

## Q&A with Larry A. Pickett, Jr., CEO of RxDataScience Inc. Applying Data Science and Predictive Analytics to the Healthcare Data for Improving Patient Outcomes and Lowering Costs



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CEOCFO Magazine

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**CEOCFO:** *Mr. Pickett, what is the vision for RxDataScience?*

**Mr. Pickett:** Our vision is to apply data science to healthcare data to improve patient lives worldwide. The focus is on applying advanced predictive statistical techniques to either very large or very complex healthcare data sets. The goal is for these efforts to lead to improved patient lives and patient outcomes. We are also hoping to use some of our algorithms and solutions to be able to lower, or help control, the cost of care, which is a big issue for patients and the healthcare community.

**CEOCFO:** *What are some of the challenges specific to healthcare analytics?*

**Mr. Pickett:** The first challenge is usually around access to high quality data. The data is inconsistent and siloed into various transactional systems; for example, systems that collect prescription, claims, labs and EMR data. There are issues associated with integrating that data together so that it can be analyzed using various techniques such as machine learning.

The quality of the data depends upon the collection process and methods to clean and standardize the data. In terms of data silos, an example are electronic health records that are in hospital systems and physician practices. Those are secured, privately held data sets that have important clinical information such as patient symptoms, diagnoses, laboratory results, and so on and it is very inconsistent and fragmented. There are special precautions and rules around control and access to that data. Then there is prescription data, which is what is collected when people go to their local pharmacy to get a prescription filled. What is known and collected at that point is the date a prescription is filled, the product name, the strength, if it is a refill, and who is the insurer. The prescription system connects to insurance companies where there is

another data source, the insurance claims data. This contains what products are covered from what pharmaceutical companies, the terms of coverage, patient demographics, the cost, and co-pay. The patient has not even received the drug yet and data has already been processed and collected in the EMR, pharmacy and claims systems. Therefore, as you see, there is a variety of data spread across many different sources. The number one challenge is accessing and integrating that data so that in-depth statistical analysis can be performed from medical and business perspectives. Complicating or exacerbating this problem is the patient privacy issue. All of this information either is or needs to be de-identified, so details cannot be traced back to an individual person, or individual patient.

**CEOCFO: *Where you sure in the beginning that it could be done? Was it just a matter of figuring out how or was there some doubt whether it was a little too overwhelming?***

**Mr. Pickett:** We knew it was a big challenge because we had faced it within our previous company. However, we had solved it using innovative approaches and new technology with solutions coming from outside of healthcare and the pharmaceutical industry. Thus, it was a difficult problem where we had an innovative solution. That is exactly what we have found with our early customers – the solution, based on advanced analytics used on Wall Street with high frequency trading, is solving the problem where current approaches fall short.

**CEOCFO: *When you are getting data from a variety of sources how sure are you it is accurate? Is there a degree of error that just gets built in because of doctors' notations or is there a way to know whether some of the data is more accurate than others?***

**Mr. Pickett:** That is an excellent question. I do think that with electronic health records in particular there is a challenge in the quality of data. That is due to the difficulty in using the HER systems and the quality of information that is entered into the physician notes; these are the actual diagnosis' themselves and then the therapies or drugs that are prescribed. Nothing is going to be one hundred percent accurate given free text entry. Therefore, what you try to do is use probabilities and validate the quality of the data as best you can.

Another issue is the data are very costly when purchased from third parties. Pharmaceutical and healthcare companies literally spend tens of millions of dollars a year on this data. However, you are absolutely right in that there is a degree of error and incompleteness so you know you are dealing with imperfect data from the beginning. This is not a new problem or challenge. We apply analytics and algorithms, such as machine learning algorithms, to the data in order to ensure the highest quality analysis. Even then, you need individual experts from a medical perspective to provide human interpretation on the data. Those that are predicting machine learning and artificial intelligence will take over or replace doctors are overhyping the potential. The data can certainly support and supplement physician decision making but not replace it – that is the reality. The role for the machine is in reading and sifting through tens and hundreds of billions of billions of patient records much faster and then identify insights and opportunities in the data that still rely on human interpretation. There is always going to be the need for a medical professional to be at the center of the patient interaction, not a machine or computer.

**CEOCFO: *Would you tell us about the products and services that you have available, what they are and who is or who should be taking advantage of what you offer?***

**Mr. Pickett:** We have three categories of products and services for pharmaceutical companies. The first is a large set of software products across the pharma value chain. We call them Micro-Apps because they address very, very specific problems or opportunities very well. One problem might be determining the business value of a particular managed care contract in terms of market share and rebate percentages. What is the profitability associated with a particular contract? How would you calculate and monitor a national contract down to the territory level? Another one might be, "What is the patient journey for my particular product and disease space and how does that journey change over time based on new data?" Those are just two examples of the many software applications which we sell as Software as a Service (SaaS) solutions on an annual subscription basis like salesforce.com, for instance.

The second set of services is analytics as a services that we provide the ability to load and link all your data sets onto our platform, either in the cloud or in your data center, and to be able to analyze that data very, very quickly using our tools and platform. Small and medium sized companies can have all the advanced tools and capabilities of big pharma using this platform.

The third and final service is a data science consulting practice. Data scientists are in huge demand right now, so it is really difficult to attract and retain data scientists that know the healthcare domain, that know the terminology, that know the issues and the data in depth. Therefore, we offer affordable data science services on a contract basis for only days up to 6 months or a year. We have a team of data scientists who can be fully dedicated to a customer to develop advanced analytic solutions and algorithms for particular medical or business problem as the customer sees fit.

Whereas we are starting with a strong focus on partnering and supporting analytics solutions for pharmaceutical companies, our vision is much larger and includes health insurance providers, medical device companies, IDNs, ACOs, hospitals, and other stakeholders across the broader healthcare value chain.

**CEOCFO: *Are there various groups and people that might utilize your services aware of RxDataScience and how do you encourage awareness?***

**Mr. Pickett:** Many are not, because we just started the company earlier this year, so it is a startup. We have been going to different conferences and presenting our capabilities at those conferences. We have presented to four or five conferences this year. That is one way we are raising awareness. We are also leveraging our contacts within the industry, as our team has over one hundred and sixty years of pharmaceutical experience. Since the team were all internal software engineers and analytics experts, we had no external sales experience. So we recently hired a VP of Sales to develop a comprehensive sales and marketing program. It is a work in process at this point in terms of raising awareness. Our focus is on showing strong business value to our first customers and we will build off of that. Finally, we are doing some limited social media marketing via LinkedIn and Twitter.

**CEOCFO: *Is the industry ready? Are people skeptical that it can be done or that the accuracy is there? What have you found so far when you have been talking with people?***

**Mr. Pickett:** We commissioned a market research study early this year because we wanted to be clear that there was in fact a need for what we were considering offering. We wanted to tailor our offerings to the needs of the customers. We reached out to twelve different companies anonymously through a market research firm to identify analytics challenges and pain points and validate the business need. What we heard back overwhelmingly is there are clear pain points and needs for the products we are providing. The analytics teams currently have to hire expensive consultants to come up with solutions and the current technology being used falls short. They prefer to license software solutions so they can solve the problems themselves. That was encouraging to hear and, along with early customer projects, validates our approach. We have a highly structured pilot approach with our customers designed to solve specific problems in a 60 to 90 day timeframe which demonstrates the power, flexibility and value of our technology and solutions.

**CEOCFO: *Would you tell us about how you work with interns, how interns fit into your business model and your corporate culture?***

**Mr. Pickett:** I have believed in the intern model for a very long time. My previous company had a strong intern program and I was always very supportive of it using many interns in the IT department. I saw value in continuing this idea when we started RxDataScience. Our RxDataScience Co-Founder, Sayee Natarajan, and I participated in a data science job fair, held in February of this year, at The Frontier in Research Triangle Park, North Carolina. We literally met and spoke to one hundred and twenty data science students who were in their graduate studies or finishing their graduate degrees. From that group, we held interviews and hired five interns for the summer. We held a week long orientation session, followed by a team building retreat on the coast of NC, and they have been working with us side by side on helping build our products. The website we just updated was done by one of our summer interns, Shruti Dalvi. Shruti is a graduate student in the human computer interactive masters degree program at Georgia Tech. We pull from other local universities such as Duke, UNC-Chapel Hill, NC State and UNC-Charlotte to source the intern program. We will continue this idea on a year round basis as it brings new ideas and talent to bear on our solutions and it helps give the interns real world experience, while helping with their expenses. We expect to hire some of the interns full time. We see this as one way to seed the future growth of the company.

**CEOCFO: *Are you seeking partnerships, investment or funding of any kind at this point?***

**Mr. Pickett:** We are doing both. We are seeking both partnerships and investors. We have one initial strategic partner who helped us get the company launched and off the ground; they are providing important strategic advisory services and technology. We are exploring a number of other partnerships from the standpoint of either distribution of our products and services or technologies to enhance offerings in our healthcare analytics ecosystem. From the funding standpoint, we have raised an initial round and are planning on a second round early next year. This will give us additional capital to build more products, scale the company, fill any talent gaps, and manage risk.

**CEOCFO:** *What surprised you along the way developing RxDataScience to the point where it is?*

**Mr. Pickett:** That one is very easy. There have definitely been a lot of challenges and a bit of a roller coaster ride as you start up a new company and try to get it going. We knew we had a very, very strong team that had successfully built and delivered products and services to the pharmaceutical market. I had zero doubt about our ability to deliver and create solutions that add business value. However, the surprise and biggest challenge was the lead time it takes to navigate the sales cycle and whole procurement process from an initial presentation to a signed contract in order to start the project. We thought it would take sixty to ninety days and the reality is it is double that time. That was my biggest surprise. I had always been on the internal buying side for hundreds of millions of dollars in IT products and services, and did not have as good an appreciation for sales and business development from the software provider side of the table. We addressed this gap in our capabilities by hiring a sales executive. However, we have sat in the chairs and walked in the shoes of our customers before starting RxDataScience and want to use that experience to our (and their) advantage.

