REINFORCING THE CRYSTAL BALL OF CARE

A predictive-analytics makeover adds greater precision to anticipating high-cost claims while also elevating vendor value propositions

Written By Bruce Shutan

Today's sophisticated predictive-analytics models help self-insured health plans get a better handle on risk, as well as enable stop-loss carriers and reinsurers to price new business with greater precision and provide care managers with a clearer path to improving clinical outcomes.

Traditional prediction models often fall short in accounting for the nuances in healthcare journeys for members who appear similar on paper, notes Ali Panjwani, founder and CEO of Merit Medicine. For example, two patients with the same condition, comorbidities, age, gender and demographics may have vastly different treatment paths. These differences can result in a significant variance in claims spend due to several factors.

"As we leap forward into a world where data is abundant, artificial intelligence has grown in sophistication with our ability to process data through GPUs [graphic processing units), and we're now able to actually process the individual healthcare data for every single member in a group that might be underwritten," he says.

That granular level of detail involves examining primary, secondary and tertiary conditions for both low- and high-cost therapies, but also individual interaction with the healthcare system that tells a narrative about each patient.

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Ali Panjwani

For example, his company may learn that a health plan member who was prescribed six months of a disease-modifying therapy following a hospitalization had an adverse reaction to the drug after only 30 days. Tack on a series of specialist visits to treat loss of eyesight and an injured leg through physical therapy, and the complexity deepens.

A scenario like this one draws on patterns that paint a picture of how risk would look in the coming year. Panjwani explains that deciphering the level of predicted spend allows the actuary, underwriter and stop-loss carrier to underwrite the risk of that particular member in a superior way to just using demographics and a manual rate build-up.

UNDERSTANDING PROBABILITY

Since the vast majority of employers aren't large enough to counterbalance large claims with employees who file low-cost claims or none at all, there's no escaping volatility and unpredictability. The challenge, of course, is how small and midsize self-insured groups can better anticipate claims when some of that volatility is random, claimants can be costly one year but not the next and employees may change every year, according to Daniel Wolsk, chief revenue officer for Claros Analytics.

In trying to anticipate unexpected cost spikes, he says the emphasis is on understanding the likelihoods of medical events occurring rather than spotting specific cases that are complicated by data-privacy concerns.

"We're not doing anything to uncover the sick people or potentially sick people in a group," Wolsk explains. "We're trying to establish what the normal range is for the group in a much more sophisticated manner than the traditional methods or alternative mechanisms out there."


Daniel Wolsk

His company uses probability models to establish sound actuarial expectations based on the size and characteristics of each group, such as age and geography. Algorithms were built to leverage large data sets and computing power to deliver more precise estimates on claims risk.

The objective is to make it fast and easy for benefit brokers and consultants to help their employer groups anticipate the risks and rewards of changing a medical copay, stop-loss policy deductible or provider network, as well as implementing a medical management program to address a particular area of concern.

"We took just a completely new approach and built probability distributions around four dozen different service categories, and then we adjusted those distributions based on the characteristics of the group," Wolsk notes. "We're doing thousands of calculations because all of these different inputs are interacting with each other in different ways inside the algorithm."

MOVING THE SITE OF CARE


Rob LaHayne

As the fastest-growing component of healthcare costs, prescription drugs serve as a ripe area for predictive-analytics. There are several components with respect to specialty drugs where it plays a role in how Leap Health applies its data logic and tools toward improving patient experience, site of care and clinical outcomes, explains co-founder and CEO Rob LaHayne.

On the front end, it's about ingesting clinical and claims data, then applying patient-generated data and trying to elevate predictions across those three categories. It starts with identifying patients who are eligible for infusion-treatment services, then engaging them in a thoughtful and targeted way that drives meaningful behavior change.

The next task at hand is determining whether the patient and doctor are willing or resistant to moving the site of care from a cost standpoint based on demographic information, ZIP code and provider contract strength within the network. In some cases, that could mean safely administering drug infusions in a patient's home. The final component is ensuring that patients are on the right drug and adhering to their regimen, which will improve outcomes.

"All of that can be solved by predictive-analytics," LaHayne says, noting that it will generate a risk score on each of those categories. Given that his company works with specialty infusion therapies that affect only about 1% of the U.S. population, he explains that there's a built-in need to be highly targeted.

When performing a full-blown savings analysis, Leap Health ingests client claims data from recent years before repricing and running it through analytic models that show savings opportunities. "We can predict where that trend line is going," he says, noting efforts to turn data into action as more automation is built around the back-end data to provide more value.

Leap Health was able to intervene on behalf of a patient in Washington who had been traveling about 100 miles every two weeks to receive Krystexxa infusions to treat gout. Switching the site of care saved $750,000, but also dramatically improved his quality of life with fewer disruptions to work and less time away from family. "We were able to get that patient off the drug because he was able to be more adherent to the plan," he reports.

COLLABORATING WITH ACADEMICS

Predictive-analytics is fertile ground for collaboration between experts in the fields of medicine and data science. One such example involves the decade-long evolution of Prealize Health. Matt Whitnack, the company's head of business development, credits two academics at Stanford University whose work was critical in helping build an AI-driven predictive modeling tool to better identify high-cost claimants and, as a result, bend the healthcare cost curve. They included Arnold Milstein, M.D., a professor of medicine who directs the school's Clinical Excellence Research Center, and Nigam Shah, Ph.D., who heads up the bioinformatics department and is also chief data scientist for Stanford Health Care.

Ten years ago, the professors noticed that 7% of today's patient population will incur 34% of next year's cost. "They used a very large offshore claims data set to do all the building and testing that led to the development of their first successful machine learning model," Whitnack explains. "They gave that model to us, and that was the catalyst for starting our company."

Prealize built out roughly 50 other machine learning models that produced highly accurate predictive insights to augment care and condition management to help payers find new high-cost claimants. The

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company later moved into underwriting and providing higher accuracy cost predictions to price renewals with more precision. It also launched a solution to help risk-stratify potential new groups that includes a 300 million-plus member claims data lake.

After focusing on fully insured plans and administrative-services-only contracts, Prealize took its solution into the self-funded space. The goal was to help stop-loss carriers find good targets and price premiums more accurately based on better risk scores and deeper insights into the risk. The solution goes beyond risk scores in that it includes threshold predictions for stop-loss.

"We've brought in predictions that stop-loss carriers don't get from other solutions in the space, such as excess models that show how many members will exceed certain cost thresholds, like $100,000 and $200,000, for example, and what the excess cost is predicted to be at those thresholds," Whitnack reports. "We've layered in some explainability around what the profile of a group's risk looks like and what sort of conditions and drugs members have and how many people are going to show up in inpatient and the emergency department."

In 2023, Prealize learned about the so-called healthcare transformer model being developed at Stanford University. The transformer model is based on the same AI model that powers large language models like ChatGPT and Gemini. It partnered with Stanford to develop its own health-care transformer model and found that it provided a lot of benefit over previous-generation machine learning models, including even higher accuracy. Training the model involves feeding it claims information that the model uses to build a healthcare timeline of medical and Rx events on each individual in the training set.

"You have every healthcare event and drug event in a timeline for each member, and then we drop some of those events out of the timeline, and we teach the transformer model how to fill in the correct events," Whitnack says. "That's similar to how ChatGPT is trained, except that model is fed."

Prealize built a new framework around the transformer model that allowed it to move away from operating 50 independent machine learning models to operating a single foundation model for each client. The foundation model enables the company to quickly add high-performing new predictions in only two months, compared to the eight to 12 months it took using prior-generation technology.

SPOTLIGHTING VENDOR ROI

Meanwhile, advancing technology continues to reshape the employer-provided medical benefits supply chain. Point-solution providers are able to leverage machine learning and predictive-analytics models to demonstrate to their self-insured customers with a high degree of certainty what the costs would have been without their solution in determining a potential return on investment (ROI) and the overall value their interventions provide.


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Since there are significant dollars in play when a carrier underwrites the risk of a group, Panjwani says it's critically important to nail down the right details to grow a healthy book of business that produces good results. That's because getting that risk assessment wrong means mispricing it or declining to quote altogether.

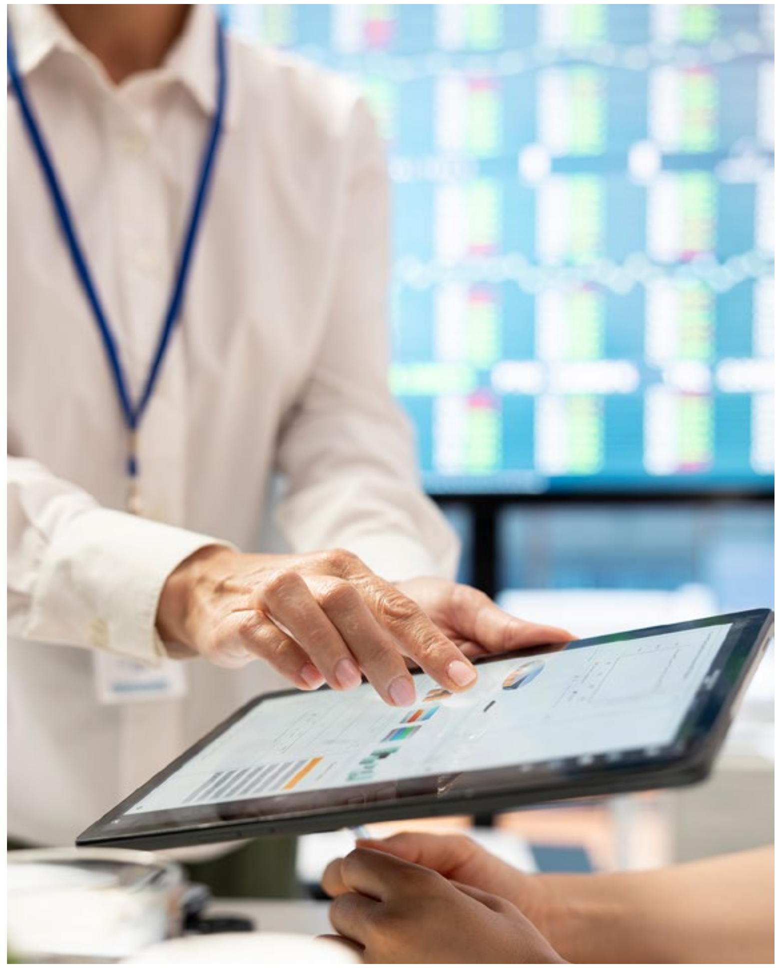
Merit Medicine's ability to map millions of chronically ill patients in a data set helps stop-loss carriers and managing general underwriters better predict claims risk and ROI with a higher degree of certainty. Having better data that allows for a much higher degree of accuracy in determining what risks are inherent in a particular group allows vendors to avoid surprises and pricing the business accordingly.

"It's a competitive environment to be able to win groups, and so it's better to know the risk, price it high and lose that business vs. not know the risk, price it too low, and end up with a group that generated a lot more reimbursements than expected and a higher loss ratio," he opines.

On the other end of the spectrum, it pays to have the right predictive-analytics in place in the event that a group appears riskier to insure than meets the eye. For example, efficacious treatments may have been acute in duration and significantly improved the condition of members who drove much of the healthcare spend in a given year.

Self-insured employers will want their carrier to price responsibly by baking into the premium the risks that exist so that year over year, there's more predictability and risk management can be planned appropriately, Panjwani adds.

Merit Medicine has been able to use predictive-analytics to better target and stratify members of a population with highly complex healthcare needs who would have benefited most from care-coordination services. He credits the ability to acquire first-dollar pharmacy and medical claims data on demand and utilize ground-up claims data to generate the company's output.



EYEING BETTER OUTCOMES

What's exciting to LaHayne is the potential to dramatically improve risk stratification and chronic disease management. Mindful that 20% of any typical employee population is driving 80% of the overall cost while 1% of infusion therapy drives 15% of the tab, he notes that "these are chronic condition patients on high-cost drugs that we want to be able to segment and tie back to better outcomes."

The aim is to establish priority tiers that factor in the cost and safety of the drug being infused elsewhere, along with the willingness of the patient and doctor to make that move. For care managers, it's a matter of providing higher-risk patients with the tools they need to receive better care.

A superior predictive-analytics model can help specialty carriers whose mission is to improve outcomes and bend the cost curve by identifying specific problems that exist in a particular group. For example, keeping a closer watch on a particular health plan member who is suffering from an ongoing low-back condition that might fall below the threshold of the specific stop-loss deductible in a given year could help ward off expensive claims the following year. That might mean exploring a musculoskeletal digital physical therapy solution today to better manage back pain and avoid expensive surgery.

Prealize partners with risk-taking entities such as specialty care management companies to drive improved cost containment. One example involves using predictive-analytics to spot members who are at risk for developing musculoskeletal injuries so that they can be offered much earlier assistance, such as physical therapy, find relief and potentially head off avoidable, costly surgeries.

As the old axiom suggests, any ounce of prevention that self-insured employers can bake into their plans with the help of predictive-analytics would be well worth a pound of cure. ■

Bruce Shutan is a Portland, Oregon-based freelance writer who has closely covered the employee benefits industry for more than 35 years.