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The impact of health information on patient outcomes

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Abstract---Health information is valuable because the functioning of a health system is strengthened when the needs of everyone in the system are well blended. Both improvements in humans must be based on evidence that indicates the main cause of the symptoms that have emerged. It turned out that the foundation of all health is a continuous system of collecting, saving, analyzing, and managing health information. The main function of compiling, storing, analyzing, and disseminating health information can be achieved through health information systems. The health information system is an integration of various functions of health information and its supporting components in an organized manner. The health information system must also manage the knowledge revolution that is happening at that time. The technology used is the latest technology to make it easier to obtain information. The driving of health information systems can be as objective as being driven to collect, store, retrieve, and manage information.

Keywords---health information, health system, patient.

1. Introduction

When discussants, global leaders, and professionals converge to chart the path for improving healthcare, advances in clinical management are hailed and celebrated, with indicators such as case mix and procedural differences as starting points, reporting health outcomes and patient experience as next steps. The core message of the current essay is that accurate and timely health information is transformative: without this, no amount of clinical excellence and

sophistication would improve patient outcomes because of the importance of patient care. The first Global Ministerial Summit on patient safety underscored the paramount importance of effective information and communication for patient safety. Most indicators of patient safety are part of developing countries, as are indicators of information and health management. For example, it was reported that it was a major factor affecting health care. Medical error is the eighth leading cause of death.

Health information is valuable because the functioning of a health system is strengthened when the needs of everyone in the system are well blended. Both improvements in humans must be based on evidence that indicates the main cause of the symptoms that have emerged. It turned out that the foundation of all health is a continuous system of collecting, saving, analyzing, and managing health information. The main function of compiling, storing, analyzing, and disseminating health information can be achieved through health information systems. The health information system is an integration of various functions of health information and its supporting components in an organized manner. The health information system must also manage the knowledge revolution that is happening at that time. The technology used is the latest technology to make it easier to obtain information. The driving of health information systems can be as objective as being driven to collect, store, retrieve, and manage information.

2. The Role of Health Information in Patient Care

In piecing together the nature of a person's injury, health information is vital for the provision of medical care and their full management. Health information is evidence that helps to explain and narrate the patient and their injury to those entrusted with care. Health information, in the form of personal and historical information as well as assessment tools, guides how that person—when seen as a patient—might best be cared for, promoting better health outcomes such as faster recovery, minimizing morbidity, and reducing the length of service involvement. High-quality health information also facilitates good service delivery, mediating the nuances between person-centered, person-driven services and personalized care. As a corollary, health information is a means of flexible and targeted care, enabling services to better utilize available resources such as time, energy, and money. Health information is foundational to the functionality of primary healthcare. The ability to collect, use, and manage other patient-related services is dependent on the availability of comprehensive and accurate health information to support the four elements of primary healthcare: care that is accessible, appropriate, affordable, and available. In practice, complete and accurate health records help clinical decision-making by providing vital information on the patient's health history, diagnosis, treatment plan, results from any tests conducted, and information on medications prescribed. Systems that capture, manage, and use innovative technologies through electronic health records and telemedicine systems streamline working processes, share resources, promote a culture of co-care, and establish interpersonal health literacy, thus enhancing communication between healthcare practitioners, their patients, and other staff involved in a patient's care. This enables a more widespread use of a team-based care approach, with the implementation of a shared care plan that is appropriate, responsive, and actively promotes good health. Through electronic health records,

more patients are provided with a personalized care plan to better manage and monitor their health progress, assisted by regular reminders for missing assessments and tests. A team-based care approach helps connect any health information available to those involved in service provision and treatment to further assist with the patient's recovery and care. Optimal health information management, such as in electronic health records, is also likely to reduce the risk of preventable medical errors that may lead to adverse events related to patient safety due to their tracking, documenting, and transmission of such occurrences in the provision of primary healthcare. All in all, health information is a pivotal component in the provision of high-quality primary healthcare and is directly related to the health outcomes of individual people. It is the information obtained from individuals' health records that can lead to a faster recovery time.

2.1. Electronic Health Records

Electronic Health Records (EHRs) refer to the digital version of a patient's medical history that pulls information from all providers a patient has seen over a period of time. EHRs centralize patient information in one location, making it visible and easily accessible to any healthcare provider across various settings. This includes facilities such as laboratories, specialists, medical imaging facilities, pharmacies, and emergency facilities. Sharing trusted, up-to-date information increases the quality of care. Another advantage of using EHR technology is to improve the accuracy of the data searched and entered. Written data may not be as legible as electronic files, which could easily lead to misinterpretation of the data. This will result in medical errors, such as the administration of incorrect medications or incorrect dosages to patients. While EHR technology offers many advantages to healthcare, its implementation has been plagued with issues surrounding the privacy and security of patient data. To ensure patient trust, federal and state laws regulate the authorization for use and the disclosure of personal health data. Security measures are constantly evolving to adapt to threats. (Dubovitskaya et al.2020)(Moorthy et al.2020)(Pai et al.2021)

EHR systems have been forced to improve and must now provide various security measures such as strong data encryption, secure socket layer requirements, usernames, and passwords. Despite these issues, the usage of EHRs is on the rise. Although privacy and security still tend to impede the process of sharing health data, the evolution of privacy laws, data protection systems, and health informatics technologies has made it easier for EHRs to exchange a patient's health history. The future areas of improvement of EHR systems are driving the EHR system towards a higher degree of communication among stand-alone systems used by various health providers. In this context, the ability of any application to work with other applications within or outside an organization is referred to as interoperability. There are emerging standards addressing EHR interoperability. Thus, EHR systems can now offer organizations, such as laboratories, improved access to data and reduce duplication of tests and other services. As the electronic data exchange system advances, the cost savings can be dramatic. The earlier diseases are detected, the better they can be controlled with fewer medications.

Currently, EHRs are used by healthcare providers, including doctors, clinics, nursing homes, and other healthcare providers that patients use. As the number of EHR users grows, more and more studies are being conducted to determine the effect of using EHRs on patient outcomes such as inpatient care processes and emergency epilepsy care. The effects of most of these studies have been positive, as EHRs likely reduce the duplication of diagnostic testing and medications and improve the accuracy and timeliness of data. Several reports have provided evidence that EHRs have important capabilities that can potentially reduce errors and improve patient safety. A study aimed to present a case study that demonstrates the effectiveness of the EHR system for healthcare providers and staff involved in the medication administration process and compare the mortality rate and morbidity rate in relation to medication ordering, employment, and monitoring during the trial period.

2.2. Telemedicine and Remote Monitoring

With the worldwide spread of the COVID-19 virus, health care workers around the world are struggling to take care of the unprecedented number of cases, while patients fear the contamination of hospitals and health teams. In this context, telemedicine, which has been in the market for many years, has revolutionized the way healthcare is provided, and remote monitoring is increasingly equipping patients to measure and monitor their vital signs at home or in the workplace. Regarding the patient's perspective, the main potential benefit of telemedicine lies in increasing access to a specialist, while the convenience of telehealth and the ability to use telehealth, a common remote monitoring tool, were top motivators. Regarding the clinical data, a number of vital signs can be transferred to a clinic directly in real time between the patient and health care professionals using telemedicine and remote monitoring technology. The likelihood of telemedicine to reduce costs and improve patient outcomes beyond vital signs is outlined in detail in the following sections.

Telemedicine has been found to be effective in certain existing medical conditions, helping to reduce costs by increasing access to care. While the upfront costs might be expensive for an organization to invest in remote health care, subsequent reduction in complications from avoidable reactions reduces hospital investment. In addition, by offering access to specialist knowledge, the use of telehealth in clinics such as emergencies has been shown to significantly reduce post-hospital stay days. The potential for telemedicine to improve management and patient outcomes is discussed, including the situations in which telemedicine could be particularly successful. There are many obstacles to the effective implementation of telemedicine technologies. In general, all patients need to have a certain level of digital training for telemedicine to be effective. In addition, representatives need to integrate telemedicine equipment and facilitate full access for our health team. Furthermore, the complete multidisciplinary approach and reimbursement of telemedicine are essential for telemedicine to be valuable to patients and clinicians. The development of telehealth surpasses and requires an evolution in professional knowledge and guidelines. Regulators in health care consider the adoption of telemedicine and remote monitoring devices, particularly clinical responsibility. A regulated environment should help ensure that patient

monitoring is harmonious. Further development of telemedicine and remote health care is needed.

3. Patient Empowerment and Engagement Through Health Information

Patients who are well informed about their health conditions, treatment options, and self-care have been found to have decreased anxiety and a greater sense of control over their health and their daily lives. In response to the demand for more health information, a variety of patient-centered care models have been developed. These models emphasize the importance of patient narratives around illness and wellness being integrated with clinical narratives in order to guide decisions about care. Health information can enhance participants' understanding, facilitate self-management of chronic conditions, and prepare individuals to engage in dialogue about their needs and vision of care with their health care provider. The increase in online patient portals and mobile health applications over the last decade has greatly affected how patients access their health information. Patient portals are secure online websites that give patients easy access to their personal health information so that they can make informed decisions about their health. By providing access to their health records, lab results, appointment information, and other clinical notes and communications, patient portals engage patients to take a more active role in their health care. Mobile health applications engage patients in self-management through features that allow users to track their symptoms, obtain health information, and link to a health care provider. The value of patient engagement through access to health information is supported by data indicating that patients who are more involved in their care are more likely to be adherent to a treatment plan and have improved satisfaction with their care. However, many individuals still lack the necessary health literacy or engage in a higher level of self-management and are currently unlikely to benefit from health information resources. This suggests a need for more health literacy interventions as well as further application of health information in the field of patient education. (Carlucci et al., 2020)(Collado-Mateo et al.2023)(Kvarnström et al., 2021)

4. Challenges and Barriers in Implementing Health Information Technologies

The use of health information technologies is not without its challenges. The costs are high for hardware, software, and information infrastructure, as well as for personnel hiring and training. Importantly, there is a gap in training staff to use the technologies and in maintaining them for long-term use. Healthcare practitioners are notoriously resistant to change, and traditional beliefs and pressures within the practice of medicine may compound this resistance. However, most surveys of IT implementation suggest that once systems are in place and have been used for a few months, the majority of practitioners report satisfaction with them. Criticisms of health IT note a lack of interoperability between different information systems, and that the benefits of IT are difficult to measure in existing studies. Further, current regulations have limited its expanded application. Patients in many areas do not have access to the Internet and other IT, preventing the benefits of these technologies from being enjoyed equally by all. Disparities also exist between rural and urban areas.

Regulatory barriers such as data protection and patient privacy regulations have been said to be a major barrier to the dissemination of eHealth. The content of health information is considered sensitive in nature, and a priority for policymakers is ensuring that the privacy rights of patients and clients are protected. Policy reform to encourage information sharing is required, as information is power, and empowering people with information or access to health care to improve their health and well-being are fundamental goals. It is noted that patient privacy is a valid concern, but those issues can be solved to make privacy-compatible computerized information exchange a real possibility. While electronic health records should enhance the quality of patient care, the reality is that health care settings face multiple challenges in implementing information systems. Stakeholder engagement and collaborative development in the strategic planning processes will offer organizations the greatest likelihood of overcoming such barriers.

5. Future Directions and Innovations in Health Information Technology

The future promises great advancements in the use of health information technologies. Currently, artificial intelligence and machine learning capabilities are developing within healthcare. Once they exceed the prediction capabilities of current analytic models, and we are able to overcome constraints with the availability of electronic health data that are required for these aging models, this could present a significant step towards greater learning. Big data analytics also show promise—by collecting information from varied and integrated data sources, large-scale inference is achievable, thus opening the door to knowledge generation that has not been feasible in the past. This powerful analytical capability can be used to promote predictive analytic solutions, thus allowing users to move from interpreting complex data to understanding it. There is a noteworthy synergy between health information technologies and personalized medicine/genomics: machine learning genomics datasets can unearth new information that can drive discovery. Given the growing demand for value-based care, secure, embedded EHR analytics can be used for policy decision-making or business intelligence within healthcare systems.

Interoperability at national levels will have great potential to impact population health, particularly where health information exchange across different sectors exists. Furthermore, with wider access to health data, consumers will be empowered to better engage in their own health. Government agencies have long prioritized national interoperability initiatives, and although shifts in governmental priorities can move the needle significantly with regard to progress toward data sharing, the demand for further driving government participation at local levels is crucial. As far as a 20-year horizon, it is believed that there is also considerable potential for blockchain, AR/VR, and data visualization. Given the amount of untapped health data that still lie in other data sources such as public health, labs and HIEs would be both innovative and effective in capturing new information that can drive knowledge and discovery. Estimation of the number of HIEs that will become operational is unknown at this time, but growth is expected. Will these future technologies face challenges? It is inevitable. Ethical considerations and challenges with ensuring equity in the context of innovations are already present today, and their importance will likely grow. Ethical

challenges can also potentially be combined with the need to ensure consent is obtained. Beyond this, the paradigm of cybersecurity and data security is likely to be forever onward, as fast as new information technology develops. Nevertheless, envision a landscape where a physician can gain immediate access to patient information, data-driven knowledge, and generate hypotheses beyond current knowing, for care delivery optimization through true learning health systems. Innovation is a continuous need in healthcare.

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