

Bringing data analytics to bear on diabetes care

Amy Carpenter Aquino

September 2017—Can data move the dial on diabetes? That's the thinking behind Roche Diabetes Care's new partnership with Accenture, and it's how some labs and health care systems are already driving diabetes care to a whole new level.

"At Roche Diabetes Care, we want to create a leading open digital diabetes ecosystem," says Yan Beynon, head of digital and health solutions. To do so, the company will use Accenture's existing Intelligent Patient Platform to build a core data platform that gathers "vital pieces of diabetes information," he says. The data will be categorized, analyzed, and transformed into "powerful insights to support improved therapy routines and outcomes."

Within this ecosystem, Beynon says, blood glucose, insulin, blood pressure, and cholesterol levels, along with co-medication, physical activity, food intake, and other information, will be collected and analyzed and put into context. "Having all therapy-relevant data in one place and the smart algorithms to perform the analyses will help to improve therapy adaptation and results," he says.

Laboratories, too, have had their eyes on a data-driven path to better diabetes management, with one—Regional Medical Laboratories in Tulsa, Okla.—launching a Diabetes Home this fall.



Beynon

C. Terrence Dolan, MD, president and CEO of RML, says a recently published study concluded that diabetes is responsible for 12 percent of U.S. deaths, even though only 3.3 percent of U.S. death certificates indicate diabetes as the underlying cause of death.

"I think they're right, based on our clinical experience," Dr. Dolan says of the study's authors.

Dr. Dolan's perspective on the number of Americans dying from diabetes is based on the massive amounts of data generated by 2.4 million RML patients. Dr. Dolan can access nearly 20 years of patient data through the regional lab's Enterprise Data Warehouse. (See "Big gain theory—data warehousing pays off," CAP TODAY, November 2014.)



Dr. Dolan

"Our Enterprise Data Warehouse is central to everything we do," Dr. Dolan says. "All our data systems feed data into the Enterprise Data Warehouse, not just from the medical standpoint but also from the business. It runs our entire operation at Regional Medical Laboratories."

Dr. Dolan and his colleagues, including Enterprise Data Warehouse director Debbie Smith and operations process improvement director Debbie McClain, have been working on a way to leverage the power of the warehouse's data to improve outcomes for diabetes patients. They began about a year ago by analyzing hemoglobin A1c levels and other data points for RML's diabetic population. What they found led to the development of a new laboratory resource called the Diabetes Home.

After reviewing 226,000 patients with a well-documented diagnosis of diabetes, Dr. Dolan and his colleagues discovered that a large percentage of patients' hemoglobin A1c levels "virtually never went into a normal range," he says.

Further analysis revealed a direct correlation between diabetes patients' elevated hemoglobin

A1c levels and greater albumin excretion in the urine, which suggests glomerular damage, he adds.

Those discoveries inspired RML to take a closer look at a segment of its diabetes patient population.

"We looked at 100,000 well-documented diabetic patients whom we had studied or who had received testing—meaning an adequate number of tests over a period of time—and fewer than 50 percent had adequate follow-up," Dr. Dolan says. RML followed the testing recommendations of the American Diabetes Association and other organizations to define adequate test follow-up as hemoglobin A1c measurements at least twice a year for all diabetes patients and quarterly for those not meeting treatment goals, and urine albumin measurement at the time of diagnosis and annual testing. Fasting lipid profiles are also important in managing diabetes patients, and dipstick urine albumin testing is inadequate, Dr. Dolan notes.

Sixty-nine percent of patients continued to have an abnormal hemoglobin A1c, and 57 percent had inadequate intervention of renal function, he and his colleagues found.

They plan to improve the numbers of RML's diabetes patients with the Diabetes Home, which will use automated ordering of lab tests combined with patient notifications to keep diabetes patients on track with their required tests.

Dr. Dolan explains how the Diabetes Home will work: "A physician can enroll their patient for monitoring for recommended laboratory tests by simply ordering it, on a requisition that we have for all our outpatients and fulfilling all the regulatory requirements. We have software that automates the particular orders to be performed at the appropriate intervals. The laboratory notifies the patient by email, which the patient has given the laboratory permission to use, to come in to any of their patient service centers to have the appropriate test performed at the appropriate time."

For patients, the purpose of the Diabetes Home is to help them understand testing recommendations, to help them stay on track, and to achieve goals, Dr. Dolan says. "For clinicians, to help them keep track of their patients' recommended laboratory testing, to improve compliance and reach treatment goals. And for payers, interestingly enough, to help monitor effectiveness of the practices in which they ensure their patients."

RML has been working on the Diabetes Home software for about a year and was starting to roll out the concept when Dr. Dolan spoke with CAP TODAY in August. "We have talked to many doctors and also the payers, and they're all excited about what we are going to be able to accomplish," he says.

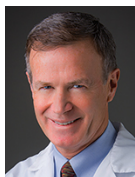
RML will measure the effectiveness of the Diabetes Home by analyzing changes in patients' hemoglobin A1c and urine albumin levels. "If their hemoglobin A1c comes in range, and the albuminuria decreases or is eliminated, that is a reasonable goal to obtain," Dr. Dolan says.

"The reality is if you look at total health care spending, and the data varies, the majority of the money—70 to 80 percent—is spent by about 20 percent of the population. That population is the unfortunate folks who have chronic disorders, diabetes, rheumatoid arthritis, etc. They're the ones spending the money and rightfully so," Dr. Dolan says. "We need to put them on a plan where we truly improve their outcomes."

In 2015, leaders at TriCore Reference Laboratories, Albuquerque, NM, were talking about a pilot to use predictive analytics to improve the management, and ultimately the health, of patients with diabetes. (See “Analyze this: data shines within and without,” CAP TODAY, November 2015.)

“We’ve been able to do that since the article,” TriCore chief medical officer Michael Crossey, MD, PhD, said of the pilot in an August interview with CAP TODAY. “The challenge was getting somebody to pay attention.”

The full potential of TriCore’s impressive collection of data, gathered from patients of central New Mexico’s three largest health systems, is yet to be realized but not for lack of interest. The problem has been identifying who on the payer side is responsible for translating the wealth of information on patient A1c and microalbumin levels into actionable measures that can change the trajectory of disease progression.



Dr. Crossey

“Is it the health plan? Is it the integrated clinic? The physicians group?” Dr. Crossey asks. “In talking about it with these various groups, everybody is excited about it, but nobody knew how to deal with this.” It was, he says, “‘Who’s going to run that? Who’s going to work that file? Who’s going to call the patients up and get them in?’”

“I’m not comfortable with the laboratory calling patients and saying, ‘You need to come in and get your A1c done,’ because that’s a little out of our wheelhouse, and Medicare takes a dim view of labs soliciting patients to have lab work done,” he says.

Since launching its pilot to payers that have care coordination, TriCore has found that two groups are most interested in diabetic patient data, which includes measures for A1c, fasting glucose, microalbumin, and lipids.

“There’s the quality group that wants to make sure the test got done because of their HEDIS [healthcare effectiveness data and information set] measures,” Dr. Crossey says, noting that health plans are rated on how many diabetes patients got their A1c test.

“The thing that’s been amazing to find out the last few years is that they don’t really care if it was going up or down or staying the same. They just need to do the test,” he says. “So it doesn’t really translate into better care for me.”

Care coordinators, on the other hand, are eager to follow the trend of their patients’ data, he says. “They want the results and they are having a very difficult time, because what they’ve done previously is rely on providers. So they run around the state with a clipboard, trying to track their patients and make sure an A1c got done and it’s coming down,” and that microalbumin and lipids are moving in the right direction.

Since TriCore has such a large footprint in the state, Dr. Crossey says he can take a care coordinator’s enrollment file, “bounce” it against his data warehouse, and deliver a comprehensive report on the testing history of patients with diabetes.

“We give them what we did, so that’s good care, and we tell them what wasn’t done, so that’s care gaps.” That’s new, he says: “I don’t think many laboratorians think about being able to tell somebody not only what they did but what they didn’t do.”

Figuring out the business model for its data analytics service has been another challenge for TriCore. “If you’re going to propose this as a value-add for the CPT code, it’s not sustainable,” Dr. Crossey says.

That is something TriCore is addressing with other members of Project Santa Fe, the group of innovative laboratory professionals and pathologists who first met last year in a think-tank-style meeting led by TriCore's CEO Khosrow Shotorbani, MBA, MT(ASCP). (See "Laboratory 2.0: Changing the conversation," CAP TODAY, July 2016.)

"Are we going to approach a health plan and say, 'We'll do your lab work with a regular lab contract, but this analytics is going to be a member-per-month cost or a cost per report?'" Dr. Crossey says. "There are all kinds of variations we've been talking about. I would say the business model is as challenging as the analytics. People are not used to a laboratory coming to them and saying, 'I can do your HEDIS report for you.'"

The need for innovative approaches to diabetes management will continue to grow, and laboratories that can offer an analytics service will have a leg up on the competition. And when it comes to data, quality trumps quantity.

"When I talk to people around the country, the first thing they say is, 'Well, I don't have 80 percent of the market; I don't even have close to that.' And I always say, 'But you know what you know,'" Dr. Crossey says. "Every piece of data you have is valuable, even if you have 20 percent of the market, even if you're in the internal, captivated group, where you're in a health plan that owns a hospital that owns a provider group. You can do this within your own system."

"If people think about this correctly, if you do this really well and you have 20 percent of the market share, big insurance companies will say, 'We need to direct more patients to that lab because they're giving us something that nobody else is.'"

Geisinger Health System, Danville, Pa., is turning its data on HbA1c levels into nutritious dishes.

A pilot to provide whole, healthy foods free to diabetes patients with elevated hemoglobin A1c levels has proved so successful that Geisinger is expanding the program.

"After a few months on the program, the patients dropped their hemoglobin A1c by about two points or 20 percent, which is dramatic," says Andrea Feinberg, MD, Geisinger's medical director for health and wellness.

In July 2016, Geisinger introduced the Fresh Food Pharmacy to help diabetes patients in Shamokin, Pa., after using its electronic health record to screen for patients with elevated A1c levels.

"Our goal was to prove that food is medicine," Dr. Feinberg says, "so we decided to focus on a disease that is very food sensitive."

Once potential enrollees were identified, Geisinger screened them for food insecurity. Patients were asked if they ever run out of food by the end of the month that cannot be replaced, or out of money to buy nutritious food. If a patient answered affirmatively to either question, the patient was invited to enroll in the pilot program at no cost to the patient. "We identified a population of diabetes patients with unmet social needs," Dr. Feinberg says.

Patients who enrolled in the pilot continued to receive their usual care, but they also received a referral to a dietician and were asked to participate in a 20-hour diabetes self-management class taught by health and wellness staff. Patients received a weekly prescription for food from Geisinger's food pharmacy, which the health system operates through a partnership with the Central Pennsylvania Food Bank and local retailers. The weekly prescription provides five days of food for the patient participant and other household members with the hope that the nutritious food will benefit all.

"While many participants don't start off knowing how to prepare quinoa, spinach, or fish, we don't see this as an obstacle," Dr. Feinberg says, because healthy-cooking classes are provided, as are recipes and help with menu planning.

The results of providing food-insecure diabetes patients with all the tools they need to follow their physician's recommendations have been "outstanding," Dr. Feinberg says. On top of their reduced A1c levels, patients reported feeling better and more in control of their health. And patients who have been in the pilot program for

more than a year have maintained the desired results, while newer patients are following in their footsteps with improvements in sugar control typified by reduced HbA1c, decreases in blood pressure, and better cholesterol management.

“So this isn’t just a flash in the pan. Often we see patients following diets for a period of time but then they lose interest and often lose the health benefits or regain the weight. We’re demonstrating how to engage with difficult-to-engage patients” and keep them engaged.

The HbA1c level of one obese patient in his mid-50s dropped from an absolute value of 16 to eight after three months in the Fresh Food Pharmacy program. “This is the result of hard work on the patient’s behalf along with the FFP’s provision of tools that assist the patient in making the right lifestyle choices,” Dr. Feinberg says.

The program has far-reaching consequences, she says, because it’s led some to get their lives together. “Patients have reported feeling like they can now handle their health, and this has resulted in our patients taking up tobacco cessation and exercise.”

Geisinger developed the structure of the Fresh Food Pharmacy based on standard medical recommendations, “Diabetes 101,” with diet and lifestyle choices first and foremost in the care of a patient, Dr. Feinberg says. “By bringing diet into the mix, eating healthfully, losing weight, and exercising, we’ve seen patient after patient getting on less medication. Some patients even get off medications and will bear the benefits of that in the long term.”

Geisinger views health care from a population perspective, Dr. Feinberg says. “We’re not only trying to help the patient but also help the households in the community. If we can start developing communities that look at health as an important issue, then we have a chance at improving things, changing what we know to be a rising trend in obesity and type 2 diabetes.”

Roche Diabetes Care has the same aim. Accenture’s Intelligent Patient Platform is a scalable platform designed to deliver digital health solutions. “There is a need to rethink how care is being provided to people with diabetes,” says Beynon, “and how e-health solutions can optimally support everyday therapy management.”

With the recent acquisition of the mySugr diabetes app, Roche is adding an entry point with which to obtain data the patients themselves enter, Beynon says, helping to complete the circle of integration of all stakeholders in the management of a patient’s diabetes care. “We want to connect the dots between the caregiver, the patient, the health plan, and the payers.” Roche Diabetes Care says the solution is in development and was unable to provide a launch date.

With the new open ecosystem that integrates existing and future diabetes management solutions, Roche will work with payers on outcomes-based reimbursement plans and prevention programs, Beynon says, all built on insight gained from data. “So people with diabetes can spend more time in the therapy target range and develop fewer secondary complications.”

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