SECURING THE PHARMA SUPPLY CHAIN WITH BLOCKCHAIN

Blockchain is more than a buzzword for the pharmaceutical industry

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Blockchain is easily becoming one of the top technology buzzwords of 2018, but it's not without good reason. While many associate blockchain with financial services and cryptocurrency, its potential is quickly being realized for a number of industries. The draws of transparency, security, and reliability make blockchain particularly promising for the pharmaceutical industry, which faces a number of unique challenges throughout the supply chain.

The Blockchain Hype

Although you probably began hearing about blockchain only in recent years, the technology was started in the 1990s and has evolved since. It took off in the late 2000s when bitcoin came into fruition, and just recently, experts are deploying and looking to apply the technology across a number of industries. Blockchain is a network of information, with every transaction – such as exchange of data or goods and services – being permanently recorded in digital blocks across multiple blockchain servers. Each block contains the history of that particular transaction and every transaction that came before it, with a timestamp of when each occurred that marks time down to the micro-second. The linking of these transactions, or blocks, is what makes up the blockchain.

One of the reasons this technology receives the hype it does is because of the security and accuracy it ensures. Blockchain networks are decentralized, meaning that while everyone in the blockchain network can see the transactions, there is no centralized point of failure where blocks can be hacked or corrupted since multiple copies are spread across multiple blockchain servers. Being virtually hack-free is a major benefit in today's digital world, where security breaches are becoming more common.

Bringing Visibility to the Supply Chain

A major benefit of blockchain, and perhaps the most important for the pharmaceutical industry, is that it creates end-to-end visibility. Currently, pharmaceutical manufacturing supply chains use a number of different computer systems that log transactions in different ways. When an issue arises it becomes difficult, and in some cases nearly impossible, to piece together the different parts of the supply chain to track down where the problem is. By recording every transaction in one blockchain system that anyone authorized can access, blockchain provides visibility across entire supply chains, from each medicine's individual ingredient

and, if necessary, to the patient to which it was prescribed.

One of the major concerns the pharmaceutical industry has is dealing with counterfeit medicines. Substandard or falsified medications are a huge economic burden on pharmaceutical supply chains, and a major risk to human life. Falsified medications may contain no active ingredient, the wrong active ingredient or incorrect amounts. Although this is an issue primarily in low- and middle-income countries, with the World Health Organization estimating that one in 10 medical products are falsified in these countries, companies around the world can be affected, and have been affected. Since pharmaceutical suppliers work without a decentralized ledger, it's challenging for companies to keep track of potential counterfeit medicine.

To address supply chain challenges such as counterfeit medicine, the U.S. introduced the Drug Supply Chain Security Act in 2013, which gives the pharmaceutical industry until 2023 to put in place track-and-trace systems for products as they move through the supply chain. As blockchain develops and begins to be implemented in the pharmaceutical industry, companies can use this technology to meet this new regulation and significantly improve visibility throughout the supply chain.

Improving Inventory Management

Inventory Management is another area of pharmaceutical manufacturing that can benefit from blockchain technology. Challenges with the supply chain extend to inventory management, where preparing inventories can be difficult without having proper supply chain visibility. Blockchain technology would enable manufacturers to see the exact inventory of wholesalers in real-time, taking the estimation game out of supply and demand.

Blockchain significantly improves traceability, leaving no questions when it comes to inventory. For example, when a product is loaded onto a shipping truck from the manufacturing facility, that transaction is immediately recorded in real-time, down to the micro-second. If a wholesaler needed to order more inventory, they would be able to see every product that has been shipped to them, including what is still in transit. This level of insight ensures that they don't order a surplus of product, which can save significant inventory costs down the line.

Larger Healthcare Implications

Blockchain has potential for not just the pharmaceutical industry, but also the larger healthcare industry as a whole. For example, for clinical trials that rely on the integrity of data for scientific research, blockchain ensures all steps of the trial and all documented patient information is recorded and accurate. Clinical trials, in particular, involve large amounts of data, and the encrypted nature of blockchain supports data integrity. Establishing trust among the different stakeholders in clinical research is essential, and blockchain is making that easier. The scientific community will benefit from clinical trials that are more streamlined and credible, and ultimately the patient will benefit from more clinical trial findings coming to light.

While there's plenty of hype around blockchain in general, it's just the beginning for the pharmaceutical industry. With potential to make supply chains more accurate, secure and more efficient, blockchain is on its way to having a significant impact on pharmaceutical companies – and supply chains are just one aspect. The entire pharmaceutical industry could be on its way to a much-needed technology refresh.