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Abstract

The majority of low and middle-income countries (LMICs) have frequently implemented health information systems (HIS) in response to international pressure to account for health care investments. Health information can facilitate better planning and monitoring health services, which may lead to improved health outcomes, which is the concept behind robust and effective HIS. However, the use of health information systems (HIS) as accountability tools has frequently been criticized for being counterproductive because they give health information more significance to international organizations and national governments than to those in charge of local health services. This paper aims to examine how HIS influence the development of local accountability practices and their effects on health care delivery. The technology domain of HIS is combined with a theoretical perspective derived from structuration theory. A case study of HIS in Kenya is analyzed from this point of view. The findings have implications for the application of structuration theory to comprehending accountability and the significance of IT materiality in structuration processes. It contributes to a deeper comprehension of how HIS can foster enhanced human development and health care. It also contributes to the comprehension of IS as a means of socialization through which users can negotiate multiple accountability goals as well as a means of governing people's behavior.

Keywords: *Health, Information systems, Health Management Information System, Healthcare*

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1.0 Introduction

Placing health data into the right hands quickly depends on health information management systems, which seamlessly and intelligently integrate health care with information technology. A health information system enables health care organizations to collect, store, manage, analyze, and optimize patient treatment histories and other key data.

A health information system (HIS) is broadly defined as a system that integrates data collection, processing, reporting, and use of the information necessary for improving health service effectiveness and efficiency through better management at all levels of health services.

The electronic HIS system for managing data processing, reporting, analysis, and use, as well as the data quality assurance and information use procedures, were utilized to support implementation of the Health Management Information System (HMIS) and the community health information system (CHIS), which puts information about people and their families together and makes it available in one place, like a family folder, including information about vaccines, family planning, maternal and child health, HIV treatment and support, and other services.

These systems also enable health care providers to easily get information about macro environments such as community health trends. Further, health information systems give insight into specific providers or health care organizations — for example, commonly used treatments or interventions that are linked with best outcomes.

Doctors and nurses use health information systems to make data-driven decisions regarding various facets of patient care. For example, quick access to patient medical histories can bring previous treatments to light.

Health information systems are also invaluable to administrators, who can analyze statistics about different departments or procedures to better allocate the organization's resources.

Familiarity with these systems is crucial for anyone seeking to be a vital member of a health care organization. A smart way to learn more is to explore or enroll in an advanced educational program, such as a Master of Health Administration degree, where health information systems are a cornerstone of the curriculum.

Purpose of Health Information System

Most of the health care environment, health care professionals gather, store, manage, and analyze health data. They use this information to develop comprehensive care plans; improving patient outcomes and judiciously allocating the organization's resources (including staff). It helps organizations to ensure superior patient outcomes. Some examples include the following:

Data Analytics and Health Information Systems

Health care organizations are constantly generating data. This includes data about surgical volume, length of hospital stay, patient health trends, insurance claims and billing, costs and revenue associated with patient care, and beyond. A primary purpose of health information systems is to help organizations capture this data, interpret it, and put it to practical use.

Collaboration with Health Information Systems

Often, patients need treatments from different health care providers. For example, a patient might receive preliminary diagnosis and treatment from a primary care doctor before being referred to a

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specialist. Easily transferable patient records ensure each provider works with the same basic information, making collaborative patient care seamless.

Population Health Management Providers can use information systems

Utilizing Information Systems for Population Health Management Providers can use information systems to track trends in community health issues. A local population's unique susceptibility to diabetes can be determined, for instance, through some fundamental statistical analysis. The coronavirus pandemic of recent months has served as a clear illustration of how effective utilization of health information systems promotes population health by providing public health officials with the tools they require to track cases and monitor regional outbreaks.

Health Information Systems and Cost Control

The availability of health information systems is crucial to cost control. Patients' histories and similar case studies can be analyzed by doctors and nurses to help them make better treatment decisions. In the meantime, administrators are able to keep track of the number of patients in each department and wisely allocate staff and other resources to the areas where they are most needed.

2.0 The Use of Clinical Vs. Non-Clinical Data

Clinical and non-clinical data can both be useful in a health care organization, with important distinctions between the two.

Clinical Data Definition

Clinical data refers to information about the direct administration of treatment or patient care. Some examples include comorbidities that show up in a patient's medical history, or outcomes associated with a particular surgical intervention or medical procedure.

Non-Clinical Data Definition

Non-clinical data refers to information that's not directly related to patient treatment but may still influence the way professionals use health care facilities and resources. For example, information about the geographic reach of an organization (from how far away are people coming) can help administrators make decisions about whether to extend their ambulance services, whether to open satellite clinics, or whether to invest in outreach to outlying parts of the community.

3.0 Different Types of Health Information Management Systems

It is typical for a number of distinct systems to collaborate within a broader IT environment in any health care organization. Understanding some of these various health information systems is helpful.

Patient-Facing vs. Provider-Facing Systems

Systems that are meant to be used by a health care provider or administrator are distinct from those that are meant for patient input.

Patient-Facing Health Information Systems

Many health care organizations now offer "patient portals," which may be either websites or apps. Patients can log in to personal accounts to access secure information about their own medical history, such as records of previous doctor's visits. Often, physicians or nurses will record a care

plan, including recommended medicines or follow-ups, allowing the patient to participate in their own treatment. Patient portals also help patients see the results of lab work or other testing, schedule non-urgent appointments, or check the status of payments or insurance benefits (Henry et al., 2016).

Provider-Facing Health Information Systems

Other systems are intended for providers. These systems may include information about population health, trends within the hospital, or other data that can inform treatment decisions.

Cloud-Based Health Information Systems

Another important distinction involves cloud-based information systems, where common records are made accessible across different departments or even different facilities. For example, in a five-hospital system, providers at each facility can log in to the remote cloud server to view or amend patient records.

Cloud-based systems play an important role in collaborative care. The patient's journey is not always linear, and a comprehensive treatment plan may involve the patient seeking input from different providers, specialists, or therapists.

When each provider in this chain can easily access the same information, it helps ensure a clear picture of the patient's treatment history, minimizes redundant treatments, and keeps providers all on the same page.

4.0 Importance of Health Information Systems

Health information systems can benefit a health care organization in several ways. To realize these benefits, however, the organization must put the proper technological infrastructure in place. This includes both fundamental software and hardware requirements.

- Effective implementation of health information systems requires a secure wireless network, which connects all associated devices and enables information to be accessed and shared from anywhere within the organization.
- It's also critical to have convenient workstations from which providers, nurses, technicians, and administrators can access records. These may include desktops, laptops, and/or tablets.

Additional considerations for the implementation of health information systems include:

- Comprehensive employee training, encompassing not only the efficient use of the information systems but also best practices for maintaining network security and ensuring patient privacy.
- Data encryption and backup, both of which can help safeguard data from cyberattacks, hackers, or system failures.
- Cyber insurance, which can protect the organization from legal liability in the event that patient data is compromised.

To oversees the implementation of health information systems

- While providers and nurses may use and benefit from these systems, it's usually an administrator who puts the health information strategy into place and ensures that it's properly maintained.

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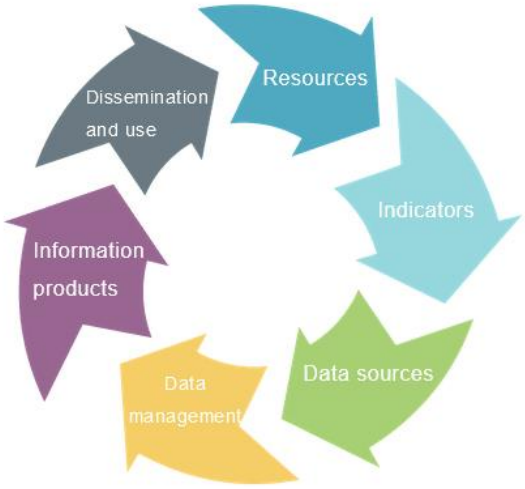
- In a larger hospital setting there is likely to be an IT team, led by a chief information officer (CIO) or a chief technology officer (CTO). In smaller practices, this responsibility may fall to the practice manager.

As information technology becomes increasingly central to health care, administrators must be familiar with the role data can play in shaping patient care strategies.

Indeed, health information systems provide an avenue for hospital decision-makers to make the best possible use of resources, achieving optimal patient outcomes as efficiently as possible.

5.0 The Six Components of a Health Information System; Health Metrics Network; 'Framework and Standards for Country Health Information Systems



1. **Health information system resources:** These consist of the legislative, regulatory, and planning frameworks required to ensure a fully functioning HIS and the resources that are required for such a system to be functional, such as personnel, financing, information and communications technology (ICT) etc.
2. **Indicators:** A core set of indicators and related targets is the basis for an HIS plan and strategy. Indicators need to encompass determinants of health, health system inputs, outputs, and outcomes, and health status.
3. **Data sources:** including population-based approaches (censuses, surveys and civil registration) and institution-based data (individual records, service records, and resource records). Additional information from occasional health surveys, research, and information produced by community-based organizations (CBOs).
4. **Data management:** collection, storage, quality-assurance, flow, processing, compilation, and analysis of data.
5. **Information products:** Data must be transformed into information that will become the basis for evidence and decision making.
6. **Dissemination and use:** The value of health information can be enhanced by making it readily accessible to decision makers.

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6.0 Examples of Health Information Management System

There are a few specific examples of health information systems that fall under these overarching categories. Some of the most common ones are listed below.

1. Software for Practice Management

There is a significant amount of administrative overhead that must be addressed in any health care setting, including scheduling appointments and sending out bills. The front office team of a medical practice frequently makes use of practice management software to automate much of this work.

2. Master Patient Index

The master patient index connects various databases and individual patient files. Every registered patient has an entry in this health information system. It brings all information pertaining to that patient's treatment history together. Master patient indexes are used by healthcare administrators to get rid of duplicate patient files and any incorrect patient information that could cause a denial of a claim.

3. Patient Portal

The patient portal, which was mentioned earlier, allows a patient to view information about their own recent visits by logging in to a secure account. Most of the time, patient portals give doctors and nurses the ability to send private messages to patients, whether it's to share lab results or just go over what was talked about at a recent visit. Patients can also send private and secure messages to their doctor through patient portals to ask follow-up questions.

4. Telehealth, Also Known as Remote Patient Monitoring (RPM)

Enables healthcare professionals to monitor vital signs like blood pressure and other biometrics even after patients return home. Usually, this is done with sensors that patients can wear discreetly at home, at school, or at work. Information is automatically returned to the service provider by sensors.

Providers can remotely monitor patients with chronic conditions like diabetes in this way. Providers can also use it to determine when patients require additional clinical intervention.

Clinical Decision Support (CDS)

Data from a variety of clinical and administrative subsystems can be accessed and evaluated by providers through clinical decision support (CDS) systems. The purpose of this information is to assist clinicians in making prudent decisions regarding clinical treatment. A CDS system's data, for instance, can help a doctor make a diagnosis or predict how various medications will interact with one another more quickly and accurately.

Providers can filter this information and use it to make the best decisions for each individual patient, even though a CDS system may rely on trends and data points from an entire Individual patient.

Electronic Health Records (EHR)

Each electronic health record (EHR) corresponds with a specific patient and provides a long-term, holistic view of that patient’s health. It might include any of the following information.

- The patient's testing and treatment history
- The patient's demographic data
- A list of medications the patient has taken (or is currently taking)
- A history of present illness

Generally speaking, an EHR will go wherever the patient goes, and it's used by different providers or specialists to make informed treatment decisions.

7.0 Potential Benefits of Hospital Information Systems

- Efficient and accurate administration of finance, diet of patient, engineering, and distribution of medical aid. It helps to view a broad picture of hospital growth
- Improved monitoring of drug usage, and study of effectiveness. This leads to the reduction of adverse drug interactions while promoting more appropriate pharmaceutical utilization.
- Enhances information integrity, reduces transcription errors, and reduces duplication of information entries.
- Hospital software is easy to use and eliminates error caused by handwriting. New technology computer systems give perfect performance to pull up information from server or cloud servers

8.0 Conclusion

The healthcare information system is the future of healthcare centers. Despite that, many hospitals are skeptical about adopting this new technology. This is because of two reasons: Its high cost and implementation process.

Once you decide to implement, an institute may undergo a drastic change. The initial process may seem complicated, but we guarantee that the outcomes will be worth every effort.

To conclude, we hope that this article will help you narrow down your search on different types of healthcare management information system.

9.0 Recommendations

When it comes to the internal workflow, the limited efficacy of the patient data management tools that are currently in use may slow down the speed with which various units make clinical decisions. It is suggested that the hospital management team concentrate on minimizing the need to retrieve information from various sources and waste time attempting to exclude data presentation errors in order to avoid similar issues. The decision to select and implement new technological solutions would speed up the workflow because the primary objective of modern electronic health records (EHRs) is to eradicate such issues. The utilization of ineffective hardware resources is yet another issue that must be addressed in conjunction with the concerns regarding workflow. In particular, according to Or, Tong, Tan and Chan (2018), outdated computer equipment frequently operates at a rate that is too sluggish for EMR and EHR systems to function properly. In light of this, it would be beneficial to enhance the hospital development plan so that it takes into account the requirement for faster computer hardware.

Employees at the hospital might need to receive training on the state of communication technology in order to communicate effectively. Cloud-based web conferencing services can help professionals improve decision-making and teamwork in addition to information exchange through the EHR (Balgrosky, 2015). It is also possible to rely on instant messaging applications to

secure communication against data breaches in the absence of video equipment (Balgrosky, 2015). Specialists will be able to share information about software errors and other issues using them. Because there is insufficient information regarding protocols, it can be challenging to make specific recommendations. However, in general, the new or improved system is going to be built using models that are well-known, like Internet Protocol and Transmission Control Protocol (Balgrosky, 2015). Additionally, it is suggested that additional evaluations be conducted to obtain more specific results.

Last but not least, the management team ought to take into consideration purchasing brand-new software in order to prevent patient complaints and enhance information technology usage. Clinical decision-making and the potential impact of the human factor on patient outcomes are linked to the identified issues. As a result, it makes sense to pay close attention to vendors that provide innovative decision-support opportunities aimed at preventing errors in medication management and diagnostics. An excellent illustration of solutions that improve patient safety is IBM Micromedex. It uses alerts and can be integrated into EHR platforms to ensure that providers make treatment decisions based on accurate information (IBM Watson Health, 2018). Its implementation will aid in improving patient outcomes and preventing future workflow issues.

REFERENCES

Balgrosky, J. A. (2015). Essentials of health information systems and technology. Burlington, MA: Jones & Bartlett Publishers.

Doganer, Y. C., Rohrer, J. E., Aydogan, U., Agerter, D. C., Cayci, T., & Barcin, C. (2015). Atherosclerosis and liver function tests in coronary angiography patients. The West Indian Medical Journal, 64(4), 333-337.

Henry, J., Pylypchuk, Y., Searcy, T., & Patel, V. (2016). Adoption of electronic health record systems among US non-federal acute care hospitals: 2008-2015. ONC Data Brief, 35, 1-9. IBM Watson Health. (2018). IBM Micromedex: EHR integration. Web.

Or, C., Tong, E., Tan, J., & Chan, S. (2018). Exploring factors affecting voluntary adoption of electronic medical records among physicians and clinical assistants of small or solo private general practice clinics. Journal of Medical Systems, 42(7), 1-12.