

More Than Just Bitcoin: How Blockchain is Revolutionizing Healthcare

November 11, 2020

The healthcare industry is one of the most vital anywhere. And it is one of the most slow-growing. In fact, many organizations still rely on inefficient, outdated record keeping systems. Medical and wellness practitioners are siloed from one another, making interprofessional collaboration more difficult.

Blockchain just might disrupt all that.

Like Cloud Computing, this horizontal innovation has potential to improve the efficiency and functionality of a vast range of fields and industries within healthcare. And as with any new innovation, blockchain presents new benefits, challenges, and potential liabilities for practitioners who boldly adopt it.

So, What is Blockchain?

Blockchain is essentially a growing digital record of transactions that is shared with a network of other computers. This digital ledger is decentralised, distributed and allows for full access by all parties. This means that no one entity owns the data. Everyone with network access can build upon and share it at the same time, in real time.

Blockchain is immutable, which means no one can tamper with the data inside the blockchain. Yet because it is also transparent, data tracking is still possible.

Blockchain's Applications in Healthcare

Currently, the most targeted areas using blockchain are Electronic Health Records (EHR) and Personal Health Records (PHR). Specifically, blockchain is used to improve:

- Access control
- Interoperability
- Secure transactions
- Provenance
- Data integrity
- Record accuracy
- Collaboration
- Agility
- Transparency and accountability

The uses of blockchain technology in the health sector are increasing exponentially, promising to bring systems, many of which still operate on fax machines and snail mail, into the 21st century.

3 Healthcare Challenges Blockchain Could Address

1) Data security:

Blockchain could provide a trusted, secure data pathway where the healthcare system desperately needs it. This could, in turn:

1. Greatly reduce incidents of data breaches
2. Increase the efficiency of medical data management
3. Empower patients to control their health data transparency and agility

Blockchain could achieve this by providing a secure data centre for health records.

Another advantage to blockchain is that it holds all participants within the network accountable and their actions traceable through cryptographic hashes. Because the blockchain network is transparent, hackers could be identified and stopped before any information is taken.

2) Data management:

Currently there is no system in place for tracking patient health records across various parties and data silos - providers, specialties, and biometric health devices/wearables.

This leaves an individual's health history in a fragmented puzzle to be pieced together by each provider they interact with.

If medical records and wellness data were put on a blockchain, providers and patients would have secure access to the complete digital picture of a patient as they move through the healthcare system and evolve in treatment and progress.

A blockchain-based system would also make medical data management and patient care more efficient by minimizing duplicate medical workups and testing, saving both the practitioner and patient time and money.

3) Data transparency and agility:

In a study by the School of Electronic Engineering and Computer Science, blockchain was introduced to an EHR and its impact observed. The study found that the system successfully allowed the practitioners and patients to share and access EHRs and be able to detect and react more quickly to crisis situations.

The study concludes:

"Even though there is still a lot of work to do, the system represented by the prototype could be an interesting alternative for networks of healthcare companies to help ensure the continuity of treatment while preserving privacy and confidentiality in extreme situations." (1)

The Challenges of Developing Blockchain for Healthcare

Patient rights:

Anyone planning to use blockchain to store healthcare patient data should keep abreast of the changing legislation around data protection as well as patient rights.

- This could involve, for instance:
- Compliance with privacy guidelines
- Following new developments in data protection laws
- Knowing when a patient has the right to request to have their sensitive personal data erased

Data security:

According to John Halamka, the Chief Information Officer of Beth Israel Deaconess Medical Center in Boston, a Harvard University teaching hospital, the capabilities and security provided by blockchain has its limitations. He says:

"Blockchain is not meant for storage of large data sets. Blockchain is not an analytics platform. Blockchain has very slow transactional performance. However, as a tamperproof public ledger, blockchain is ideal for proof of work. Blockchain is highly resilient." (2)

Though blockchain certainly can improve data security, it is not immune to cyber attacks. It should therefore be treated with as much scrutiny as any other network or new technology.

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Sources:

1. <http://www.diva-portal.org/smash/record.jsf?pid=diva2%3A1335811&dswid=-9192>
2. <https://blockgeeks.com/guides/blockchain-in-healthcare/>