Tech and Tenderness

TPA uses predictive modeling based on artificial intelligence,
wrapped with personalized nurse intervention, to lead high-risk patients to medical care.

By Robin Blair, Editor

On the surface, predictive modeling might not light up the sky the way wireless devices or voice recognition systems do. But make no mistake: Its impact is so far-reaching that soon it will influence and possibly direct the healthcare services many of us receive.

Disease management (DM), with its predictive modeling corollary, have of late come under increased scrutiny. The DM concept, of course, made perfect sense in the beginning: Manage those patients with chronic, high-cost conditions to avert admissions or emergency episodes and, hence, reduce costs. But how does a health plan with 500,000 members actively influence 10 percent of its membership with diabetes, congestive heart failure and asthma in such a way that the intervention moderates behavior that, in turn, moderates costs? That's 50,000 people and a lot of intervention. How much smarter might it be to predict who could be in the high-risk population years before they get there, and modify their behavior now?

The advent of more sophisticated predictive modeling technology has turned attention to high-risk health plan members who aren't yet high-cost patients, but soon will be without effective intervention and lifestyle changes.

These may be patients in the early throes of utilization, as well as consumers who aren't yet active utilizers. Experts postulate that 2 percent of a health plan's membership may be at very high risk and may, eventually, drive 70,

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80 or even 90 percent of the health plan's expenses. Those numbers alone make it a problem worthy of the IT microscope.

Artificial Intelligence

HealthSCOPE Benefits Inc. (HSB), headquartered in Little Rock, Ark., is a full-service health management and claims administration company—a third party administrator. It provides administration, claims and support services to self-funded employers. Its 250 employees manage more than $400 million in an-

For more information about Risk Navigator *Clinical* and predictive modeling solutions from MEDai, www.rsleads.com/405ht-206

nual healthcare expenses, servicing about 140,000 members.

As part of a suite of medical management services that includes disease management and case management, HSB also offers High Impact, a predictive modeling-based program that proactively identifies tomorrow's high-risk, high-cost patients. Today, about 40 percent of HSB's total membership is eligible for the High Impact program.

The technology foundation of High Impact is Risk Navigator *Clinical*, a forecasting tool from Orlando, Fla.-based MEDai (Medical Artificial Intelligence). The technology foundation of Risk Navigator *Clinical* is MITCH (Multiple Intelligent Tasking Computer Heuristics), a prediction engine that allows health plans and TPAs to not only predict which members are tomorrow's high-cost patients, even if they are not now heavy utilizers, but also to predict which individuals in the high-risk population are likely to respond to intervention.

MEDai CEO and co-founder Steve Epstein says the technology is third-generation. It started with rules-based systems, he says, then progressed to groupers, and now systems are heuristic. They have become "smart."

"It's a tremendous advantage," says Epstein, "for a health plan to

take subsets of a populations and say, 'Five years down the road, if you continue your current lifestyle, you run an 80 percent chance of developing heart disease or lung disease. Here is what you can do *now* to prevent that.' It's an even greater advantage for the health plan to be able to predict which members are likely to respond to its intervention."

Juggling Data

To forecast risk, MITCH uses a varied collection of administrative data—encounter claims, pharmacy claims, lab data and membership files—as well as survey or evaluative data such as health risk assessments. With earlier renditions of predictive modeling programs, accurate predictions couldn't be generated if some of the data were weak or missing—but no longer.

MITCH's mission is to spot high risk from miles away. Being able to deal with linear and nonlinear data, "MITCH can compare a consumer sitting at home, with no prior hospital admissions or ER episodes, to his neighbors with similar backgrounds, ages, zip codes and insurance coverage, and can generate an accurate prediction," says Epstein.

Equally important, he says, is the system's ability to identify the drivers. "It's not enough to identify the risks," he continues. "Care management programs must know the drivers of risk. Is it a drug, a lab value, or something in the patient's history at the foundation of his risk score?"

Modeling with artificial intelligence (AI) also makes crystal clear the difference in value of healthcare dollars spent. In their article, "Predictive Modeling in Health Plans," authors Randy Axelrod and David Vogel cite as an example two health plan members that each generate $3,000 of service utilization in a plan year. One member generates those costs in a single episode of hospital treatment; the other, through months of prescription utilization. While the dollar amounts might render similar financial profiles, AI-based predictive modeling would manifest dramatically different risk forecasts for those patients.

MITCH relies upon more than 68 types of mathematical components or configurations to clean, analyze and mine data. For example, says

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Epstein, "If you have a data set with age as a component, but you know data are missing or some have been coded incorrectly, MITCH can determine where age is likely to be in error and can modify the results so age isn't too heavily weighted an influence on the final analysis."

Personal Touch

Even the most sophisticated IT can't modify human behavior. To produce behavioral change, the High Impact program combines the information generated by MITCH with a program of personalized intervention, information collection, guidance and monitoring. High Impact utilizes registered nurse life coaches who are assigned to individual plan members identified as high-risk.

Cindy Furgerson is the director of High Impact. She says that after the program's first year of operation, HealthSCOPE Benefits' clients experienced these collective results:

♥ Catastrophic medical cases dropped by one-half;

- ♥ Inpatient admissions per 1,000 members fell nearly 4 percent;
- ♥ The number of inpatient days for High Impact members decreased 16 percent;
- ♥ Emergency room visits per 1,000 members decreased 13 percent;
- ♥ Average gross cost per member, spread over the total employee population, decreased an average of $75 per member per year.

During initial contact, the High Impact life coach uses a survey instrument to measure the member's perception of his own health. "The member's perception can alter our approach to facilitating care," she says. "A member who understands his medical needs and is already using services or is on the threshold is very different from an at-risk member who perceives himself to be in good health."

The initial intervention also allows the life coach to identify barriers to compliance and care—for example, claims not yet paid or co-pays so high that the members fails to get medications. "We look for issues that would lead to non-compliance. We strive to establish credibility in the relationships so we can help guide as the patient accesses healthcare service."

Once the patient is onboard, the life coach develops a customized care plan that includes continual needs assessment, education, a monitoring schedule to document medication and treatment compliance and, where needed, advocacy and facilitation.

"Our life coaches work as clinical navigators to help patients make their way through a complicated, fragmented and sometimes broken healthcare system. If we find it that way—and we're clinicians—imagine how it appears to patients. When we can help them make the right connection, remove obstacles, and bring them together with resources and services they need, their health will improve."
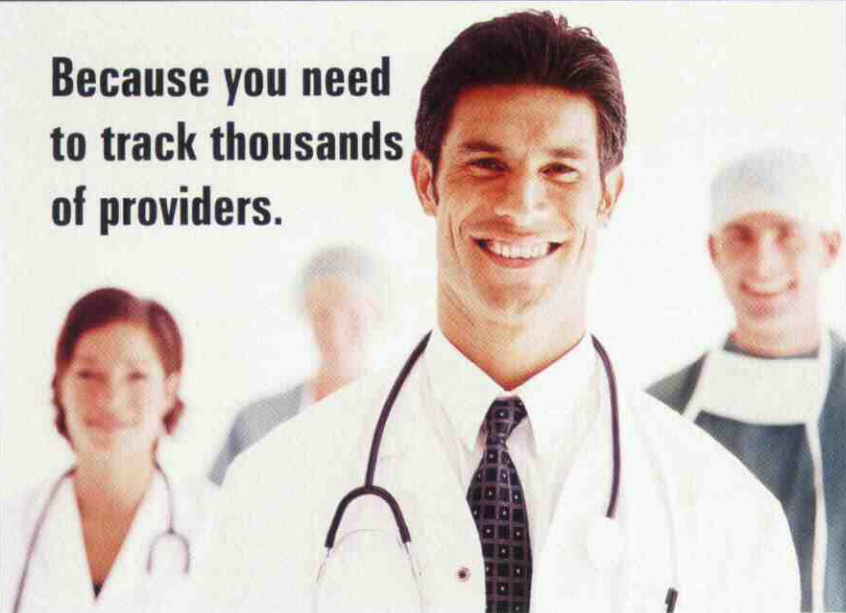
Little Things Mean a Lot

Furgerson says life coaches effect change in ways that sometimes would be hard to detect. "One of our patients was a post-kidney transplant patient on anti-rejection drugs. She had two separate prescriptions with two separate copays. This gave her a large pill count to handle each day, and the two copays were rich enough to jeopardize her compliance. We worked with her physician and pharmacy benefits manager to get the prescription rewritten and eliminate one copay so she would remain compliant."

Another time, a congestive heart failure patient tried to make an appointment with her cardiologist when she noticed swelling in her feet—a symptom she learned from her life coach—but was told she had a one-month wait. When the life coach followed up with the cardiologist's office, she learned that the patient hadn't described her symptoms in requesting the appointment—and that one-month wait vanished.

The intervention isn't difficult, says Furgerson, but "sometimes the hardest part of the program now is contacting members. There are many privacy-related barriers that can impair the initial contact. Once the life coach is able to speak with a potential participant, enrollment rates are very good. Our life coaches are skilled as clinicians, personal motivators and salespeople." Most employers prepare their employees for High Impact with a series of informative newsletters and brochures, so that first contact isn't a surprise.

In the past, the term "high-risk" usually equated with "high-cost," but that's no longer true. Today, "high-risk" might equate with a disease and its related medical costs, both under control.

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