Centralized healthcare database for ensuring better healthcare: Are we lagging behind?

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Database is an organized set of large information gathered and stored electronically to be retrieved whenever required. The systematically stored information can be accessed, analyzed, updated or moved to other databases as per the requirement. A centralized healthcare database (CHD) is a memory house of health data from a wider population, where information such as health records, financial data, billing and claims information and inventory use is not only stored systematically but can also be retrieved, analyzed, and integrated. The data can be assessed by the healthcare providers, researchers, policy makers, institutions and by the patients themselves.

In the United States almost 100% hospitals shifted to centralized electronic health record systems as a result of the 2009’s Health Information Technology for Economic and Clinical Health (HITECH) Act.¹ The system was further strengthened by the Trusted Exchange Framework and Common AgreementSM (TEFCASM) that is responsible for establishing universal governance, policy, and technical floor for nationwide interoperability, help consumers easily and securely access their electronic health information, secure exchange of information between organizations for a better patient care, foster healthcare value and direct towards augmenting population welfare.²

Many countries were using Electronic Medical Record systems (EMRs), but it was only after COVID-19 that the researchers and clinicians found that the EMRs have not lived up to their full potential due to decentralization of data. This was overcome by the development of CHD.³

How is it beneficial?

Development of a CHD is an efficient and quick way to search through large volumes of data composed of centralized patient information offering a complete view of a patient’s medical history, treatments, prescriptions, diagnostic test results, billing information and many more. Apart from sparing a large space in the hospital’s record rooms, it minimize cluttering. It allows interdepartmental integration, where health care providers can share patient’s information to improve coordination and treatment plans to provide best patient care. Continuous patient care can be provided even after discharge of the patient. It largely supports the telemedicine services too.

A review conducted between the years 2010 to 2019 to access the evidence based value of the electronic medical record for hospital care showed that the EMRs are efficient in reducing the costs and improving the health care quality.⁴

Maintaining a CHD reduces duplication of tests and procedures, saving time and resources while minimizing the risk of redundant treatments. Researchers can get great benefit from this CHD by designing studies after anonymizing the data and using for research purposes, aiding in understanding disease patterns, treatment outcomes, and public health trends.
CHD can be analyzed to identify trends and best practices, supporting evidence-based decision-making for healthcare policies and procedures. If employed in the form of Big Data, it can calibrate and adjust the screening and preventive protocols to reduce the burden of many diseases like cancers and metastasis.5

The complexity of getting databases in our systems:

In order to get a CHD, quintillions of bytes have to be created and managed. In addition, accurate and efficient data management systems need to be linked to the CHD in order to ensure safe and efficient transfer of sensitive and confidential healthcare data. If the data is not processed with care, it results in medical errors. There is a need to employ standardized data management systems to make the system efficient and error free.6

The system should work with physician’s satisfaction, balancing the benefits of improving patient outcomes with the potential pitfalls of increasing physician’s burnout due to poor implementation leading to added complexity.5

Strong and strict security measures are required to protect patient data in CHD from the unauthorized access and breach in patient confidentiality should be prevented. There should be strict privacy regulations for CHD as is used by Trusted Exchange Framework and Common AgreementSM (TEFCASM).

Multicenter comparison of the large data sets require Common AgreementSM (TEFCASM).

CHD as is used by Trusted Exchange Framework and Common AgreementSM (TEFCASM) prevents. There should be strict privacy regulations for access and breach in patient confidentiality should be prevented. There should be strict privacy regulations for CHD as is used by Trusted Exchange Framework and Common AgreementSM (TEFCASM).

Appendix B

CONCLUSION

In conclusion, while CHD offers substantial benefits in enhancing patient care, improving healthcare systems, and aiding research, the successful implementation of these databases necessitates addressing challenges related to data management, security, uniformity, and ensuring physician satisfaction to harness their full potential. Efforts to streamline and standardize these systems on a global scale can significantly improve healthcare outcomes worldwide.

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REFERENCES


