

Using data and technology to improve healthcare ecosystems

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A Verily Life Sciences executive explains how the company targets better patient outcomes by harnessing analytics, machine learning, and other digital tools.

Patient outcomes are taking over from products and services as the focus of healthcare. But reorienting away from product development toward a holistic approach to patients demands the convergence of data from every part of the healthcare system. In this interview, part of our Biopharma Frontiers series on how the pharmaceutical industry is evolving, Jared Josleyn, global head of corporate development at Alphabet-owned Verily Life Sciences, talks with McKinsey's Michele Raviscioni about the need to integrate health data and apply it to patients' lives in ways that achieve enduring impact.

McKinsey: *What is Verily's mission?*

Jared Josleyn: Verily is a data healthcare company that extracts high-fidelity data from the healthcare ecosystem and applies it to patients' lives to improve human health. Everybody today talks about the need to focus on patient outcomes, but a lot of those conversations break down because of a lack of high-quality, longitudinal data—because we don't know how well people manage their diseases on a daily basis, or we don't understand comorbidities across different chronic diseases well enough, and so we can't predict the effect a treatment will have on a patient population. Right now, data sets, whether from pharmaceutical companies, hardware companies, clinical workflows, or patients, sit separately within the ecosystem, which doesn't effectively enable a true outcomes-based model that properly aligns incentives for all parties so that patients arrive at optimal outcomes. Verily's purpose is to collect and integrate these massive and disparate data sets, observe new patterns, extract insights, and provide those insights to clinicians and patients to enable better management of health and disease.

Take medical-device hardware. Verily's goal isn't to create the next incremental invention in hardware: it's to ask what exists in a particular space and whether it's sufficient to extract the highest-quality data to enable better outcomes. For example, we looked at continuous glucose

monitoring for patients who are diabetic. After doing an assessment, we didn't think the applications currently available were wholly effective for patients with type 2 diabetes because they are not user-friendly, they are too narrowly focused, or they overlooked other important behavioral aspects of diabetes management. So we entered that space. We start with the problem first, and if an available wearable or other sensor doesn't collect the right data so we can provide inputs back to the patient, the providers, and the clinicians, we want to create a solution.

The approach is equally applicable to pharmaceutical companies. We look at how we can improve a company's ability to predict whether a particular combination therapy will be precise enough to be effective for a given patient population.

On the provider side, we look at how to create tools providers can use to create recommendation engines, to improve clinical workflows, to improve clinical outputs—and to offer doctors all the tools and data so they can make the best clinical decision possible and do what they went to medical school to do, which is to focus on the patient, not spend an inordinate amount of time entering information into systems.

McKinsey: *What do you see as the short-term and longer-term opportunities for impact in the way healthcare is delivered?*

Jared Josleyn: To create short-term impact in people's lives, you need to focus on the delivery of certain applications. This can include the continuous glucose monitor, as I described before, or the diabetic-retinopathy screening tool that we're developing with Nikon, the goal of which is to improve the speed, accuracy, and accessibility of diabetic-retinopathy screening as a way to prevent blindness. Short-term impact in healthcare is driven by the regulatory system, however. We know we can deliver a continuous glucose monitor into the marketplace, for example, but we still have to follow a regulatory process to get it there.

The long-term opportunity is to build chronic-disease models to help people manage their diseases and lead them into a better path toward a better outcome. There are certain disease states, like diabetes, where the management of the disease isn't just about the device or titration of the insulin. It's also about what food you eat, or how to be more active. In other words, it requires behavioral changes that people can find hard to make and be consistent, which can cause them either to use the systems in an unoptimized way, or not to use them at all. By building the user experience first, we look at designing solutions that result in widespread adoption because they are easy to use, develop habitual-behavior change, and ultimately help people better manage their health without negatively affecting their daily lives.

McKinsey: *How do you decide which areas to focus on in healthcare?*

Jared Josleyn: We look at what creates the most impact. We got involved with diabetes, for instance, because we believe we have the tools and expertise to improve the lives of people with this condition in a big way, not just incrementally.

As part of Alphabet, we have opportunities to work with a lot of different companies and innovative thinkers within Google. We can tap into Alphabet's experience with user design and machine learning to develop solutions that will be adopted and sustained. The areas we choose may be high-value areas, but we don't necessarily pick high-value areas: we pick high-impact areas.

McKinsey: *Can you take an example of a partnership you're working on and describe what you're trying to achieve?*

Jared Josleyn: I can give you several. We have a joint venture with J&J called Verb Surgical that is aimed at reducing surgical complications by making robotic surgery more portable and usable across a wide range of indications. Research suggests that 50 percent of surgical cost is related to 3 percent of complications in surgery, so if we can reduce the complication number to 1 percent, we'll drastically impact the lives of patients and significantly reduce healthcare costs.

With 3M, we're using machine learning and a suite of data-analytics tools to develop software, called the Performance Matrix, that gives visibility to operational inefficiencies in hospitals so that the hospital can better understand what's going on day to day and make improvements to hospital operations that will reduce negative patient outcomes and healthcare costs. With GSK, we have a joint venture called Galvani focused on bioelectronics, and we're working on creating therapeutic interventions for a number of conditions, with a level of investment that hasn't been seen before, relating to neuromodulation. By modulating a nerve, we believe we can create an effect within the body that may improve function and quality of life for refractory patients that are not effectively treated by currently available therapies.

In all of these partnerships, we're looking at involving providers, patients, payors, technology companies, and pharmaceutical companies in creating the best solution for the people rather than the best product in a particular space.

McKinsey: *What is your perspective on others that are doing this?*

Jared Josleyn: Many groups are focused on becoming a disruptor by taking a technological approach to data and deploying it in a healthcare system in a new way. We all have similar ways of viewing improvement in outcomes, but we take different technological approaches to achieving those improvements: for example, Apple takes a hardware-centric approach, while IBM takes a software-centric approach. Verily builds capabilities in a vertically integrated way. We have domain expertise, with some of the world's foremost medical experts building

platforms with our software and hardware engineers and creating a dialogue about what the data we collect actually means. We have a scientific team that's building first-in-class systems-biology programs and analytical tools and marrying these tools with things like digital pathology, which Google Brain recently announced. From a software perspective, we utilize machine learning to learn and predict rather than learn and react. We're really pushing to use all these different capabilities to bring a proactive rather than reactive approach to health management within a collaborative ecosystem. □

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