Saving lives through powerful research analytics

Customer
Catholic Health Initiatives

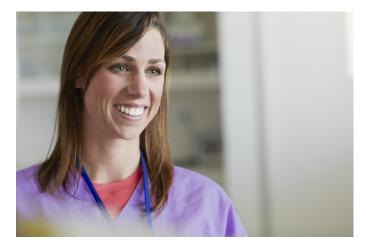**Products and Services**
Analytics Platform System

Industry
Health

Organization Size
Corporate (10,000+ employees)

Country
United States

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For Lela McFarland, the hardest thing about healthcare is not knowing what research is available to help someone who is critically ill. She's not alone. Researchers in healthcare have been working tirelessly to speed up the process of finding answers to questions that can change the course of treatment and care.

But as the National Director for Clinical Data Research Management for Catholic Health Initiatives Institute for Research and Innovation, she's found a unique solution that will radically transform the process of accessing critical information needed to connect patients with new options for participating in clinical trials and integrating advancements in care.

Medical research is moving faster than ever. For instance, 20 years ago, it took 10 years to conduct a clinical trial. Researchers realized that by conducting secondary research using electronic medical records, a lot of that information could be accessed much earlier. But even with speeding up results, it can still be a challenge to get innovations into the mainstream and to link patients cared for in community-based hospitals to trials. And to a cancer patient, every single day can make a huge difference.

Even though researchers are continually streamlining the process—and using technology

to do it—there's one particular hurdle that hasn't yet been adequately addressed. Research is, by nature, unpredictable. Not only can it yield surprising results, but getting to those results sometimes comes from unexpected detours into the data.

Researchers need to be able to query and explore data in real time

The fact is, simply asking the right questions is often a process of trial and error. Healthcare data can be extremely "messy," meaning that it may not be standardized across all data sets. That means how a query is structured makes an enormous difference. In addition, changing a single variable can open up a whole new way of thinking. To be effective, researchers need to be able to follow new lines of inquiries quickly and easily.

Most research tools make data easier to access by "pre-connecting" the data together. The drawback is that this approach also prevents creating the novel connections that researchers require to generate new understandings of healthcare.

What most organizations do is gather a team of researchers and developers to develop the right queries to databases. This process is time-consuming—particularly when there's a shortage of developers—and overhead grows because documentation must now be produced that clearly describes that the data generated is what the researcher intended. The process is repeated when there are any changes to the query. As a result, research can move at a snail's pace. The answers might be there, waiting to be uncovered, but it's hard to get to them. And remember, all this time and labor goes into a single occurrence. After a question has been answered, it's onto the next.

The Catholic Health Initiatives (CHI) Institute for Research and Innovation (CIRI) was no stranger to this conundrum. As an arm of the second-largest faith-based healthcare organization in the United States, CIRI uses data collected from about 80 different entities within the CHI network. All of which are data-warehoused and stored in multiple locations. CIRI's team knew a centralized data repository could streamline the research process. But to justify building this repository, CIRI first needed to address the challenge of allowing researchers to access all this information firsthand.

Data exploration tool Qiagram opens up data to researchers

McFarland had her aha moment when she saw biorepository laboratory staff use a particular tool for patient charts. "They had this app running on laptops that let them create queries across multiple electronic medical records. I am very familiar with all the toolsets used to support researchers, but I had never seen anything like this. It is just what I've been saying we needed, the exact product that would solve our data-querying problem for a broader scope of clinical research," she says.

The tool is called Qiagram, a database query and exploration tool from Microsoft partner BioFortis. Qiagram provides nontechnical users with the ability to build their own queries to access SQL databases simply by manipulating variables within a graphical interface.

The beauty of Qiagram is in its "drawing canvas" interface. It essentially writes the code that queries the database for you—without the need for a developer—and that opens up data to a lot more people. If researchers want to change a variable, they just select it and choose a different variable from a drop-down box. If they want to add a variable, they simply drag it into place. Even moving filters to a different part of the sequence is as easy as a click of the mouse.

And for McFarland, the fact that Qiagram documents the entire process while researchers are deriving the data just makes it better. "This is really powerful." says McFarland, "You're not spending three hours documenting what characteristic you filtered for first, and then how you changed that."

APS provides powerful processing for research analysis

With Qiagram as the tool for data access and exploration, CIRI needed a powerful data warehouse solution that can process large data volumes and pull in different types of data from various data sources. CIRI selected the Microsoft Analytics Platform System (APS) because it provides a robust parallel data processing environment; with APS performance we can pull in many different data sources and process vast volumes of data that can then be accessed by Qiagram. "With the Microsoft Analytics Platform System's huge parallel environment, we not only can process but also comprehend large numbers of healthcare

records," says McFarland. "There is a huge amount of transformation required to integrate and bring this data together at the database level."

APS will also enable the organization to grow its data sets as required. To begin with, CIRI plans to process its many different electronic medical records. The project will eventually grow to include a trial management system the organization is currently testing and biobank data for genomics research.

"Our broad focus is really around making it easier to find new understandings of delivering healthcare," says McFarland. "A lot of the work we've done has been focused on how we can improve that process so that people can actually get to the work that has the highest value. That's where Microsoft Analytics Platform System and BioFortis' Qiagram come in."

Looking ahead into the future of medical research

When it comes to medical research, breakthroughs often occur when researchers stumble across data, or when they start looking at one piece of data through a different lens. But in order to facilitate these new lines of inquiry, data has to be accessible in myriad ways.

And for CIRI, that's exactly the value that the combination of the Microsoft Analytics Platform System and Qiagram provides. It takes a current system and improves on it, pulling together the power of research analytics and data visualization. "Isaac Newton said, 'If I have seen further, it is by standing on the shoulders of giants,'" says McFarland. "And for us, Microsoft and BioFortis are the giants that allow our research community to understand healthcare better, which saves lives."

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