

# Modern Healthcare

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## Will blockchain save the healthcare system?

By Shelby Livingston

**A**N UNLIKELY RELATIONSHIP was sparked over box lunches at a tech conference in Nashville. Mike Jacobs, a senior distinguished engineer at the healthcare services company Optum, had been experimenting with how to solve healthcare industry problems with that emerging, exciting, little understood technology called blockchain. He had heard rumors that health insurer Humana, like Optum, had been testing blockchain's applications.

So during lunch at the Distributed Health conference in September 2017, Jacobs and Humana Lead Enterprise Architect Kyle Culver described their projects in careful terms (there was no nondisclosure agreement in place) and learned that both companies were attempting to use blockchain to improve the accuracy of healthcare provider directories—a perennial, costly issue for the insurance industry. Their experiments had revealed that blockchain works best when multiple partners are involved.

The idea to form an alliance was hatched.

Just two months later, Optum, Humana and three others—MultiPlan, Quest Diagnostics and Optum's corporate sibling UnitedHealthcare—had solidified an agreement to form the Synaptic Health Alliance, which in June 2018 piloted the use of blockchain to fix errors in provider directories and lower the cost of keeping that information up to date by sharing

the data and workload. Aetna and health system Ascension have since joined the group.

With “multiple people looking at the same information, the quality of that information should go up and operational costs for the provider and the payers should go down because there's less frequent contact being done between those two stakeholders. And because the quality goes up there should be a better experience for the patient,” Jacobs said.

It's early, but the companies have already found they are able to locate inaccurate information faster than they would on their own while also protecting information from cyberattacks. The goal is to scale the tool to a national level. But fixing provider directories is an initial foray. “We have a general agreement that, boy, if we can get this to work, this is just the first area of focus,” Jacobs said.

**Blockchain is gaining traction** as a tool that could help solve some of the healthcare industry's age-old problems that have resulted in wasteful spending and higher costs for providers, insurers and patients. Once-reluctant competitors are joining forces to find out just what the technology can do and in the process are developing new transparent business models.

They anticipate that blockchain will be the key that unlocks barriers to healthcare data-sharing

### THE TAKEAWAY

Insurers are among the first to use blockchain technology in healthcare, and they are only going to expand its use.

and ultimately enables an industrywide shift to value-based care.

“When we talk about healthcare today, we talk about the silos a lot—the silos of data and the barrier for exchanging information,” Humana’s Culver explained. “The hope is that blockchain allows us to connect those silos and ... enable new capabilities (so that) access to information no longer is where we compete, but we compete much more on the value-added service and the trust and transparency of the companies that are providing those things.”

In the simplest terms, blockchain is a shared record of transactions. It enables participants in a group to securely share data with each other without a middleman and keep track of what was exchanged and when. Instead of that record being located on a single, hackable computer, it is maintained across multiple computers, which makes the information extremely difficult to tamper with or delete. That tamper-proof characteristic, along with a process that ensures any information put into the blockchain is valid, enables trust between the group participants.

So in the case of the blockchain-enabled provider directory, if one insurance company in the alliance calls a doctor’s office to verify an address and updates that information in the record, all members of the alliance would see the change. That means less work for the rest of the insurers and the doctor’s office.

The potential is enormous, experts on the subject say. “Very rarely does infrastructure technology create the hype that blockchain currently has,” said Emily Vaughn Bailey, director of blockchain product development at Change Healthcare. “The challenges that blockchain addresses in healthcare are very disruptive.”

**Blockchain emerged about** a decade ago and garnered attention as the “distributed ledger” technology that acts as the backbone to the cryptocurrency bitcoin. Healthcare has woken up to blockchain’s capabilities over the past three years as the technology has evolved beyond bitcoin to meet the needs of highly regulated businesses. A 2016 challenge from the Office of the National Coordinator for Health Information Technology invited stakeholders to come up with ways to reform the healthcare delivery system with blockchain and helped jump-start the industry’s interest in the technology.

Around the same time, Humana CEO Bruce Broussard prophesied in a LinkedIn post that blockchain would “be the next dramatic innovation in healthcare.”

The blockchain startups arrived first. Then came the big technol-

## Blockchain 101

**B**lockchain is a log of activity that is time-stamped, tamper-proof and shared across a network of computers. Originally dreamed up in 2009 by an unknown person or group—it’s not known for sure which—called Satoshi Nakamoto as a means to move the digital currency bitcoin, its uses have since been broadened to exchange other types of digital assets, such as data, in private, permissioned networks suitable for businesses. Each transaction that goes into the log of activity is enclosed in a block and linked together in chronological order to form a chain, giving it the name blockchain.

—Shelby Livingston

ogy companies. And then the old guard—mostly health insurers, but also some large hospital systems—began individually trying out blockchain. Now they’re building out coalitions across the industry to create environments where they can share data and pilot projects on a larger scale. To start, they’re steering clear of handling sensitive data like personal health information and applying blockchain to solve challenges that are systemic across the sector but aren’t too risky or costly for the early adopters.

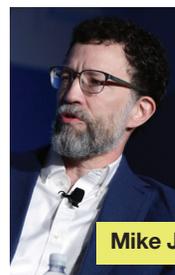
This is “the year where we are starting to understand which use cases can be solved now and which will take more time,” said John Bass, CEO of Hashed Health, a Nashville-based company that was one of the first to build blockchain solutions specifically for healthcare.

Bass said blockchain is best put to use when addressing problems of trust, transparency and incentive alignment, and the healthcare industry is full of such issues, he said. Others noted that blockchain will drive the most value when applied to healthcare processes that suffer from redundancies or require different sets of data to be reconciled.

The Hashed Health-backed Professional Credentials Exchange—which includes Michigan-based system Spectrum Health, Anthem subsidiary National Government Services and insurer WellCare Health Plans, among others—is deploying blockchain to streamline the complicated process of verifying providers’ credentials to practice in a certain clinical setting. It’s a redundant process, with multiple

provider organizations gathering the same credential information for the same clinicians.

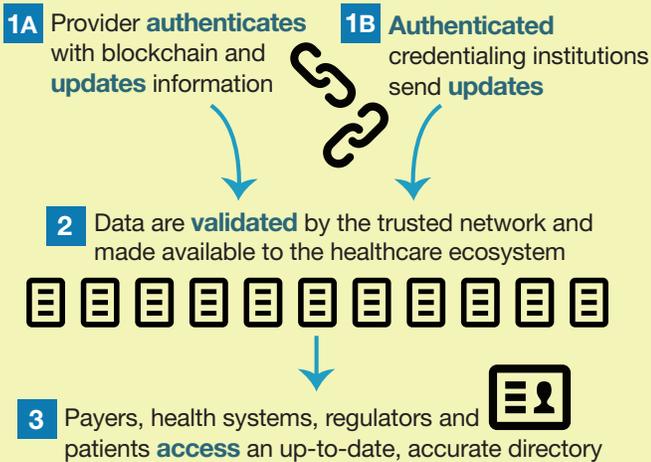
But blockchain technology will allow the members of a network to trade already verified practitioner credential information with one another, eliminating the need to spend the four to six months it takes to collect and validate that data independently, said Anthony Begando, CEO of the Professional Credentials Ex-



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Mike Jacobs | Senior Distinguished Engineer | Optum

## Creating a blockchain to maintain a provider directory



Source: Adapted from an IBM graphic

change, which plans to go live in mid-2019.

Change Healthcare, meanwhile, is using blockchain to enable healthcare providers and insurers to track a claim across its entire life cycle in real time, from filing the claim to each physician being paid. Today, providers and insurers maintain their own data, and the insurer's idea of the status of a claim may differ from the provider's view. But blockchain would allow both parties to have a shared understanding of where that claim is in the life cycle and automate the claims adjudication process, Bailey explained.

**An IBM-led collaborative** comprising Aetna, Anthem, Health Care Service Corp. and PNC Bank is more concerned with developing an "ecosystem" where members of the group are comfortable working together with a centralized governance framework. IBM said it expects healthcare providers to join the initiative as well.

The problems the group chooses to address with blockchain are secondary, but revolve around ridding the health system of wasteful clinical and administrative spending and advancing interoperability. The insurers will spend the next few months "figuring out the technical and business construct" of the group and prioritizing the issues they will address, said Barb Hayes, general manager of payers at IBM Watson Health.

"There's a very complex ecosystem that exists in healthcare, and you've got competition where you really need transparency, where data is thought of as currency, and you've got a lot of cybersecurity issues," Hayes said. "So to see Anthem and Aetna on the same side of the table, you don't see (that) very often. ... When you start to see that ecosystem come together and establish the rules of the game, that's where this is going to change."

"We're certainly focused on the business use cases, but also looking at the technology and governance around how a plat-

form like this would work as well," said Steve Betts, chief information officer at Health Care Service Corp.

Addressing provider directory inaccuracies and creating a more portable patient health record are two areas the group may focus on. One solution is already in the works. IBM plans to launch a blockchain-enabled bundled-payments tool midyear that will streamline the typically labor-intensive process of evaluating clinical outcomes and paying providers based on that outcome in real time, Hayes said.

But members of the group have signaled that they hope to reach what's considered the holy grail for blockchain in healthcare—creating complete and portable medical records that connect all the disparate pieces in a patient's health history. A patient's health record today is often incomplete, divided into pieces sitting in doctor's offices and hospitals whose computer systems don't speak with each other. In theory, blockchain could be used to keep track of where those pieces of the health record are, so patients and doctors with permission could easily access them and have a full view of the patient's history, Optum's Jacobs explained.

But it will be years before anyone masters the technical skill needed to implement blockchain medical records at scale while also keeping them fully private and easy to use, he said.

**While most experts agree on blockchain's** potential to disrupt the industry, they caution that the technology is just one tool of many that could be used to revolutionize certain parts of U.S. healthcare. "It's not a cure-all for what ails the healthcare ecosystem," said Brian Kalis, managing director of digital health and innovation at Accenture, who then ticked off the numerous cultural, legal and technical obstacles that could stand in the way of blockchain's widespread adoption.

The technology is relatively immature and, for now, struggles to handle very large transactions. Building and scaling it is no easy feat, and it costs money—the Synaptic Health Alliance founders pay a membership fee of \$100,000 each year, according to a September 2018 membership prospectus on its website. Businesses will have to decide if the value they receive is worth the expense. Moreover, companies will be challenged to ensure that the information on the blockchain is secure and private, Kalis said.

Fearless industry giants are willing to spend resources to test blockchain capabilities, but others are hesitant. Entire professions, including the lawyers who advise healthcare providers and



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## HHS using blockchain to streamline contract procurement

**I**nterest in blockchain technology to solve big problems isn't limited to the private sector. In December, HHS received authority to operate the first blockchain-based tool in the federal government.

The tool, called HHS Accelerate, relies on blockchain to streamline the process the department uses to procure products and services from private vendors. With the tool, HHS aims to speed up the procurement process and reduce its costs.

Vendors should benefit from fewer administrative tasks, so they can focus on the quality and delivery of the services they provide.

The "authority to operate" term means HHS Accelerate can start testing the tool with live data.

"Our goal is actually to leverage and harness all of the data within HHS, which is about \$24.8 billion in spend, about 100,000 contracts, about 1 million pages of unstructured data, and provide that information to

the 20,000 members of the acquisition workforce in real time at their fingertips so that they can actually make good business decisions," Jose Arrieta, associate deputy assistant secretary in HHS' acquisition division, said during a recorded demo of the tool on Dec. 12. "We believe that without blockchain this would not be possible."

Arrieta explained that one aspect of the tool will use blockchain as a ledger to record vendors' interactions with HHS so vendors are able to access a time-stamped record of all financial information, requests-for-information, reference checks and other data they provided in the past so it can be used again.

**Another aspect** of the tool would enable contracting professionals to access historical information about prices, terms and conditions for a product or service in real time. Collecting, organizing and analyzing that information would normally take an agency four to six months for a large sourcing initiative, Arrieta said.

"We believe that empowering you at the point of purchase will actually save a significant amount of money for the federal government, U.S. taxpayers and in particular Health and Human Services," he said.

—Shelby Livingston

insurers on new technologies, need to catch up before the industry rapidly adopts blockchain, said Lance Anderson, a partner at law firm Dickinson Wright.

"It all looks great, sounds great, but who's willing to stick their neck out within the organization and say this is something we should do and we will be fine?" Anderson said.

So blockchain may still be a long way away from affecting patients. Change Healthcare's Bailey likens its evolution to that of the internet, which took off only when personal email and web browsers allowed anyone to navigate it.

"Email clients like AOL brought all the functionality of the internet into a single user experience that really satisfied most people's interest in the internet at the time," she said. "Blockchain is still very far away from its AOL moment. This networking tech-

nology is going to underpin a lot of these digital health applications and when it does it's going to result in unprecedented levels of patient mobility. It will be really interesting to see."

In the nearer term, though, the Synaptic Health Alliance is inching its way closer to proving that using blockchain technology to clean up provider directories will produce a return on investment for companies participating in the alliance.

"We did not find a silver bullet to identify exactly where a doctor is practicing today—not yet," David Murtagh, vice president of operations at alliance partner MultiPlan, said during a panel discussion at the latest Distributed Health conference in November. "But we are finding there's definitely multiple paths to getting direct business value and starting to see a return on this investment as we go into the next year." ●

