting will continue to undermine the full potential of predictive modeling.

Predictive Modeling Today

Predictive analytics are more prevalent among health plans that hold greater risk-bearing responsibility. These include insured, government (Medicaid and Medicare), accountable care, state exchange and insured products. Predicting risk typically focuses on key physical conditions—asthma, diabetes, heart disease, low back pain and rheumatoid arthritis—with the goal of cost management.

Predictive algorithms are used to a lesser degree by self-funded plans and experience-rated private insurers be-

cause, ultimately, the output requires expertise in translating and triggering services based on findings. Some plans use independent clinical management vendors, which may pose additional challenges, such as:

- Lack of real-time access to electronic health records
- Delayed receipt of medical and pharmacy claims data
- Data-sharing concerns that prevent clinical staff from receiving necessary information.

Some vendors have crafted predictive analytics to identify and reach out to those with mental health conditions and substance use concerns. Some are highly effective in risk stratification and successfully incorporate mental health conditions into these calculations. However, many of these solutions create concerns about cybersecurity, tracking, compliance with state and federal laws, privacy rules, and data sharing between plan sponsors and other vendors.

The Predictive Analytics Patient Experience

Some patients recognize a need for mental health treatment and take action themselves. They may mention concerns to a primary care provider or schedule an appointment with their member/employee assistance program. However, with the average lapse of 11 years between onset of symptoms and mental health treatment,⁹ the condition is most likely to deteriorate and impair the individual’s ability to manage other medical conditions.

If the participant’s plan employs high-quality predictive analytics, the

TABLE IV

Hypertension and Alcohol Use Disorder Diagnoses

	Hypertension With Alcohol Use Disorder			Hypertension Without Alcohol Use Disorder
	Hypertension After Alcohol	Hypertension Before Alcohol	Total	
Demographics				
Total members	2,393	7,790	10,183	539,742
Percent of total	0.4%	1.4%	1.9%	98.1%
Average age	42	49	47	51
Percent female	33.8%	30.4%	31.2%	48.9%
Cost per Member per Month (PMPM)				
Medical	\$1,969	\$1,858	\$1,884	\$888
Rx	\$254	\$332	\$313	\$349
Total	\$2,223	\$2,189	\$2,197	\$1,237
Utilization per 1,000				
Office visits	9,057	9,039	9,043	7,124
Emergency room visits	992	904	924	330
Admissions	439	274	313	33

Source: SHAPE, Segal’s health data warehouse.

participant may be identified as in need of outreach. The inputs for predictive analytics software typically consist of medical and pharmacy claims, which may take several months to reach the health plan, along with triggers from utilization management processes. However, just because the algorithm identifies at-risk individuals does not mean those individuals receive outreach. Health plans typically target only the top few percentage points of at-risk patients. If the participant meets this elusive risk threshold, the participant’s name typically remains on an outreach list for weeks to months until a case manager or administrative employee from a short-staffed department has time to call the participant. In

some models, live outreach is replaced with an autodialer or even sent offshore.

Participants typically do not answer their phone for an unknown caller. In response to the lack of live engagement, many vendors have opted for text or email outreach and may even be pushing for 100% virtual engagement by using artificial intelligence (AI). As a last resort, the health plan may try sending a letter to notify the participant of the availability of clinical assistance. Without hearing a response during the time frame, the health plan will close the case and label the participant as unreachable.

Participants who do respond to the outreach attempt may observe a disconnect between medical conditions

and mental health. For many health plans, separate staff work on mental health with little or no integration within the system focused on medical conditions. In some cases, it is an entirely separate vendor servicing medical and mental health conditions. While a few health plans coordinate this care admirably, the result is usually an individual whose case management focuses primarily on either their mental health or physical medical conditions without close coordination.

Even if using a state-of-the-art predictive modeling system with algorithms that consider the effect of mental health on medical conditions, the outcome can be minimal engagement and improvement for a tiny fraction of the at-risk population.

How to Proactively Impact Positive Outcomes

A multidimensional approach is most effective to address the impact of mental health on participants. Plan sponsors should not only rely on dedicated mental health resources; they should also consider addressing the integration between predictive analytics and medical and mental health resources.

Plan sponsors should consider following this seven-step strategy:

1. **Determine which resources address mental health directly.** These benefits may include member/employee assistance programs, targeted point solutions, benefits offered through a specialized mental health benefits administrator and specific care navigation/case management programs.
2. **Consider whether the mental health spending ratio is optimal.** Research shows that when comparing the allowed dollars per member per month for low-acuity services with high-acuity services, organizations that spend a higher amount on low-acuity mental health services (like office visits) tend to experience lower costs on high-acuity services (like inpatient stays) when compared with their peers.
3. **Negotiate for high-quality predictive analytics.** Some vendors, such as medical carriers, third-party administrators (TPAs) or point solutions, include predictive analytics only as an optional buy-up product. During contracting, plan sponsors can look for opportunities to negotiate for predictive analytics and outreach in-

clusion in services. They can also ask whether the predictive analytics system incorporates the effect of mental health on medical conditions when determining risk scores. Plans should make sure to include performance guarantees on risk stratification standards, the percentage of targeted participants who receive an attempted outreach and the timeliness of outreach.


4. **Discuss whether data input systems that predict outcomes are receiving all essential data in a timely manner.** It may be necessary to facilitate conversations between the vendors. The goal is to optimize data-warehousing capabilities (within the constraints of privacy regulations) to reduce lags between file sharing between administrators, TPAs and clinical management vendors.
5. **Examine the extent to which predictive analytics are siloed from other vendors.** Plans should ask vendor partners to find patterns, align reporting frequencies, create synergies, and optimize opportunities to combine outreach and synchronized messaging. This includes scripting patient conversations for vendors when directing them to other services. A more strategic positioning of analytics could increase early detection and minimize chronic issues within a population. Vendors should be asked to explore methods to make effective outreach and referrals, while still adhering to regulatory standards.
6. **Find out whether outreach protocols address mental health conditions at the same time as medical conditions.** Clinicians need to be empowered to use their own clinical judgment, regardless of a predictive analytics algorithm's output. As noted above, Tables II and III illustrate that anxiety and depression often appear after a diagnosis of a chronic condition like diabetes. Therefore, clinical protocols and scripting for outreach of members with a new life-changing condition should include a clinical assessment for mental health impacts. Outreach should also include educational materials on case management goals, so prospective participants develop trust in the value of the program.

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7. **Review reporting regularly to identify trends and areas for improvement.** Mental health service utilization reporting from medical insurance carriers, clinical management firms and TPAs should be broken down between mental health conditions and substance use disorders, including pharmacy utilization data. A review of group-specific benchmarks and annual trends will help guide where changes will make the biggest impact and which conditions require special attention. For instance, changing mental health plan networks may have a greater impact than implementing or updating an assistance program. Pharmacy reporting also illuminates interventions needed to optimize utilization management for opioid prescribing and to fine-tune the dispensing and coverage of medication-assisted treatment.

However, keep in mind that not only mental health will be affected by this mental health-related reporting. Medical outcomes will be impacted from effective outreach to high-risk individuals, regardless of whether the cause of the risk is predominantly related to medical or mental conditions.

Health care has made significant progress in predicting health outcomes. Now it is time to correct the industry's missteps by prioritizing mental health interventions and by unifying health care resources for a holistic, timely, participant-focused experience. 

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