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Health Information Exchange with Blockchain amid Covid-19-like Pandemics

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The COVID-19 pandemic is stress-testing existing health information exchange systems. There exists an increasing demand for sharing patient information and efficiently responding to patient medical data requests. Current health information technologies lack data fluidity, especially for remotely sharing medical data beyond their protected, local data storage. This paper presents a blockchain-based data-sharing framework that leverages the properties of immutability and decentralization to ensure a secure, user-centric approach for accessing and controlling access to sensitive medical data. The proposed framework builds its foundations on a peer-to-peer network fueled by the distributed InterPlanetary File System combined with on-chain tagging, and on the use of cryptographic generation techniques for enabling a secure way of sharing medical data. The flow of information is orchestrated by a smart-contract deployed on a blockchain-based protocol to ensure traceability and data integrity. The effectiveness of the framework is demonstrated with the implementation of the framework over a pilot study