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Exploring the importance of health information in modern healthcare systems

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Abstract---In a modern healthcare system that is increasingly reliant on utilizing information, both health information and the management of health information have become heavily examined topics. Should patients or healthcare professionals serve as the main owner of that electronic information? In the United States, this nation is growing towards a full "electronic world," and management of health information is a "necessity." Patient privacy needs to serve as a guiding ethic with respect to health information management, which is why legal and ethical considerations are examined in this component of the paper. All responses indicate: Patients own data; healthcare professionals own data; or both (healthcare professionals and patients).

Keywords---modern healthcare systems, health information, management of health.

1. Introduction

Accurate, timely, and relevant health information is critical for formulating policies, making health system decisions, and enhancing patients' lives through improved patient care and less resource wastage. The healthcare industry is constantly evolving, and traditional methods are not immune to persistent changes. Nowadays, due to the increasing volume of data generated in the healthcare sector and in vertical data silos, providing data-driven and evidence-based health and service policies to healthcare professionals and concerned authorities is a

challenging task. Health information management and health information systems could bring a change to traditional healthcare methods and more effectively deliver health services.

Health information is important because it leads to improved patient outcomes, facilitates clinical quality improvement, and results in long-term health system efficiency. The importance of health information in a health care organization can be described in terms of its potential influences on decision makers, patients, and health care service delivery. The quantity and magnitude of health care organizations providing services to consumers make health information an essential ingredient in decision making. Decisions are made more regularly and have a wider impact on more stakeholders than what might traditionally be noticed by senior managers alone. In effect, the outcome quality of health service delivery is influenced by effective health information management. Subsequently, the efficient use of health care resources can create a positive economic impact.

2. The Role of Health Information in Healthcare Systems

Health information is key to improving health outcomes in the world's growing healthcare systems and in its accountability and transparency efforts. Health information is used in various ways in healthcare systems, including to: (1) support clinical decision-making by determining the severity of a patient's condition, their treatment history, their test results, and the presence of any risks; (2) monitor patient care; (3) supply data to so-called evidence-based clinical practice guidelines to improve the quality of patient care; (4) assess the effectiveness of different approaches to patient care and the need for closer management; (5) operationalize these data into everyday healthcare delivery processes; (6) monitor the occurrence of care-related complications; (7) monitor adverse events caused by treatments or diagnostic procedures; (8) provide information on a patient's care and complications to assist in identifying adverse events and the potential for negligence or malpractice; (9) reduce costs in the healthcare system; (10) ensure quality of care and patient safety. High-quality care is often seen as care that results in an outcome in accordance with the relevant clinical guidelines; (11) facilitate public health initiatives; (12) facilitate communication across providers, especially across various service providers; (13) research; (14) health policy; (15) new health technologies; (16) remuneration systems.

Data in health, known as health information, are the foundation for most of these activities. Clinical data are therefore closely linked with health information. The ultimate use of most clinical data is health information and its analysis. Therefore, clinical data become all the more important as more attention is focused on patient outcomes and on public access to comparative statistics on the clinical outcomes in different healthcare organizations. As such, health information can be seen as the cornerstone around which a modern healthcare system operates. Monitoring patient care using data and data measurement methods also underpins the ever-increasing reliance on data analysis used to produce data for monitoring outcomes and determining payments under performance-based remuneration systems. This extends across various regions. In other words, healthcare organizations collect and report on health information based on data analysis outcomes. Systems tend to invest in data quality wherever such a quality measure affects their funding level.

3. Technological Advancements in Health Information Management

As the system for collecting, safeguarding, and managing health information has evolved, so too have the tools for practicing health information management. Electronic health records were once luxury items available only to a select few. But consumer demand for timely and accessible information eventually overcame the traditional thinking that had safeguarded data. Once EHR ownership penetrated six percent of American hospitals, electronic data exchange of protected health information became a priority. Health information exchange utilizes two methods for data transmission: pulling and pushing. Pulling systems are query-based and require direct intervention by the data recipient and are controlled via access controls. Physicians and staff in private and print-filled doctors' offices still struggle daily with pulling in order to find information in a pulling system. Pushing systems are used to collect and send pre-measured data to other computer systems, databases, EHRs, and even warehouses where it can be analyzed. (Wang et al., 2022)(Yousef et al.2020)(Jianxun et al., 2021)

EHRs have sparked a revolution in data management, enabling real-time data access. Even lay audiences are beginning to understand the value of data in health management and making forward-thinking long-term health decisions. As such, another health information management trend is making inroads: telecare and mobile health applications designed to assist house-wide disease management and tracking. When these devices are Bluetooth capable, data can be easily uploaded into EHRs. It is estimated that with a mere 1,000 data points per traditional unit of information, billions of data points require processing. Health information technologies are leveraging big data analytics to predict future health trends and personalize health care. Information that was once recorded with and then forgotten by the patient is now with the patient at all times. Technological breakthroughs show no signs of abatement as healthcare influencers engineer rapid improvements in how we work with information. The next new thing, albeit in its infancy, is the design of databases for the Internet of Things. It won't be long before devices talk to databases and databases talk to one another.

Future information management tools will process, analyze, and disseminate health information more quickly. For example, artificial intelligence will be used to process structured and unstructured data. Home health devices are becoming interconnected, making the need for more sophisticated EHR devices, such as new wearables or mobile tablets. However, advances cannot be efficiently implemented without first addressing the challenges facing health information technology. With multi-million-dollar categories of expenses contending for one hospital's operating budget, healthcare organizations are challenged by the high costs of health information technologies. Adding to implementation costs are the costs of training staff, who must become proficient in the use of these tools before new workflows can be fully integrated. Just as cost-prohibitive as purchasing such technology is the periodic need to perform expensive upgrades.

4. Challenges and Solutions in Health Information Sharing

The sharing of health information among stakeholders can be limited due to several challenges. For instance, data privacy requirements necessitate that patient rights

are protected, so they must be notified when sensitive health information is shared. However, current systems do not always provide such mechanisms for patients. Additionally, differing standards from local to international levels can prevent health information exchanges. Moreover, there may be legal barriers for health information exchange. Furthermore, healthcare systems may be fragmented, which can impede a consistent flow of information due to vendor-specific, targeted vendor-specific, and enterprise-level systems with varying capacities and constraints. (Senbekov et al.2020)(Abu-Elezz et al.2020)(Guo et al.2020)

Some solutions have been offered based on different factors, including data element sharing or a data set structure for exchange, data standards based on a common operating environment, and individual PCs or regional exchange systems. One proposed solution is a robust data governance framework, data dictionary, and metadata management. It has also been demonstrated that the use of standardized, automated protocols could result in the identification, collection, and sharing of health data from consumers or clinical systems, as well as from remote sensors and monitoring appliances. This data infrastructure standard aims to provide a common way of exchanging data that defines both the format and process for electronic data interchange. Consequently, a modern healthcare ecosystem that disintegrates silos necessitates collaborative actions from professional associations, organizations, and groups to guarantee the preservation of patient privacy in addition to encouraging data sharing. Healthcare organizations can incentivize clinicians to engage in health information exchange. Policymakers can promote health information exchange, especially for vulnerable and underserved populations, through inter-organizational agreements and incentive programs.

Information plays a significant role in healthcare and can be critical to treatment processes, but has been neglected. Many technological advances that have been developed to operate more efficiently are still restricted due to limitations on health information access and interoperability. Real-time access to health information is one of the major breakthroughs in the modernization of healthcare. Assuredly, healthcare could greatly benefit from a shared set of data by providing more comprehensive treatment plans while reducing operational costs. Therefore, without a proper mechanism for data sharing and use for patient treatment programs, the health quality and performance measurability are both poorly defined.

5. Ethical and Legal Considerations in Health Information Management

In a modern healthcare system that is increasingly reliant on utilizing information, both health information and the management of health information have become heavily examined topics. Should patients or healthcare professionals serve as the main owner of that electronic information? In the United States, this nation is growing towards a full "electronic world," and management of health information is a "necessity." Patient privacy needs to serve as a guiding ethic with respect to health information management, which is why legal and ethical considerations are examined in this component of the paper. All responses indicate: Patients own data; healthcare professionals own data; or both (healthcare professionals and patients).

A variety of legal and ethical regulations apply to health information management in healthcare. These include regulations on the use of medical information and confidentiality. Legal policies stipulate the management of patients' private data. Well-known ethical considerations for health data management include control of medical information flow, data ownership, and confidentiality of sensitive patient information. Legal ramifications could arise should a person or healthcare organization not adhere to the standards. Nurses deal with several different dilemmas in this area, including patient confidentiality, data sharing, and various legal and ethical concerns. In general, the healthcare organization should monitor healthcare professionals' management of this information while also meeting the legal and ethical standards of management of said information. Technology will continue to change the ethical criteria of healthcare information management. Maintaining an open dialogue with all levels of healthcare leadership can be a valuable tool to meet the ethical and legal standards for managing health data in a healthcare facility. Regulatory agencies will help create the ethical and legal management of health information in the years ahead. Each aspect of ethical and privacy concerns with healthcare information needs continued examination from healthcare professionals, health policy specialists, and other pertinent stakeholders in healthcare systems.

References

- Abu-Elezz, I., Hassan, A., Nazeemudeen, A., Househ, M., & Abd-Alrazaq, A. (2020). The benefits and threats of blockchain technology in healthcare: A scoping review. *International Journal of Medical Informatics*, 142, 104246. [sciencedirect.com](https://doi.org/10.1016/j.ijmedinf.2020.104246)
- Guo, C., Ashrafian, H., Ghafur, S., Fontana, G., Gardner, C., & Prime, M. (2020). Challenges for the evaluation of digital health solutions—A call for innovative evidence generation approaches. *NPJ digital medicine*, 3(1), 110. [nature.com](https://doi.org/10.1038/s41732-020-00110-1)
- Jianxun, C., Arkorful, V. E., & Shuliang, Z. (2021). Electronic health records adoption: Do institutional pressures and organizational culture matter?. *Technology in Society*. [HTML]
- Senbekov, M., Saliev, T., Bukeyeva, Z., Almabayeva, A., Zhanaliyeva, M., Aitenova, N., ... & Fakhradiyev, I. (2020). The recent progress and applications of digital technologies in healthcare: a review. *International journal of telemedicine and applications*, 2020(1), 8830200. [wiley.com](https://doi.org/10.1155/2020/8830200)
- Wang, X., Sun, J., Wang, Y., & Liu, Y. (2022). Deepen electronic health record diffusion beyond breadth: game changers and decision drivers. *Information Systems Frontiers*. [utrgv.edu](https://doi.org/10.1007/s11464-022-1000-0)
- Yousef, C. C., Thomas, A., Alenazi, A. O., Elgadi, S., Abu Esba, L. C., AlAzmi, A., ... & Ahmed, O. (2020). Adoption of a personal health record in the digital age: Cross-sectional study. *Journal of medical Internet research*, 22(10), e22913. [jmir.org](https://doi.org/10.19187/jmir.org)