Advanced Medical Reviews

Blockchain in Healthcare

How it could transform EHRs, drug safety and medical reviews

Blockchain dates back to the 2000s, but it only entered the mainstream in 2017. That year, it neared the peak of the Gartner Hype Cycle, a visual index of how much attention emerging technologies garner for their business-level potential. By the end of 2017, the trading prices of prominent digital currencies such as Bitcoin and Ethereum (both of which are blockchain-based) had also reached all-time highs.

The vast potential of blockchain extends to healthcare, and Advanced Medical Reviews (AMR) is prepared to explore and harness its power. AMR has always prioritized the application of innovative technologies to the medical review process, as embodied in the highly customizable data-gathering capabilities of our proprietary portal. Blockchain represents another possible step in the evolution of timely, accurate and informed reviews, based on up-to-date guidelines and peer-reviewed medical literature. More specifically, it could enable more consistent, reliable access to medical histories, even in nonclinical settings, such as physician-led case review.

An overview of blockchain:

Why the healthcare sector should take note

While it can seem like a Wild West innovation from the fringes of the internet, blockchain technology is essentially a new spin on an old and familiar format – the ledger. Like accounting books and spreadsheets, blockchains are built for recordkeeping. At the same time, they are distinguished from these other formats by several unique design traits:

> ### Decentralization:
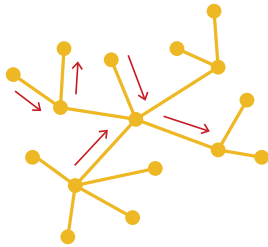
There is no authoritative private copy of a blockchain. Instead, its records are publicly distributed among its nodes (participants), each of which can process and evaluate its new blocks (transactions). In other words, a blockchain is a distributed ledger. Permissions can also be set up to limit the extent of this distribution.

> ### Consensus:
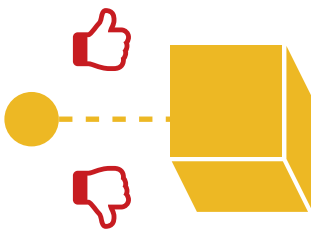
When a node attempts to add a new block, others must accept or deny it based on their blockchain's consensus mechanism. For example, Bitcoin always requires proof-of-work for approval: Every block must come with a hash showing that the submitting node has already solved a challenging cryptographic problem.

> ### Immutability:

It's simple to scratch out an old entry in a ledger or delete a cell in an Excel sheet, but a blockchain cannot be tampered with so easily. Each block contains the hash of its immediate predecessor, meaning that any change to it would require the mathematically impractical step of altering all of the preceding blocks in public view, too.

The third feature in particular makes blockchain technology appealing to the healthcare industry. More specifically, it could streamline electronic health record (EHR) management, by supporting more reliable interconnectivity between systems along with higher-quality data containing fewer errors. Similarly, healthcare-specific blockchains might become go-to resources for researchers and independent review organizations (IROs) needing well-organized, secure and transparent data sources for informed decision-making.

In 2017, Gartner predicted blockchain was still 5 to 10 years from plateauing as a mature, widely accepted technology. Along that timeline, healthcare professionals can expect a few likely gradual changes to its core processes as a result of new blockchain implementations. Prime candidates for blockchain-driven transformation include EHR modernization, drug provenance tracking and medical reviews handled by experienced IROs such as AMR.

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Blockchain in healthcare:

Three promising applications on the horizon

The case for EHRs on the blockchain

EHRs are common sources of frustration. Some physicians dislike them so much they even cut clinical hours to avoid using them, according to a 2017 survey from the American Medical Association, Mayo Clinic and Stanford University. Meanwhile, patients and payers both face numerous potential complications any time health EHRs are exchanged during a provider switch or referral.

The shortcomings of present-day recordkeeping systems are multidimensional, but their inaccuracy and high administrative overhead really stand out. The RAND Corporation estimated an 8 percent mismatch rate for patients and records at providers, while alleged discrepancies in one cancer victim's EHRs catalyzed a $1 billion lawsuit against a vendor. Fragmentation between the many different EHR solutions in use amplifies the problem by scattering information across sites and by making it more difficult to retrieve.

With blockchain, EHRs could be more dependable and easier to manage. Records would be consolidated onto a common technology that would eliminate incompatibility issues between platforms. A doctor could add a simple pointer to a record, which would be logged on the blockchain and become securely accessible in its unaltered form to anyone needing to view it.

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>
> Eddie Hawatmeh, Operations Team Lead

The permissions systems mentioned earlier would come into play by requiring would-be participants in an EHR blockchain to prove their identities first for security reasons. As Eddie Hawatmeh, Operations Team Lead at AMR, explains, "The objective is that blockchain technology will eventually be developed into a nearly impenetrable database where up-to-date PHI and medical records will only be viewable to parties that are granted access. With this in mind, this would more firmly enforce AMR's stance on PHI security and protection alongside contributing to more accurate and concise medical reviews." Overall, blockchain could enable safer, more efficient stewardship of data that allows for superior decision-making about medication regimens and during case reviews.

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How blockchain might change medication regimens

According to the World Health Organization, one-tenth of medicines in developing countries are fake or otherwise substandard. Drug counterfeiting is a massive industry with major implications for public health.

Bodies like the U.S. Food and Drug Administration (FDA) already invest significant resources in monitoring facilities for such quality issues, and blockchain might be another valuable tool in this type of monitoring. Blockchain immutability would help reliably establish a drug's provenance, i.e., prove it was manufactured in an FDA-inspected factory.

Accordingly, physicians could have more confidence when dispensing generic medications in particular, since these meds are scrutinized for any discrepancies with brand names. Moreover, patients and payers would know that their dollars were going toward medication with proven potency and efficacy. These advancements would be particularly important in the context of the ongoing opioid crisis, which has prompted the government, payers, providers and patients to all reconsider how prescriptions are managed.

"At AMR, we use our technology and robust specialist network to aid payers with non-formulary drug reviews," explains Jeff Schulze, Vice-President of Enterprise Accounts at AMR. "Blockchain technology could offer a more secure and accurate way to assess a patient's prescription drug regimen for efficacy, whether done initially by a provider or through the internal non-formulary drug review process."

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Independent Medical Reviews and blockchain

A blockchain-backed review process could help IROs like Advanced Medical Reviews (AMR) ensure independent medical case reviews are completed with the most accurate and appropriate data available. Approved reviewers would have access to a blockchain containing relevant and original data they could trust when analyzing the details of each case.

In practice, this added reliability could allow more reviews to be decided without additional appeals that require extra time and manpower to complete. That would, in turn, lead to timely decisions rooted in the best available information and documentation for each case, even under strict turnaround timetables.

"A complete and accurate patient record in many instances will prevent unnecessary levels of appeals," states AMR general manager Megan Kaufman. "Blockchain could be the key to ensuring that all elements needed for independent medical review are accessible and swiftly retrieved through highly secure permissions from across disparate EHR platforms. Robust security permissions in blockchain technology will be essential before any healthcare company is able to fully implement blockchain for EHR management, but, once that's in place, the possibilities are great."

Blockchain is still in its early stages. However, AMR is already thinking ahead about how blockchain technology can integrate with current technologies to improve the workflow, quality and accuracy of medical reviews. Our track record with our portal demonstrates our commitment to keeping our technologies up-to-date, highly secure and flexible for our clients, and we plan to show the same devotion to productive blockchain solutions.

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We believe every patient should receive quality healthcare.

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