Use Case Library

Improving Pharmaceutical Supply Chains

Executive Summary written by GBBC

Despite advances in supply chain management, fraudulent and substandard drugs have increasingly become a problem in the U.S. According to a comprehensive review of literature on the subject, the growth of internet pharmacies combined with drug shortages, opaque supply chains, and complex wholesale markets has led to an increase in the percentage of fraudulent and substandard drugs in the U.S. market. Congress responded by passing the Drug Supply Chain Act (DSCSA), which lays out a process to "build an electronic, interoperable system to identify and trace certain prescription drugs as they are distributed in the United States... The system will also improve detection and removal of potentially dangerous drugs from the drug supply chain to protect U.S. consumers." Blockchain technology is currently being explored by the largest stakeholders in the pharmaceutical industry as a potential solution to this ongoing problem.

MediLedger was created in 2017 to determine whether blockchain platforms are a viable way to improve traceability and interoperability of pharmaceutical supply chains. This project has been backed by Pfizer, McKesson, AmerisourceBergen, Cardinal Health, Genentech, Abbvie, and Walmart. The MediLedger network uses Parity, an enterprise Ethereum fork with a proof-of-authority consensus mechanism. Using this blockchain network, companies can enter their products into a lookup directory. This enables distributors to scan the serialized products to receive verification that the product is legitimate. The protocol ensures that only approved manufacturers can commission serial numbers, making it more difficult for counterfeiters to enter the supply chain.

The U.S. Food and Drug Administration (FDA) will continue phasing in the DSCSA until it is fully implemented in 2023. Drug manufacturers and distributers have turned to blockchain as a potential tool for complying with new DSCSA regulations. The MediLedger platform has the ability to vastly improve the traceability and security of the pharmaceutical supply chain. MediLedger and other blockchain-powered supply chain protocols must show more progress and successful pilot projects before the government and consumers will trust them, though they are already extremely promising.