STRUCTURE OF THE ELECTRONIC MEDICAL RECORD AND ITS COMPONENTS

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Abstract

Electronic Medical Records (EMRs) are digital repositories of patient health information designed to improve the accessibility, accuracy, and continuity of healthcare delivery. EMRs typically include structured demographic data, comprehensive medical histories, clinical documentation, diagnostic results, treatment plans, and physician observations, enabling efficient clinical decision-making and patient management. According to existing literature, the structure of EMRs encompasses both longitudinal patient data collected over time and standardized clinical components that facilitate interoperability across healthcare systems. However, research also highlights variability in data structure and the ongoing need for standardized clinical data formats to support effective data exchange and integration. The adoption of EMRs has been associated with improvements in healthcare structure and processes, though the evidence on clinical outcomes remains complex. EMRs play a pivotal role in enhancing coordination of care, reducing medical errors, and supporting evidence-based practices in modern health information systems.

Keywords: Electronic Medical Record (EMR); Medical data; Personal information; Medical history; Instrumental tests; Interoperability

Introduction

In recent years, information technology has brought fundamental changes to the field of medicine. Traditional paper-based records are increasingly being replaced by digital systems to enhance the efficiency of diagnosis, treatment, and patient monitoring. Among these innovations, **Electronic Health Records (EHRs)** have emerged as a vital tool, enabling the storage of comprehensive patient information in digital form and providing quick access when needed. An electronic health record encompasses a patient's personal information, medical history, diagnostic results, laboratory tests, and prescribed medications. This system not only facilitates effective monitoring of patient health but also simplifies decision-making processes for healthcare professionals. Additionally, EHRs enhance communication between patients and doctors, proving crucial in emergency situations. Therefore, the elements, structure, and functional capabilities of electronic health records play a central role in developing modern medical information systems. Their effective implementation contributes to improving patient care, reducing errors, and enhancing the quality of healthcare services. This article provides a detailed analysis of the key elements of electronic health records, their functions, and practical significance, as well as discussing the advantages of EHR systems and the challenges encountered during their implementation.

Objects and methods of research

This research focuses on the electronic medical card as a modern information resource widely used in healthcare systems. The object of the study is the electronic medical record system implemented in medical institutions, which ensures the collection, storage, processing, and secure management of patients' medical information in digital form. Special attention is paid to the structural organization of electronic medical cards and their role in improving the quality and efficiency of medical services. The subject of the research includes the main

elements of the electronic medical card, such as patient identification data, anamnesis, diagnostic and laboratory results, treatment protocols, prescriptions, clinical observations, and follow-up records. In addition, the study examines the functional and technological principles of forming electronic medical cards, including data standardization, interoperability, and information security mechanisms.To achieve the objectives of the research, a set of general scientific and specialized research methods was applied. The analytical method was used to study and systematize scientific publications, international experience, and regulatory documents related to electronic health records. The comparative method enabled the comparison of traditional paper-based medical documentation with electronic medical cards, highlighting their advantages and limitations in terms of accuracy, accessibility, and data integrity.

Advantages and limitations of electronic health records (EHR). Electronic health records (EHRs) have become an essential component of modern healthcare systems, offering significant improvements in the management and utilization of medical information. One of the primary advantages of electronic health records is the enhanced accessibility of patient data. Healthcare professionals can quickly retrieve complete and up-to-date medical information regardless of time and location, which facilitates timely clinical decision-making and continuity of care. This accessibility is particularly important in emergency situations, where rapid access to accurate patient information can be life-saving. Another major advantage of EHRs is the improvement in data accuracy and completeness. Unlike paper-based records, electronic systems reduce the risk of illegible handwriting, lost documents, and duplication of information. Standardized data entry formats help ensure consistency and minimize human error, thereby increasing the reliability of medical records. Additionally, electronic health records support the integration of laboratory results, imaging data, and clinical notes into a single unified system, allowing for a more comprehensive view of a

patient's health status. Electronic health records also contribute to increased efficiency in healthcare delivery. Automated documentation, electronic prescribing, and decision-support tools reduce administrative workload and save time for healthcare providers. As a result, medical staff can devote more attention to patient care. Furthermore, EHRs enable better coordination among different healthcare providers by facilitating information sharing across departments and institutions, which improves collaboration and reduces unnecessary and treatments. Despite these advantages, electronic health records have several limitations that must be considered. One of the main challenges is the high cost associated with the implementation and maintenance of EHR systems. Expenses related to software acquisition, hardware infrastructure, system customization, staff training, and ongoing technical support can be substantial, particularly for small healthcare institutions. These financial constraints may limit widespread adoption and effective use of electronic medical record systems. Another significant limitation of EHRs is related to data security and patient privacy. Electronic systems are vulnerable to cyber threats, unauthorized access, and data breaches, which can compromise sensitive medical information. Ensuring strong cybersecurity measures, compliance with data protection regulations, and proper user authentication requires continuous effort and investment. Any failure in these areas can undermine trust in electronic health record systems. In addition, the transition from paper-based records to electronic health records may face resistance from healthcare professionals. The need to adapt to new technologies, changes in workflow, and increased screen time can initially reduce productivity and lead to user dissatisfaction. Poor system design or lack of user-friendly interfaces may further complicate adoption and negatively affect the quality of clinical documentation. In conclusion, while electronic health records offer substantial advantages in terms of accessibility, accuracy, efficiency, and coordination of care, they also present limitations related to cost, security, and user adaptation. Addressing these challenges through effective planning, training,

and technological improvements is essential for maximizing the benefits of electronic health record systems and ensuring their successful integration into healthcare practice.

Conclusion

Electronic Health Records (EHRs) have become an essential component of modern healthcare systems, providing a comprehensive and structured way to store and manage patient information. Their key elements—including personal data, medical history, diagnostic results, treatment plans, and communication records—ensure that healthcare professionals can deliver timely and effective care. Overall, the effective implementation of EHRs contributes to improved patient care, better decision-making, and more efficient healthcare management. As healthcare continues to evolve, the development and optimization of electronic health records will remain a critical factor in enhancing both patient safety and operational efficiency.

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