# THE ROLE OF HEALTH INFORMATION TECHNOLOGY (HIT) IN IMPROVING PATIENT CARE: A PROFESSIONAL PERSPECTIVE

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**Abstract**

Health information technology includes electronic health records, personal health records, clinical decision support tools, and telemedicine, as well as Internet use for data and knowledge sharing. The area of healthcare quality and patient safety is starting to use health information technology to prevent reportable events, identify them before they become issues, and act on events that are thought to be unavoidable. To this end, health information systems HIS have been implemented in hospitals, with this implementation representing progress in medicine and information technologies. As a result, life expectancy has significantly increased, standards in healthcare have been raised, and public health has improved. This progress is influenced by the process of managing healthcare organizations and information systems.

**Objectives:** The purpose of this review is to provide a foundation for understanding the role of health information technicians (HIT) in improving patient care.

**Keywords:** Health Information Technology, Healthcare Quality, Patient Safety, Hospital performance.

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## Introduction

Information technology in healthcare involves both computer hardware and software applications that collect, retrieve, share, and utilize healthcare information [1]. Electronic health records (EHRs) aim to promote consistency, reliability, and quality in healthcare. Health information technology encompasses technologies ranging from basic charting to advanced decision support and integration with medical devices. Health information technology presents numerous opportunities to improve and transform healthcare, including reducing human error, enhancing clinical outcomes, facilitating care coordination, boosting practice efficiency, and tracking data over time [2]. Patient safety focuses on mitigating and preventing adverse healthcare outcomes or injuries. The evolution of information technologies has influenced the healthcare sector significantly, playing a vital role in patient safety [3]. Literature on patient safety widely regards patient care information systems as core components of a safe healthcare system [4]. Moreover, high-quality health information positively impacts hospital performance, as efficient health information technologies supply hospital units with accurate and timely data needed to meet dynamic patient needs and provide quality care [5,6]. Several studies have demonstrated a positive relationship between health information technology and hospital performance, as well as between health information technology and health information quality [5,6]. However, other research argues more hospital technologies do not necessarily enhance all patient care quality measures [7,8].

## Health Information Systems and Patient Safety

Patient safety mirrors healthcare quality, including ensuring harm-free services [9] through accurate patient identification [10], as misidentification can cause harm through incorrect medical treatments or diagnoses [11]. Fortunately, available techniques and solutions can help reduce patient misidentification risk by employing a health information system standardizing patient identification approach and cultivating a culture of patient safety through its use implementing and applying policies. An electronic health record represents a major domain of health information technology, defined as "a longitudinal electronic record of patient health information produced by encounters in one or more care settings" [12]. It includes patient data such as problem lists, orders, medications, vital signs, past medical history, notes, laboratory results, and radiology reports. The EHR generates a complete record of a clinical patient encounter or episode of care, underpinning care-related activities including decision-making, quality management, and clinical reporting [12]. Some distinguish between EHR and electronic medical record, with the latter focusing on ambulatory care systems; however, in practice the terms are interchangeable. The Institute of Medicine recommended computerized orders and decision-support applications as primary health information technology mechanisms for increasing future patient safety [13].

## Clinical Decision Support

Clinical decision support provides healthcare professionals with patient-specific information intended to enhance clinical decisions. This information is rationally filtered and presented appropriately. Clinical decision support encompasses notifications, alerts, reminders for care providers and patients, clinical guidelines, condition-specific order sets, patient-specific clinical summaries, documentation templates, diagnostic and investigational support, and other tools [14]. A Cochrane review concluded on-screen reminders for physicians resulted in minor to modest improvements in adherence, medication ordering, vaccination, laboratory ordering, and clinical outcomes. However, physicians frequently ignore alerts from clinical decision support systems. A study evaluated 18,115 drug alerts in Boston, finding 33% were ignored [15]. Several clinical trials studied modifying decision support systems to improve physician compliance with alerts, finding "tiering" and "automation of alerts" enhanced compliance [16,17]. A meta-analysis of why some decision support systems succeed in improving outcomes while others do not concluded systems providing simple advice less likely to succeed, while odds increased for systems requiring justification to override advice. Odds also increased when systems provided advice simultaneously to patients and practitioners [17].

## Advantages of Health Information Systems

The utilization of health information systems offers a multitude of advantages including enhanced cost management, heightened efficiency in delivering accurate patient care and administrative data promptly, expanded service capabilities, decreased labor expenses and inventory levels, and elevated standards in patient care quality. Nevertheless, it is crucial to note that the realization of these benefits is not guaranteed immediately upon the implementation of such systems. Challenges in operations could hinder the timely availability, accessibility, and precision of information, while

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inadequately tailored policies and procedures might not fully align with the operational dynamics and objectives of the systems [18].

**Improved Accountability:**
Through the digitization of healthcare data, Health Information Technology (HIT) facilitates easier data abstraction and review by medical institutions, government bodies, and other stakeholders. Previously, paper records often led to data being unreadable, lost, or incomplete, limiting analysis and insights. With HIT, data is not only digitized but can also be organized, structured, and presented in formats like dashboards and graphs, offering real-time actionable insights [19].

**Improved Patient and Population Health Outcomes:**
Access to accurate information and decision support through HIT has resulted in better treatment outcomes and reduced readmission rates. Patients are more engaged in their healthcare with access to their records and telehealth options, leading to improved adherence to treatment plans [20]. HIT aids in tracking disease outbreaks, monitoring population health, and planning public health interventions. It enables healthcare professionals to quickly access a patient's complete medical history, medications, and test results for better-informed diagnoses and treatment plans. Telehealth and remote monitoring systems allow patients to receive care at home, enhancing healthcare accessibility, particularly in remote areas.

**Better Healthcare Delivery Efficiencies:**
Apart from enhancing patient care, Health Information Technology (HIT) is believed to streamline the process of delivering healthcare services efficiently. A key challenge in efficient healthcare delivery is ensuring timely access to essential data. In the era of paper records, retrieving information, even within a patient's own medical system, was a cumbersome task involving searching through file archives. The widespread adoption of Electronic Medical Records (EMRs) has transformed this landscape, enabling organizations to retrieve data from electronic repositories instantly.

However, a persistent challenge lies in transferring data across different systems, as EMRs from various providers often lack the capability to electronically share information. Initiatives are currently underway to establish robust Healthcare Information Exchange (HIE) networks that facilitate the seamless retrieval of patient data generated by different providers or health systems, irrespective of the specific EMR platform or vendor in use. Furthermore, in a significant stride towards this goal, the healthcare standards organization Health Level Seven International (HL7) introduced Fast Healthcare Interoperability Resources (FHIR) in 2014. FHIR proposes a standardized set of software and programming standards aimed at promoting universal interoperability among EMR systems and associated HIT software [21].

**Reduced Healthcare Costs:**
One of the critical contemporary issues that poses a significant threat to the national economy and various societal priorities like education, military, and social services is the escalating healthcare costs. While not a panacea, Health Information Technology (HIT) is believed to have the potential to reduce expenses through enhanced operational efficiencies, better patient safety, and improved management of chronic diseases. As per a study by RAND Corp. in 2005, the savings resulting from enhanced operational efficiencies alone could reach a substantial $77 billion annually [22]. Nonetheless, the primary obstacle hindering the widespread adoption of HIT is the exorbitant cost of implementation. For instance, the implementation of Electronic Medical Record (EMR) systems from companies like EPIC and Cerner Corp alone can run into tens of millions of dollars, rendering them unaffordable for many. Furthermore, the subsequent changes in workflow, staff training, required software applications, and upgrades to hospital infrastructure all add to the overall expenses.

**Barriers to HIT Adoption:**
Barriers to the Adoption of Health Information Technology (HIT) can be grouped into various categories, including situational barriers related to time and financial constraints, cognitive and physical barriers such as physical disabilities and inadequate computer skills, liability barriers concerning confidentiality issues, and knowledge and attitudinal barriers. Among these, the cost emerges as a significant organizational obstacle to HIT adoption, encompassing both initial setup expenses and ongoing maintenance costs, which can be prohibitively high. From the perspective of healthcare providers, time stands out as a crucial barrier. Time-related challenges revolve around the processes of acquiring, training on, implementing, utilizing, and assessing the effectiveness and efficiency of new technologies. Healthcare

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providers, particularly those involved in direct patient care, often lack the time to familiarize themselves with new technologies. Before embracing new HIT solutions, healthcare providers need assurance that these technologies will not burden them with additional work or disrupt their existing workflows. Many healthcare professionals are resistant to changes that impact their routines, documentation practices, and patient interactions. Despite the transformative potential of technology in healthcare, providers must overcome their apprehensions about technological changes to fully leverage the benefits it offers.

**Conclusion:**
Health information technology has become an integral part of the practice of medicine. As with any new technology, HIT brings many potential benefits and as well as potential concerns. Health information technology improves patient safety by reducing medication errors, reducing adverse drug reactions and improving compliance to practice guidelines. Moreover, there is a significant positive effect of the quality of HITs on hospital performance and health information. Health information quality is a key input of the quality of clinical and administrative decisions and practices. However, modifying organizational policies, improve the infrastructure and enhancing nurses' motivation in documenting nursing reports can be effective in increasing the impact of information technology in care management processes.

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