

Electronic Medical Records: Impacts, Outcomes, Challenges, and Opportunities

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Abstract

Aim: This comprehensive review aims to examine the impact of Electronic Health Records (EHRs) on patient care and outcomes, exploring their historical development, benefits, challenges, and future directions.

Methods: A thorough literature review was conducted, encompassing studies, reports, and scholarly articles on EHRs from various academic databases. Key findings and insights from these sources were synthesized to provide a comprehensive overview.

Results: The review highlights the significant benefits of EHRs, including improved accessibility and efficiency of patient information, enhanced communication and coordination among healthcare providers, and support for evidence-based clinical decision-making. However, challenges such as interoperability issues, privacy concerns, and provider resistance remain barriers to the full realization of EHR benefits. The review also identifies promising opportunities for the future of EHRs, including advancements in technology, integration with telemedicine and remote monitoring, and their role in population health management and research.

Conclusion: Despite challenges, EHRs have revolutionized healthcare delivery, offering substantial benefits for patient care and outcomes. Continued efforts to address challenges and harness technological advancements will be critical in maximizing the impact of EHRs and further improving patient care and outcomes.

Key Words: *Electronic Health Records, EHRs – Healthcare delivery – Patient care, outcomes – Interoperability – Challenges – Technology – Telemedicine – Population health management.*

Introduction

HEALTHCARE delivery has been completely transformed by electronic health records (EHRs), which offer a digital platform for exchanging, managing, and storing patient data. A wide range of patient data, including lab results, treatment plans, medication lists, medical histories, and allergy information, are included in electronic health records (EHRs). Critical findings and consequences for healthcare practice are highlighted in this comprehensive analysis, which looks at how EHRs affect patient care and outcomes (Cerchione et al., 2023; Gopal et al., 2019; Kumar & Mostafa, 2020). This paper aims to provide a comprehensive overview of the role electronic health records (EHRs) play in modern healthcare and how they impact patient outcomes and care. This study aims to identify the benefits and challenges of EHRs through the examination of current literature and research projects, providing insights into their successful incorporation into clinical practice. This review is significant because it has the ability to educate researchers, policymakers, and healthcare professionals on how Electronic Health Records (EHRs) affect patient outcomes and care. Healthcare stakeholders may make informed decisions about the deployment and use of EHRs in their practices, which will eventually improve patient care and outcomes, by being aware of the advantages and difficulties associated with these technology.

History:

The growth of Electronic Health Records (EHRs) tells a journey of technology innovation, regulatory reform, and changing healthcare practices that collectively reshaped patient care and outcomes (Cogan et al., 2023; Darlington, 2022; Robichaux et al., 2019). This thorough analysis explores the key turning points and developments in the development of EHRs, highlighting their influence on patient outcomes and care. The idea for electronic health records (EHRs) originated in

the 1960s when scientists and medical professionals started looking into ways to digitize patient records. The technology of the time limited the first attempts at electronic health records (EHRs), which mostly relied on punch card systems and mainframe computers. The early systems were expensive and cumbersome, which prevented their widespread use. More complex EHR systems were made possible by developments in computer technology in the 1970s and 1980s. The emergence of networking technologies and personal computers facilitated the creation of electronic databases that could store and retrieve patient data more effectively. Despite these advancements in technology, the usage of EHRs by healthcare professionals has not increased, with many still keeping paper records (Kim et al., 2019; Sadoughi, Khodaveisi, & Ahmadi, 2019; Sutton et al., 2020). The passage of the Health Insurance Portability and Accountability Act (HIPAA) in 1996 signaled a major shift for the 1990s. HIPAA created guidelines for the electronic interchange of medical records, paving the way for a more widespread adoption of electronic health records. Concurrently, the Institute of Medicine (IOM) produced a paper touting the benefits of EHRs, further fueling interest in digital health records.

Early in the new millennium, government incentives and technical developments drove a wave of EHR adoption. With the intention of having electronic health records (EHRs) for every American within ten years, President George W. Bush established the Office of the National Coordinator for Health Information Technology (ONC) in 2004 to supervise the rollout of EHRs. A major factor in the adoption rates of EHRs was the financial incentives provided by the American Recovery and Reinvestment Act (ARRA) 2009 Health Information Technology for Economic and Clinical Health (HITECH) Act to healthcare providers for the adoption and meaningful use of EHRs (Clark et al., 2022; Fabiano et al., 2021; Ruffin & Hawkins, 2019). The percentage of American office-based doctors who used an EHR system by 2017 was close to 86%.

Patient care and results have been significantly impacted by the use of EHRs. EHRs have improved patient information's accuracy and accessibility, fostering greater care coordination and more informed decision-making. They have reduced errors and duplicate testing by streamlining record-keeping and documentation. EHRs have also enhanced provider-to-provider contact, which has led to greater care coordination and a decline in medical errors. EHRs also enable evidence-based practices and clinical decision-making, leading to improved treatment outcomes and patient safety. EHRs have improved patient outcomes by improving the effectiveness, safety, and quality of patient care overall. EHRs seem to have a bright future ahead of them, thanks to ongoing technology improvements spurring new developments. It is anticipated that more interoper-

able EHR systems will enable smooth information sharing across healthcare providers. To further improve patient care and outcomes, it is also expected that EHRs would connect more closely with other healthcare technology, like telemedicine and remote monitoring. In summary, the development of electronic health records is a story of innovation and revolution in the provision of healthcare. Electronic Health Records (EHRs) have transformed patient care and outcomes, improving the quality, safety, and efficiency of healthcare delivery since its humble origins in the 1960s and broad implementation in the 2000s. EHRs will remain essential in influencing the future of healthcare, resulting in years to come in advances in patient treatment and outcomes (Abernethy et al., 2022; Jeffery Daigrepoint, 2020; Wang et al., 2022).

EMR Evaluation:

Revolutionizing the storage, access, and exchange of patient information, electronic health records, or EHRs, have profoundly changed the healthcare sector (Cerchione et al., 2023; Mourya & Idrees, 2020; Rudin et al., 2020). Decades of technology progress, changing healthcare regulations, and growing awareness of the benefits of digital health information are all contributing factors to this shift. The acceptance and integration of EHRs into healthcare systems, as well as their historical development and progress, are all covered in this article. Healthcare professionals initially investigated digitizing patient data in the 1960s, which is when the idea of electronic health records (EHRs) originated. The limitations of the time's technology, which mostly relied on mainframe computers and punch card systems, hindered the early attempts. Widespread adoption of these early systems was hampered by their high cost and complexity. More complex EHR systems were made possible by advances in computer technology in the 1970s and 1980s. The development of electronic databases for the more effective storing and retrieval of patient data was made possible by the advent of personal computers and networking technologies. Many healthcare practitioners continued to use paper-based records in spite of these technological advancements (Kim et al., 2019; Sadoughi, Khodaveisi, & Ahmadi, 2019; Sutton et al., 2020).

The implementation of the Health Insurance Portability and Accountability Act (HIPAA) in 1996 signaled the beginning of a significant phase in the development of EHRs: the 1990s. HIPAA laid the foundation for the widespread adoption of electronic health records by establishing standards for the electronic interchange of medical data. Concurrently, there was a report produced by the Institute of Medicine (IOM) emphasizing the advantages of electronic health records (EHRs), which increased demand for DHRs. The usage of EHRs increased dramatically in the early 2000s due to both technological breakthroughs and government incen-

tives. With the intention of implementing electronic health records (EHRs) for all Americans within ten years, President George W. Bush established the Office of the National Coordinator for Health Information Technology (ONC) in 2004. As a component of the American Recovery and Reinvestment Act (ARRA), the Health Information Technology for Economic and Clinical Health (HITECH) Act was passed in 2009. Healthcare providers were given financial incentives by HITECH to embrace and use EHRs in a meaningful way, which led to a notable rise in adoption rates. An electronic health record (EHR) was used by around 86% of US office-based doctors by 2017. (Esdar et al., 2019; Johnson, Neuss, & Detmer, 2021; Rahurkar et al., 2023).

Improved patient care, better care coordination, and increased efficiency are just a few advantages of the EHR's integration into healthcare systems. Electronic Health Records (EHRs) facilitate prompt and effortless access to patient data, allowing healthcare professionals to make better decisions and improve patient outcomes. They also help healthcare providers communicate with one another, which enhances care coordination and lowers medical errors. Notwithstanding these advantages, provider reluctance, data security concerns, and interoperability problems have hindered the adoption and integration of EHRs. However, it is anticipated that continued attempts to develop EHR systems and address these issues will strengthen their function in the provision of healthcare (Gill et al., 2020; Mullins et al., 2020; Watterson et al., 2020).

Effectiveness and Importance of EMR:

Patient care and results have improved as a result of the significant improvements made to patient information efficiency and accessibility through the use of electronic health records, or EHRs. This thorough analysis looks at how EHRs affect efficiency and accessibility, emphasizing improved patient information access, streamlined record-keeping and documentation, and a decrease in test duplication and medical errors. A major advantage of EHRs is the enhanced patient data accessibility. No matter where they are, healthcare providers may quickly and easily access patient records because to EHRs. This accessibility is especially important when there is an emergency since it can save lives to have quick access to critical patient data (Ayaad et al., 2019; Neves et al., 2020; Abdulkadir et al., 2022; Tapuria et al., 2021). Furthermore, electronic health records (EHRs) provide a thorough perspective of a patient's historical health information, including diagnoses, prescriptions, allergies, and test results. Healthcare professionals are able to make better judgments about patient care and treatment when this information is easily accessible.

EHRs have improved efficiency and decreased the possibility of errors by streamlining the paperwork and record-keeping process. Healthcare

practitioners can do away with paper-based data by using electronic health records (EHRs) to electronically enter and update patient information (Tapuria et al., 2021; Victor & Great, 2021; Wass, Vimarlund, & Ros, 2019). Error risk is decreased since electronic documentation is easier to read and more readable than handwritten notes. Additionally, electronic health records (EHRs) offer a single location for all patient data, saving medical professionals time and effort by eliminating the need to search through numerous paper documents. To further increase productivity, EHRs can also automate some documentation tasks, like coding and billing. Additionally, the number of medical errors and test duplications has decreased because to EHRs. EHRs lower the likelihood of errors by enabling healthcare providers to make more accurate diagnoses and treatment decisions by giving them access to comprehensive patient information (Melton et al., 2021; Johnson et al., 2023; Rozental & White, 2019). EHRs further reduce the chance of unfavorable occurrences by informing medical professionals about possible drug interactions or allergies. Furthermore, EHRs decrease test duplication by giving healthcare practitioners access to prior test findings, enabling them to evaluate older tests before requesting new ones. By ensuring that tests are only repeated when necessary, this approach lowers expenses, lowers the possibility of needless treatments, and perhaps protects patients from injury.

Patient outcomes and care have been greatly improved by the efficiency and accessibility that EHRs provide. EHRs have revolutionized healthcare delivery by enhancing patient information access, expediting record-keeping and documentation, and lowering medical errors and test duplication. The influence of EHRs on patient care and outcomes will increase with ongoing efforts to enhance EHR systems and resolve outstanding issues (Adane, Gizachew, & Kendie, 2019; Ezeigweneme et al., 2023; Mehta, Grant, & Ackery, 2020). According to Janette & Yeracaris (2020), Quinn et al. (2019), Vos et al. (2020), and others, electronic health records (EHRs) have improved patient care and outcomes by revolutionizing communication and coordination within healthcare settings. This thorough analysis examines how Electronic Health Records (EHRs) affect communication and care coordination. It highlights how EHRs increase continuity and coordination of care, foster better provider-to-provider communication, and have an impact on patient engagement and involvement in treatment. Improved provider communication is one of the main advantages of electronic health records. EHRs make it possible for medical staff to quickly and readily access patient data, which promotes better teamwork and communication. For example, EHRs allow healthcare practitioners to more effectively coordinate patient care by providing real-time updates on their illnesses. According to several studies (Gatiti et al., 2021; Ibekwe et al., 2024;

Hornik et al., 2019; Nordo et al., 2019), electronic health records (EHRs) also enhance communication by providing a common repository for patient information, enabling physicians from different disciplines and locations to access the same data. This promotes more coordinated treatment. EHRs further improve provider collaboration by facilitating communication through functions like electronic referrals and secure messaging.

By offering a thorough perspective of a patient's medical history, including past medical problems, prescriptions, allergies, and test results, electronic health records (EHRs) enhance care coordination and continuity. Healthcare professionals may more efficiently organize patient care and guarantee continuity of treatment across various venues and providers thanks to this easily accessible information. By sending out warnings and reminders for screenings and preventative care, EHRs also improve care coordination (Mallozzi et al., 2020; Schrembs, 2023; Etukudoh et al., 2024; Willis et al., 2022). To guarantee the prompt implementation of preventive care measures, EHRs, for instance, can notify clinicians when a patient is scheduled for a screening or immunization. By enabling patients to access their health records and play an active role in managing their health, electronic health records (EHRs) have a favorable impact on patient engagement and involvement in care. Through encrypted messaging platforms, patients may interact with their healthcare providers and access their medical history, prescriptions, and test results. By giving patients access to individualized health information and instructional materials, EHRs help increase patient engagement. To help patients make educated decisions about their health, EHRs, for example, can provide information on their illness, available treatments, and self-care techniques.

To sum up, electronic health records (EHRs) have greatly facilitated care coordination and communication in hospital settings, which has improved patient outcomes. EHRs have revolutionized the way that healthcare is delivered by enabling improved communication between healthcare providers, enhancing care coordination and continuity, and enabling patients to take an active role in their care. EHR systems' influence on patient care and results will continue to improve with ongoing attempts to improve them and solve any outstanding issues.

EMR and Clinical Decision:

Clinical decision-making and treatment outcomes in healthcare settings have been significantly impacted by Electronic Health Records (EHRs) (Lee et al., 2020; Lewkowicz, Wohlbrandt & Boettinger, 2020; Patterson et al., 2019). With an emphasis on supporting evidence-based practices, facilitating the use of clinical decision support tools, and having a general impact on treatment outcomes and patient safety, this thorough review examines

the effects of EHRs on clinical decision-making and treatment outcomes. The fact that EHRs promote evidence-based procedures is one of their main advantages. At the point of care, electronic health records (EHRs) can give healthcare professionals with up-to-date, evidence-based information by integrating clinical guidelines and procedures directly into the system. By assisting providers in making better decisions regarding patient care, this integration improves results. Clinical decision support systems, which assist healthcare practitioners in identifying possible drug interactions, allergies, and other factors that may affect treatment decisions, are another way that EHRs promote evidence-based practices. EHRs help make treatment decisions that are safer and more effective by providing this information in real-time. (Wasylewicz et al., 2019; Ostropelets, Zhang & Hripesak, 2020; Khalifa, Magrabi & Gallego, 2019).

EHRs make it easier to use clinical decision support systems, which improve treatment results and clinical decision-making. These tools might be as basic as reminders and alerts or as complex as algorithms that make suggestions based on patient information. EHRs, for instance, have the ability to recommend preventative care based on a patient's medical history or notify healthcare professionals about possible drug interactions. By reminding patients to get frequent screenings or tests, these decision support tools in EHRs also contribute to better chronic condition management by making sure patients receive the right care. Patient safety and treatment outcomes are significantly impacted by EHRs. EHRs help healthcare providers make more accurate diagnoses and treatment decisions by providing access to extensive patient data. This can improve treatment outcomes and save healthcare costs. Because they reduce the possibility of pharmaceutical errors, EHRs also improve patient safety. They are able to notify users of possible drug interactions, allergies, and other issues that could jeopardize the security of their medications. (Hydari, Telang & Marella, 2019; Tubaihat, 2019) These alerts contribute to the improvement of overall patient safety by preventing adverse medication events. To sum up, electronic health records have greatly enhanced clinical decision-making and treatment results in medical environments. Electronic Health Records (EHRs) have revolutionized the way healthcare is delivered by promoting evidence-based practices, enabling clinical decision support tools, and improving treatment outcomes and patient safety. The influence of EHR systems on treatment outcomes and clinical decision-making will be further enhanced by ongoing attempts to integrate new technologies and improve existing ones.

Challenges and Barriers of EMR:

With so many advantages for patient outcomes and care, electronic health records, or EHRs, have completely changed the way healthcare is delivered.

However, there have been a number of difficulties and obstacles in their usage and execution. Examining how EHRs affect patient care and results, this thorough assessment focuses on interoperability problems, privacy and security difficulties, and acceptance and resistance issues from providers. Interoperability, or the capacity of various EHR systems to exchange and use patient data, is one of the main problems with EHRs. Fragmented care can result from a lack of interoperability since medical professionals might not have access to all patient data. Due to this, there may be gaps in care, drug mistakes, and unnecessary testing (Rudin et al., 2020; Wyatt, Lampon & McKevitt, 2020). Disparities in healthcare providers' data standards and systems can give rise to interoperability problems. Data transmission and storage formats used by different EHR systems can differ, which makes seamless information interchange challenging. Furthermore, it's possible that EHR providers use proprietary systems that are difficult to integrate with other systems. Another significant obstacle to the effectiveness of EHRs in improving patient care and outcomes is privacy and security concerns. Cyberattacks target electronic health records (EHRs) because they hold sensitive patient data, such as test results, prescriptions, and medical histories. Patient privacy and safety may be jeopardized by data breaches that result in unauthorized access to patient information (Benson et al., 2021; Lehne et al., 2019; Schulz, Stegwee & Chronaki, 2019). Healthcare providers need to put strong security measures in place, like encryption, access controls, and frequent audits, to allay these worries. But putting these policies into practice may be expensive and time-consuming, which presents a problem for medical professionals, especially smaller practices with fewer resources.

The influence of EHRs on patient care and outcomes is also significantly hampered by provider resistance and adoption issues (Niazkhani et al., 2020; Tsai et al., 2020). EHR adoption may be resisted by healthcare professionals because of worries about more paperwork, disruptions to productivity, and perceived lack of value. Adoption may also be more difficult because elderly providers might not be as accustomed to new technologies. Healthcare companies need to give healthcare providers the necessary assistance and training to overcome these obstacles. This could involve giving continual help to handle any problems or queries that come up in addition to teaching on how to use EHR systems efficiently. In order to minimize disruption, healthcare companies also need to make sure that EHR systems are easy to use and smoothly integrate into current workflows. In summary, even if electronic health records (EHRs) provide many advantages for patient care and results, there are obstacles and difficulties in implementing and using them. Significant obstacles stand in the way of the effectiveness of EHRs in improving patient care and outcomes. These obstacles include interoperability problems,

privacy and security concerns, provider reluctance, and adoption issues. In order to set standardized data standards, improve security measures, and give healthcare providers the assistance and training they need, it will be necessary for legislators, EHR companies, and healthcare providers to work together. We can optimize the benefits of EHRs on patient care and outcomes by tackling these obstacles, which will eventually raise the standard and safety of healthcare delivery.

Future of EMR:

Electronic Health Records (EHRs) have already significantly impacted healthcare delivery, but their full potential is yet to be realized. This comprehensive review explores the future directions and opportunities of EHRs in impacting patient care and outcomes, focusing on advances in technology and interoperability, potential for integration with telemedicine and remote monitoring, and their role in population health management and research.

Advances in Technology and Interoperability:

Advancements in technology, such as artificial intelligence (AI), machine learning, and blockchain, are poised to revolutionize EHRs and their impact on patient care and outcomes. AI and machine learning can analyze vast amounts of patient data to identify patterns and trends, helping healthcare providers make more informed decisions and improve treatment outcomes. These technologies can enhance predictive analytics, assist in diagnosing diseases earlier, and personalize treatment plans based on individual patient data (Chattu, 2021; Kumar et al., 2022). Blockchain technology, with its ability to securely store and share data, can enhance the interoperability of EHR systems, enabling seamless exchange of information among healthcare providers. Blockchain can ensure the integrity and security of patient data while making it easily accessible across different healthcare platforms (Tagde et al., 2021). Furthermore, the development of standardized data formats and protocols can improve interoperability among EHR systems, facilitating better coordination of care and continuity of care for patients across different healthcare settings.

Integration with Telemedicine and Remote Monitoring:

EHRs have the potential to integrate seamlessly with telemedicine and remote monitoring technologies, expanding access to care and improving patient outcomes. Telemedicine allows healthcare providers to deliver care remotely, which can be particularly beneficial for patients in rural or underserved areas. EHRs can facilitate telemedicine by providing access to patient information and enabling secure communication between patients and providers (Ahmad et al., 2021; Dinh-Le et al., 2019). Similarly, EHRs can support remote monitoring of patients with chronic conditions, allowing healthcare providers to track patient data in re-

al-time and intervene proactively when necessary. Remote monitoring can lead to better management of chronic conditions, such as diabetes and hypertension, by continuously tracking vital signs and other health metrics, thereby improving outcomes for patients (Jat & Grønli, 2023).

Role in Population Health Management and Research:

EHRs play a crucial role in population health management and research by providing access to large amounts of patient data. This data can be used to identify trends and patterns in disease prevalence, track outcomes of interventions, and identify areas for improvement in healthcare delivery. EHRs also enable personalized medicine by providing access to genetic and other patient-specific information, allowing healthcare providers to tailor treatment plans to individual patients for more effective and efficient care (Bardhan, Chen & Karahanna, 2020; Barrett et al., 2019). Furthermore, EHRs can support population health management efforts by providing tools for tracking and managing population health indicators, such as immunization rates, chronic disease prevalence, and health disparities. These tools can help healthcare organizations identify areas where interventions are needed and allocate resources accordingly (Braunstein, 2022; Hatef, Weiner & Kharrazi, 2019). For example, EHRs can facilitate the identification of populations at risk for certain conditions and ensure they receive timely preventive care and screenings (Hohman et al., 2023). The future of EHRs in impacting patient care and outcomes is promising, with advances in technology, interoperability, and integration with telemedicine and remote monitoring. EHRs have the potential to revolutionize healthcare delivery by providing access to timely and accurate patient information, enabling personalized medicine, and supporting population health management efforts. Continued investment in EHR technology and infrastructure will be key to realizing these opportunities and improving patient care and outcomes. By addressing the challenges of interoperability, privacy, and security, and enhancing provider adoption through training and support, the healthcare industry can maximize the benefits of EHRs and ensure their full potential is realized.

Conclusion:

Electronic Health Records (EHRs) have significantly transformed healthcare delivery, offering numerous benefits for patient care and outcomes. Their development and adoption, which began in the 1960s, accelerated with advancements in technology and key policy interventions such as HIPAA and the HITECH Act, leading to widespread use by the early 2000s. EHRs improve accessibility and efficiency by providing quick and easy access to patient information, streamlining documentation, and reducing medical errors and test duplications. They enhance communication and coordination

among healthcare providers, leading to more cohesive patient care and fewer medical errors. Additionally, EHRs support clinical decision-making through integrated decision support tools that aid in evidence-based practices, improving treatment outcomes and patient safety.

However, the implementation and use of EHRs are not without challenges. Interoperability issues, stemming from differences in data standards and proprietary systems, can lead to fragmented care. Privacy and security concerns are significant, given the sensitive nature of patient information and the risk of cyberattacks. Provider resistance due to workflow disruptions and increased documentation burden also poses a barrier to EHR adoption. Despite these challenges, advancements in technology, such as AI, machine learning, and blockchain, promise to further enhance the capabilities of EHRs. These technologies can improve data analysis, interoperability, and secure data sharing. The integration of EHRs with telemedicine and remote monitoring can expand access to care and improve the management of chronic conditions. Moreover, EHRs play a crucial role in population health management and research by providing valuable data for tracking health trends and supporting personalized medicine.

In conclusion, while EHRs have already made a significant impact on healthcare delivery, their full potential is yet to be realized. Addressing interoperability issues, enhancing security measures, and providing adequate support and training to healthcare providers are essential steps to maximize their benefits. Continued investment in EHR technology and infrastructure will be key to realizing these opportunities and further improving patient care and outcomes.

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الملخص العربي

الهدف: تهدف هذه المراجعة الشاملة إلى فحص تأثير السجلات الصحية الإلكترونية (EHRs) على رعاية المرضى والنتائج، من خلال استكشاف تطورها التاريخي وفوائدها وتحدياتها وتوجهاتها المستقبلية.

الطرق: تم إجراء مراجعة شاملة للمراجع، تضم الدراسات والتقارير والمقالات العلمية حول EHRs من مختلف قواعد البيانات الأكاديمية. تم تلخيص النتائج والأفكار الرئيسية من هذه المصادر لتوفير لمحة شاملة.

النتائج: تسلط المراجعة الضوء على الفوائد الهامة للسجلات الصحية الإلكترونية، بما في ذلك تحسين إمكانية الوصول إلى المعلومات الخاصة بالمرضى وكفاءتها، وتعزيز التواصل والتنسيق بين مقدمي الرعاية الصحية، ودعم اتخاذ القرارات السريرية القائمة على الأدلة. ومع ذلك، تبقى التحديات مثل قضايا التوافق بين الأنظمة، والمخاوف المتعلقة بالخصوصية، ومقاومة مقدمي الخدمات عقبات أمام تحقيق الفوائد الكاملة للسجلات الصحية الإلكترونية. كما تحدد المراجعة فرصاً وأعددة لمستقبل السجلات الصحية الإلكترونية، بما في ذلك التطورات في التكنولوجيا، والاندماج مع الطب عن بُعد والمراقبة عن بُعد، ودورها في إدارة الصحة السكانية والبحث.

الاستنتاج: على الرغم من التحديات، ثورة السجلات الصحية الإلكترونية في تقديم الرعاية الصحية، بتقديم فوائد كبيرة لرعاية المرضى والنتائج. وتظل الجهود المستمرة لمعالجة التحديات واستغلال التطورات التكنولوجية أمرًا حاسمًا في تعظيم تأثير السجلات الصحية الإلكترونية وتحسين رعاية المرضى ونتائجهم.