

# INVESTING 101

EXPANDING YOUR INVESTMENT KNOWLEDGE

## Authors argue for opportunities in health industry's embrace of tech

*Technology has already transformed fields like banking; now it's health's turn, says longtime venture capitalist Harry Glorikian and co-author Malorye Allison Branca*

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**W**hy can't health care be more like financial services? Or retail? Or the automotive industry? Or...baseball? All of these fields use data and advanced analytics to help make better decisions and increase profits. In healthcare, decisions are often based on a single doctor's experiences or some other very limited dataset. Data sharing is restricted if not outright frowned upon, and there are probably more layers of regulation than in any other field.

But despite these hurdles, shouldn't healthcare, more than any other field, be data-driven—using as much data in the smartest way possible to get to the best solution? The U.S. healthcare market was worth US\$3.2 trillion in 2015, accounting for almost 18 per cent of the nation's GDP. That's a staggering US\$9,990 being spent per person, per year on health.

As professionals who work in and track advances in the healthcare industry, we are regularly awed and inspired by the remarkable technological advances we witness: cochlear implants that allow the deaf to hear, new drugs that essentially cure deadly diseases such as malignant melanoma and hepatitis C, and machines that can decode the three billion base pairs in a human genome within days versus the years it used to take...

This book aims to highlight exactly where data and advanced analytics are advancing healthcare and creating new and evolving business opportunities.

We hope this book will inspire others to be a part of this revolution and help ensure that the new system well serves the billions of people who will depend upon it. We'll discuss everything from digital healthcare to value-based purchasing, looking at the full range of ways that experts are using data to improve the healthcare system and what the next step in that evolution could be.

So why this trend, and why now? Analytics-intensive, evidence-based approaches have revolutionized dozens of other fields, including baseball, but things have been much slower in healthcare. Despite the tremendous amounts of data collected on patients (from

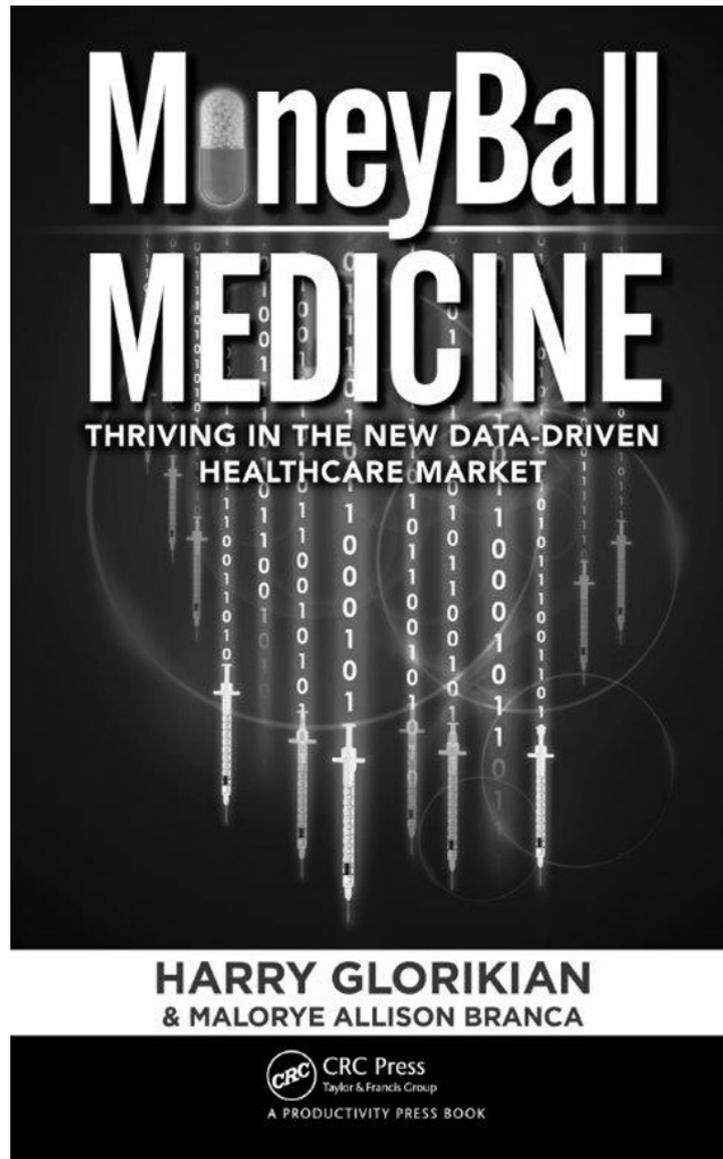
routine physical exams to blood work performed before a surgery), concerns about privacy, heavy regulation, a long-standing culture of secrecy, and ultra-competitiveness have hamstrung the field.

Doctors and hospitals guarded patient records, price transparency was unheard of, and no one could agree on "fair" ways to measure quality. Additionally, researchers in public and private institutions also held on to most of their data, fearing that someone would use them to "scoop them." The list of hurdles goes on and on. Though some of these issues are valid and others have largely been addressed in the past few years, some are just ways to protect the status quo.

Security of healthcare data remains a challenge for companies and healthcare providers, especially when data sharing would be useful. But the reasons for this have evolved over time. Jeroen Tas, chief innovation and strategy officer at Philips Healthcare, compares the healthcare industry to Internet banking. "Twenty years ago Internet banking was thought of as unsafe; now everyone does online banking and security isn't such a big issue," he says.

Barrett Rollins, chief scientific officer of Dana-Farber (Cancer Institute in Boston), agrees: "(It's) passed the tipping point where this is an engineering problem, not a conceptual problem." Salient to the comparison is the ability to go to an ATM owned by any bank and retrieve money from your bank account. It's unlikely that a physician would be able to pull up a patient's medical record for procedures performed at a different hospital in the same way—but this should be a manageable problem.

Neil de Crescenzo, president and CEO of Change Healthcare, says things that are taken for granted in other sectors are not possible currently in healthcare. Although sharing data between healthcare providers has improved in the past several years, limited interoperability between EHRs (electronic health records) and continued privacy concerns remain as barriers that have largely been addressed in other industries, such as the mobile banking sector, as described above... "The health care enterprise is going to become orient-



ed around data management, analytics, and data liquidity," says de Crescenzo. "To move forward, we need to learn from how data has transformed other industries."

**MoneyBall Medicine:  
Thriving in the New Data-  
Driven Healthcare Market**

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Productivity Press  
Copyright 2020  
\$43.29, 272 pages

The first step, he says, is to translate as much data as possible into a digital format. "We're making good progress in that direction, especially through the steady growth in electronic medical records. And that's happening around the world," de Crescenzo says. This is a key change that will drive the evolution of healthcare.

There are also new types of data, such as that from sensors and personal tracking devices. Further, sophisticated algorithms and analytics that were once accessible only to highly specialized professionals can now be used by a much wider range of people.

But the most important trends he sees are higher accuracy, utility, and liquidity of data. "We finally have the ability to take healthcare data from many sources, put it into a common form, and process it at multiple sites," he says. "That's going to

be transformative."

By definition, big data is huge volumes of data that is difficult to analyze. We've already reached that point with whole genome sequence data. Now we have to reach that point with other data types, including clinical data. Ideally, there would be a standard clinical care document that would allow clinicians to pull specific data and share it between institutions.

"We have made some progress toward that but that's been much slower," says de Crescenzo. The CommonWell Alliance, which includes some of the biggest IT providers in the healthcare industry, has devoted itself to such data exchange, or interoperability. But achieving that across the industry is taking much longer than anticipated.

There are a lot of things that are taken for granted in other sectors that are still far behind in healthcare. For example, everyone who sends a package expects tracking information. But for most patients, it's impossible to determine exactly all of the doctors they've seen in the last month. Let alone the last year. "That's an enormous logistical challenge and it's going to take a lot of work," de Crescenzo says.

The overall idea is to digitize more data, make it more liquid, and use analytics to make it easier to track and analyze. But that will be a big change in the healthcare sector, which until

now has been all about privacy and secrecy. All that sensor data that is building up on patients' personal trackers, for example, needs to start making its way into doctors' offices. Meanwhile, more of the tools found mainly in medical settings, such as EKG monitors, need to get into patients' homes. Then, the data from those devices needs to be piped to physicians.

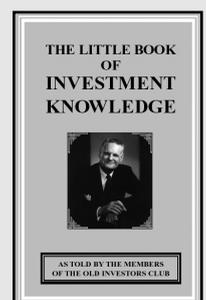
Flatiron is just one of many startups, healthcare organizations, and other groups trying to use Big Data and sophisticated analytics to improve healthcare and take advantage of market opportunities. New enterprises are developing products, such as Athena Health's Epocrates medical reference app, that streamline processes that have long been too cumbersome. Others, such as PokitDok and Castlight Health, are helping to shed light on the cost and quality data that have been mostly shielded from most peoples' view until recently. Still others, such as Health Catalyst, are developing software and other tools that can be shared across healthcare institutions and providers.

Even companies that haven't been traditionally associated with healthcare are expanding into the healthcare market. Many of these are technology companies that are finding healthcare to be an extension of their evolving business models. Tech giant IBM has been asserting itself in healthcare with its Watson Health artificial intelligence solution, particularly for oncology and genomics.

Flatiron was one of the companies that have scored big in the past several years, netting US\$313 million in funding by the end of the first half of 2016. Other winners included Jawbone and Health Catalyst, which had amassed US\$948 million and US\$223 million, respectively, by that time.

But you don't have to be a health IT startup to benefit from this new emphasis on data. As we will try to describe, many sectors of the approximately US\$9.6-trillion global healthcare market are already being affected, and many more will be over time.

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