Introduction to
Medical Supply Management
Techniques Using Blockchain and
Machine Learning

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Introduction

Medical management is the collaborative process that facilitates treatment plans for patients. It includes the planning and coordination of health care services required to achieve the goal of medical rehabilitation.

Medical supply management includes approaches to link medicine, equipment, vendors, hospitals, and transport for the efficient use of resources to achieve effective supply chain management.

Medical facilities are core necessities for humankind. However, much of the population worldwide cannot access the right medical care in time, and too often the cost is a great burden. We've seen this highlighted during the COVID-19 pandemic.

Medical Supply Chain

| Manufacturer | Wholesaler | Pharmacy or Hospital | Patient |
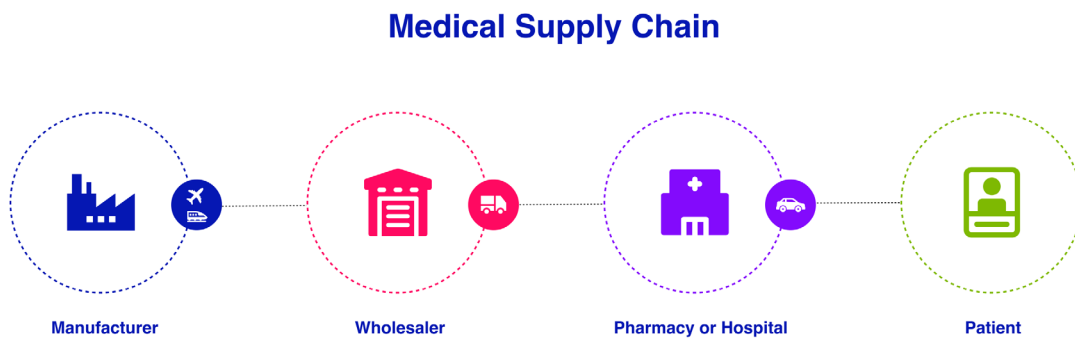
Proposed Improvements

Currently, there is no centralized way to perform quality control for supplies sent to medical facilities. The wholesalers make orders to the manufacturers and then sell them to their customers, such as hospitals and pharmacies. When hospitals need extra medical supplies, they order from the wholesaler. However, there is no way to check the authenticity of the medicine, which can lead to the supplies coming from black markets. In addition, there isn't a system in place that can predict surges in demand or identify areas with high-volume orders.

Necessity is the mother of innovation. In this era, technology is the key to solving these pressing problems. We can correct the long-standing issues when supplying medical facilities through the latest available technology. The following are suggestions for supply chain management that could improve the medical supply chain process:

A Centralized System for Medical Supplies

Control centers should implement technology to fill the gap between suppliers and the hospitals and pharmacies they support to minimize the risk of black-market supplies. . If there is a centralized system, supply management will be able to keep track of demand and have control over supplies, creating a reliable distribution system. As a result, this will reduce the black market medicine and medical equipment now in circulation and help quality control over supplies.

Medical Supply Chain

Manufacturer Wholesaler Pharmacy or Hospital Patient

CONTROL CENTER
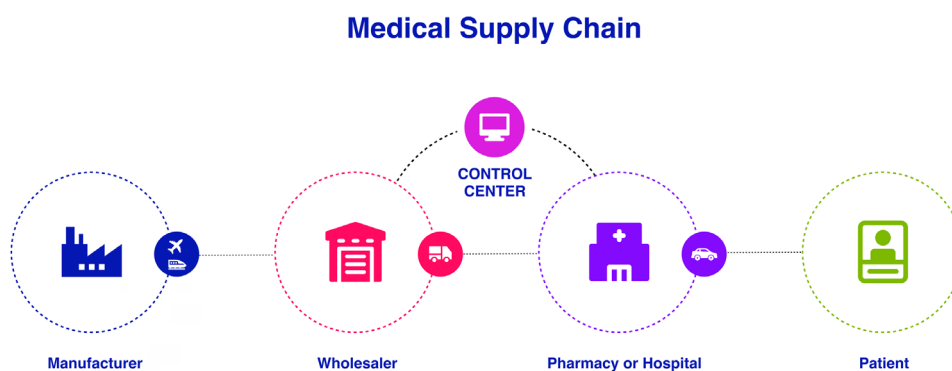
Benefits of Proposed System

Monitoring the Distribution of Medical Supplies

This proposed system can monitor hospital and pharmacy inventory and notify management of significant medicine or supply consumption. Then management can quickly take the appropriate action to tackle the situation. In addition, the central command system can track the medical supply availability and its demand in designated areas. This system would help reduce supply chain issues and black-market purchases.
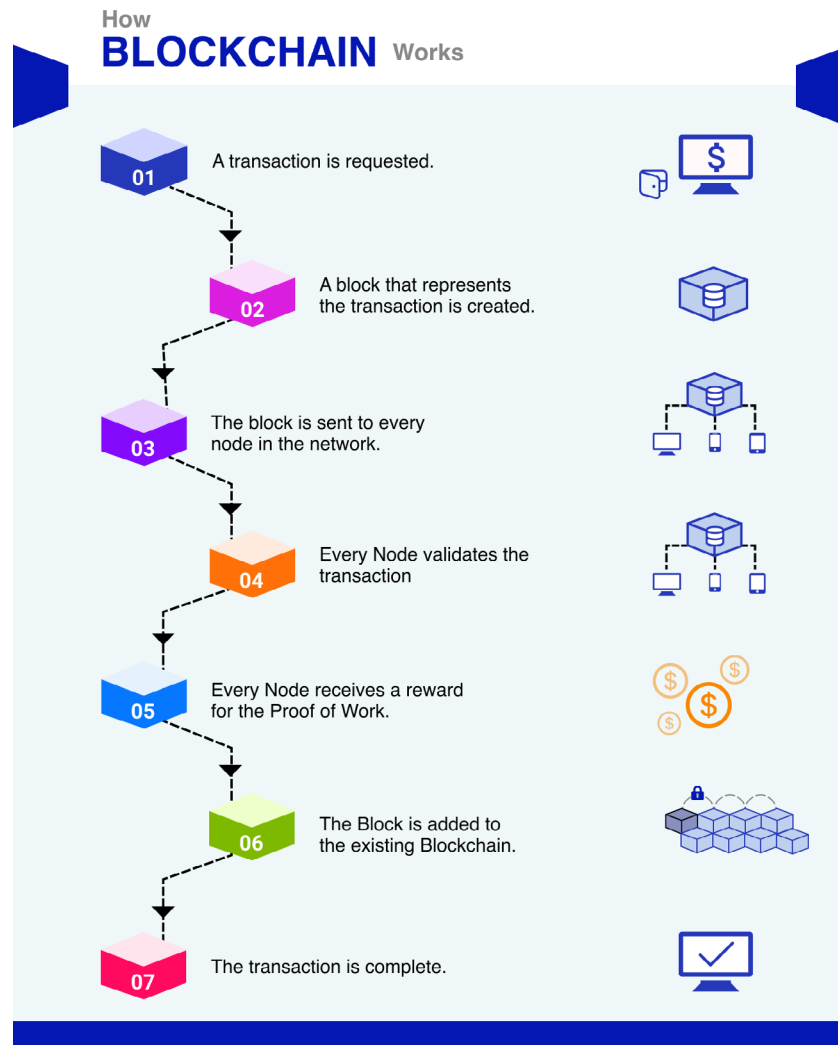
This system would also help supply distribution by prioritizing the high-demand locations. The medical and supply industries can also create an audit system to check the authenticity of supplies.

Tech-Stack

Use of BlockChain in the System

Blockchain is a distributed ledger system to store digital assets. The data on a blockchain cannot be modified, which makes it a reliable process for the healthcare industry. First, let's discuss how Blockchain works:

How BLOCKCHAIN Works

01 — A transaction is requested.

02 — A block that represents the transaction is created.

03 — The block is sent to every node in the network.

04 — Every Node validates the transaction

05 — Every Node receives a reward for the Proof of Work.

06 — The Block is added to the existing Blockchain.

07 — The transaction is complete.

When a hospital or pharmacy requests supplies, the orders go into the system. The requests would also reflect in the system for supply competition with the wholesaler for every transaction. This system would create a centralized audit process for medical supplies and end any data manipulation.

Machine Learning for Accurate Prediction

Machine learning is the future of technology innovation and can create impactful solutions for the healthcare industry. This technology is incredibly beneficial since it can compile large amounts of data and predict demand in advance. As a result, this could help minimize the misinformation spread about shortages in medical supplies. In addition, authorities can proactively share the expected market demand with the manufacturers to produce enough supplies before a problem arises.

Scope of the Suggested Changes

The scope of the proposed system is vast and impactful since it will reduce black market supplies in the medical field and create complete transparency in the medical supply chain. This system can also monitor the purchase of medical goods and reduce high commissions and brokerage charges. Furthermore, when medical emergencies arise due to pandemic-related or demand surges, there will be a seamless distribution of necessary medical equipment and medicine.

About the Author

Anuj Sharma works as an Associate Consultant in Java Backend profile. He always looks forward to learning new things, which can be seen in his career profile as he started out as an Android Developer and moved to backend profile

Sharma believes that continuous learning and adapting new things are the keys to ultimate success.

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