Blockchain in Healthcare
Transforming the Future

Introduction to Blockchain Technology

What is Blockchain?

A decentralized digital ledger that records and secures transactions across multiple computers, eliminating the need for a central authority.

Decentralization & Security

Data is shared across a network, making it tamper-proof and protected by cryptographic verification.

Importance in Industrial aplications

Used in finance, healthcare, and supply chains to improve security, transparency, and efficiency. In healthcare, it protects patient data and prevents fraud.

Current Challenges in HealthCare

Data Security Issues

Patient records are vulnerable to hacks and unauthorized access, leading to privacy risks and data breaches.

Counterfeit Drugs in Supply Chains

Fake medicines enter the market due to lack of transparency in drug tracking.

Lack of Interoperability

Different healthcare providers use separate systems, making data sharing slow and inefficient.

Inefficient Billing Systems

Billing errors and fraudulent claims lead to delays, disputes, and financial losses for both hospitals and patients.

High Costs Due to Intermediaries

Middlemen in insurance claims, billing, and record management increase expenses and delays.

Why Healthcare Needs Blockchain

Data Security

01

Blockchain technology enhances the security of patient data by decentralizing storage and limiting access to authorized personnel.

Cost Reduction

02

By minimizing the involvement of intermediaries, blockchain can significantly lower transaction costs in the healthcare industry.

Drug Traceability

03

Blockchain provides a comprehensive tracking system for pharmaceuticals, effectively combating counterfeit medications in supply chains.

Clinical Trials

04

Utilizing blockchain ensures integrity and transparency in clinical trials, facilitating better tracking of results and data accuracy.

How Blockchain Works in Healthcare

Data Entry

Healthcare data is entered into the blockchain by authorized personnel.

Data Encryption

All data is encrypted using cryptographic techniques for security.

Consensus Protocol

Transactions are verified through consensus among network participants.

Data Access

Authorized users can access the secure data in real-time.

01

02

03

04

Blockchain in Electronic Health Records

Improved Access

Patients can securely access their medical records in real-time, promoting engagement and ensuring they receive the correct treatments and care based on accurate data.

Enhanced Security

Blockchain technology offers encrypted patient records, significantly reducing unauthorized access and ensuring that personal health information remains confidential and secure.

Smart Contracts in Healthcare

Claims Processing

Automates insurance claims for faster reimbursements and less paperwork.

Billing Systems

Improves accuracy in billing and reduces disputes with automated contracts.

Research Funding

Facilitates automatic disbursement of research funds upon meeting criteria.

Supply Chain

Manages drug inventory with real-time data and automated reordering.

Patient Consent

Streamlines and secures patient consent for data sharing in trials.

Data Access

Controls and logs access to medical records based on predefined rules.

Telemedicine

Ensures secure and automated transactions during virtual consultations.

Regulatory Compliance

Tracks compliance with regulations via automatic enforcement rules.

Blockchain in Pharmaceutical Supply Chain

? Problem Faced

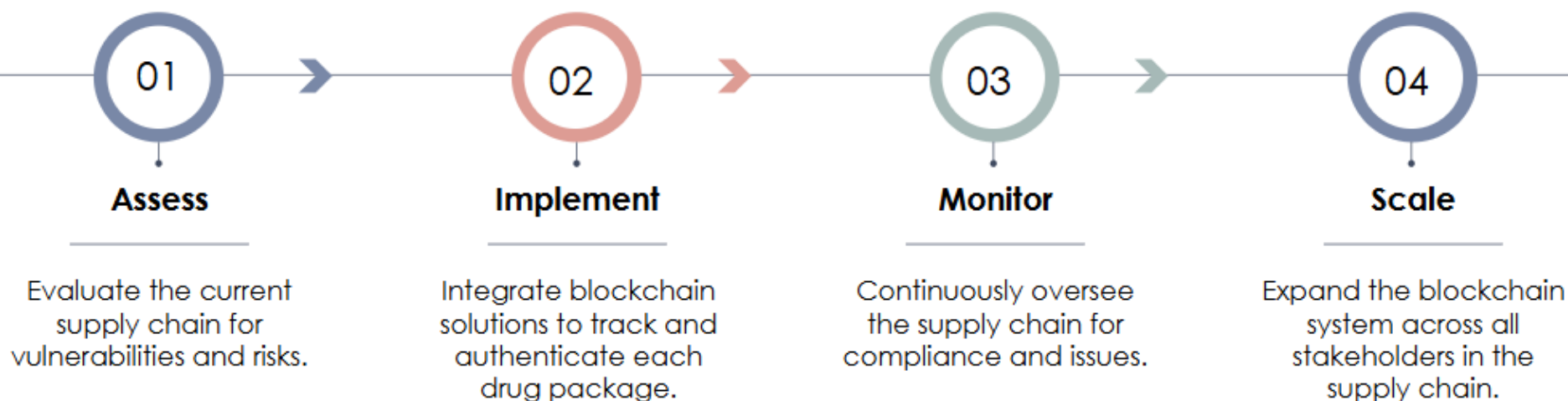Counterfeit medications threaten patient safety and trust.

Solution Offered

Real-time tracking of drugs from manufacturers to patients.

Benefits

Improved transparency and accountability in drug distribution.

Approach

01 — **Assess**

Evaluate the current supply chain for vulnerabilities and risks.

02 — **Implement**

Integrate blockchain solutions to track and authenticate each drug package.

03 — **Monitor**

Continuously oversee the supply chain for compliance and issues.

04 — **Scale**

Expand the blockchain system across all stakeholders in the supply chain.

Challenges and Limitations

Scalability

Difficulties in processing high transaction volumes efficiently.

Costs

High initial investment deters widespread implementation among providers.

Regulatory

Absence of established guidelines leads to compliance challenges.

Collaboration

Lack of consensus hinders industry-wide adoption and integration.

Future of Blockchain in Healthcare

Increased integration of blockchain technology into electronic health records, insurance claims processing, and clinical trials, enabling real-time access to secure patient data, reducing administrative costs, and enhancing transparency in healthcare operations while fostering collaboration among stakeholders across the healthcare ecosystem.

Case Studies and Real-World Implementations

IBM Watson

Utilizes blockchain to streamline healthcare data sharing among providers.

BurstIQ

Facilitates secure health data exchange for personalized medicine approaches.

MedicalChain

Enables patients to control their health records securely via blockchain.

Walmart

Track and trace pharmaceuticals to prevent counterfeit drugs in supply chains.

Conclusion

01

Blockchain has the potential to revolutionize healthcare by ensuring secure patient data, seamless interoperability, reduced costs, and transparent drug tracking.

02

Its ability to automate processes and enhance trust can lead to a more efficient and patient-centric healthcare system.

Thank You