Letter to the Editor | Open Access

DMMS: A Decentralized Blockchain Ledger for the Management of Medication Histories

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Dear Editor,

We hereby appreciate you for publishing a unique journal dedicated to *Healthcare Blockchain.* We would like to mention some points on the latest paper published: "DMMS: A Decentralized Blockchain Ledger for the Management of Medication Histories".[1] It is a valuable text prototyping one of the most case requirements of healthcare suggesting that we should to move on peer-to-peer blockchain network, facilitating prescribing and patient history access.

First, when we are trying to solve an issue, specifically in the health care; it would be better to plan a more comprehensive solution,[2] what is called *lean management*.[3] The prescription is not a stand-alone piece of software discrete of other administration and admission processes in hospitals. Experience has shown that stand-alone e-

prescription has cost barriers to the system and also training of the staff.[4,5] Therefore, a comprehensive and modular EHR could contain an e-prescription module.

On page 4, "Public and private blockchain", the first sentence parallels the public and private blockchain to permissionless and permissioned. Although the definitions are close together, they are different as described in chapter 23 of this APress book[6] or this website[7].

On page 4, Hyperledger is mentioned as a private blockchain. However, it is a highly customizable platform that can be used for any type of blockchain.[8–10]

On page 5, research exemplified Etherium next to Bitcoin as a "Proof of Work" consensus blockchain. However, Etherium has switched to a mixed method "Proof of Concept" called Casper in recent years[11,12] and has become more green and environmental friendly[13] by reducing energy costs needed for mining.

The other point to mention is about component naming (page 6). Although the system and component names are not visible to everyone, ethically it would be better not to categorize the patients as assets. Even some have suggested that we should not write the term patient in papers and that we should use the "participant" instead.[14] However, as you have that for the physicians, you could simply call that "users".

On page 7 you have stated, "Machines will have a pre-installed client with a prescriber-type network card." It was not clear to us what you mean at the first sight. It appears that the researcher has manufactured specific hardware that replaces computer network card for prescribers' computer to join the developed blockchain network.

The security part of the paper (page 8) starts with the sentence "In some breaches…". Although using the word "breach" is not wrong here, as the research is published in an expertise blockchain journal, we have to consider that "breach" is specifically a type of insecurity issue[15] that may lead to misunderstanding here.

The other ethical issue (page 9) is that in a system developed by highly secure blockchain technologies, users trust and join as they are assured their data are safe and secured in the blockchain. Thus, how and in what case are the records queried and sent

to the third-party EHR vendors? In most cases, they do not store data in an encrypted format.

Furthermore, (as described on page 10), the same issue happens for the private keys of the users unable to access smartphones. How are their private keys stored? What has been done in the research puts the users in more danger in comparison to those that have access to smartphones. That's the violation of ethical code "Justice".[16,17]

Sincerely,

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