



Enhancing Patient Experience: The Role of Health Information Management Systems

¹ AL Mutairi, Abdulrahman Abdulaziz, ² AL Ghamdi, Sanad Saad'allah, ³ AL Mutairi, Mohammed Nahir, ⁴ AL Hagbany, Mohammed Nagemsh, ⁵ AL Hassan, Muhannad Abdullah, ⁶AL Mutairi, Mohammed Naif, ⁷AL Qahtani, Reem Nasser.

¹ Ministry of National Guard Health Affairs, Saudi Arabia, al-mutairiab1@mngaha.med.as

² Ministry of National Guard Health Affairs, Saudi Arabia, al-ghamdisa@mngaha.med.sa

³ Ministry of National Guard Health Affairs, Saudi Arabia, almutairimo42@mngaha.med.sa

⁴ Ministry of National Guard Health Affairs, Saudi Arabia, alhigbanimo@mngaha.med.sa

⁵ Ministry of National Guard Health Affairs, Saudi Arabia, alhassanmu@mngaha.med.sa

⁶ Ministry of National Guard Health Affairs, Saudi Arabia, mutairimo@mngaha.med.sa

⁷ Ministry of National Guard Health Affairs, Saudi Arabia, alqahtanire1@mngaha.med.sa

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ABSTRACT

In the rapidly evolving landscape of healthcare, the patient experience has emerged as a pivotal factor in delivering high-quality and patient-centered care. Health Information Management Systems (HIMS) have become indispensable tools for healthcare providers, facilitating the efficient storage, retrieval, and management of patient information. This article delves into the crucial role that HIMS plays in enhancing the patient experience across various healthcare settings. It explores the multifaceted ways in which HIMS contributes to improved patient satisfaction, safety, and overall quality of care. Drawing on real-world examples and research findings, the article highlights the benefits and challenges associated with implementing HIMS to enhance patient engagement and communication. Additionally, the article addresses potential concerns related to data privacy and security, underscoring the need for robust safeguards. By examining the symbiotic relationship between advanced HIMS and elevated patient experience, this article underscores the imperative for healthcare institutions to embrace technological solutions that prioritize patient-centered care.

Key words: Patient experience, HIMS, Communication, Empowerment, Data security, Interoperability, Telehealth, Feedback, Improvement.

1. INTRODUCTION

The landscape of healthcare is undergoing a significant transformation, with a growing emphasis on patient-centered care and the overall experience of individuals seeking medical services. As healthcare providers strive to enhance the quality of care and engage patients more actively in their health journey, the role of Health Information Management Systems (HIMS) has become increasingly vital [1]. These systems serve as the backbone of efficient information handling, enabling healthcare institutions to manage patient data effectively and streamline communication among various stakeholders.

In the past, healthcare primarily focused on diagnosing and treating medical conditions, often neglecting the holistic experience of patients within the healthcare system[2]. However, as the expectations of patients evolve, so too does the approach to delivering care. Today, patients desire more personalized, transparent, and accessible healthcare services. This shift has led to the recognition that patient satisfaction, engagement, and empowerment are not just desirable outcomes but critical components of achieving positive health outcomes.

The aim of this article is to comprehensively explore and elucidate the pivotal role that Health Information Management Systems (HIMS) play in enhancing the patient experience within the modern healthcare landscape. By investigating the multifaceted ways in which HIMS contributes to improved patient engagement, communication, and overall satisfaction[3], this article seeks to provide healthcare professionals, policymakers, and stakeholders with a

comprehensive understanding of the benefits and challenges associated with integrating HIMS into healthcare practices. Through an examination of real-world examples and research findings, this article aims to highlight the significance of patient-centered care and the evolving expectations of individuals seeking healthcare services. Showcase how Health Information Management Systems streamline information access, facilitate personalized communication, and empower patients to take an active role in their health journey. Discuss potential challenges related to data privacy, security, and interoperability that must be addressed in the adoption and utilization of HIMS. Illustrate the positive impact of HIMS on patient experience through case studies and successful implementations in healthcare settings. Emphasize the importance of a holistic approach to healthcare that integrates technological solutions like HIMS to foster improved patient satisfaction and outcomes.

By achieving these objectives, this article aims to contribute to the ongoing discourse surrounding patient-centered care and the integration of technology in healthcare, ultimately guiding healthcare institutions toward strategies that enhance patient experience and foster a more patient-centric approach to healthcare delivery.

Health Information Management Systems encompass a range of technologies designed to collect, store, manage, and exchange patient information securely[4]. From electronic health records (EHRs) to patient portals and telehealth platforms, HIMS facilitates the digitization and organization of patient data, enabling healthcare providers to access accurate information when and where it is needed. This digital infrastructure offers a plethora of opportunities to enhance the patient experience and create a more patient-centric healthcare environment.

This article delves into the multifaceted relationship between Health Information Management Systems and the enhancement of the patient experience. It examines the ways in which these systems contribute to improved patient engagement, communication, and satisfaction. Moreover, it addresses the challenges and considerations associated with implementing HIMS and maintaining patient privacy and data security. By exploring real-world examples and research findings, this article underscores the importance of incorporating advanced technological solutions to elevate the patient experience and, consequently, the overall quality of healthcare delivery.

2. BENEFETS OF HIMS IN PATIENT EXPERIENCE ENHANCEMENT

Health Information Management Systems (HIMS) have emerged as transformative tools in revolutionizing the patient

experience within healthcare. These systems offer a plethora of benefits that collectively enhance patient engagement, communication, and satisfaction[5]. By centralizing patient data, HIMS enable healthcare providers to access information swiftly, leading to quicker diagnoses, minimized waiting times, and reduced duplication of tests. This streamlined information sharing improves care coordination among healthcare teams, ensuring patients receive a consistent and well-coordinated treatment plan.

HIMS also facilitate personalized communication, with automated reminders for appointments and medications, fostering patient involvement and adherence to treatment regimens[6]. Patient portals within HIMS empower individuals to actively participate in their healthcare journey by granting them access to their electronic health records, lab results, and treatment plans. This transparency not only engenders trust but also allows patients to make informed decisions about their health.

Moreover, the rise of telehealth and remote care is made possible by HIMS, offering patients convenient access to virtual consultations and remote monitoring. This accessibility enhances patient convenience, particularly for those with mobility challenges or living in remote areas.

HIMS contribute to informed decision-making by providing healthcare providers with comprehensive patient data, facilitating quicker and more accurate diagnoses[7]. These systems also aid in data-driven improvements, allowing healthcare institutions to analyze patient outcomes and feedback to refine care strategies continually.

In essence, HIMS redefine the patient experience by offering efficient data management, personalized communication, patient empowerment, and remote care capabilities. This, in turn, creates a patient-centered care environment that optimizes outcomes and elevates patient satisfaction.

2.1 Streamlined information access and sharing

Health Information Management Systems (HIMS) have revolutionized the way patient information is accessed, stored, and shared within the healthcare ecosystem, resulting in streamlined processes that benefit both healthcare providers and patients.

Traditionally, paper-based records and fragmented information systems posed challenges in retrieving patient data promptly[8]. HIMS, however, centralize patient information in electronic health records (EHRs), enabling healthcare providers to access comprehensive and up-to-date data with remarkable ease. This swift access to patient history, diagnoses, medications, and treatment plans supports more accurate diagnoses, reduces redundancy in tests, and minimizes patient wait times.

The seamless sharing of information is a core advantage of HIMS. In a multidisciplinary care setting, different healthcare professionals can access the same patient data simultaneously, promoting efficient collaboration and reducing the risk of miscommunication or conflicting treatments[9]. This contributes to a cohesive care experience, where all involved parties are well-informed and aligned in their approach.

Interoperability, a key feature of HIMS, ensures that patient data can be shared across various healthcare systems and institutions. This is especially valuable when patients transition between different healthcare providers or move between different healthcare facilities. With HIMS, relevant patient information can be securely transmitted, eliminating the need for patients to carry physical records or repeatedly provide their medical history[10].

HIMS also play a vital role in emergencies. Accurate and readily available patient information can be critical in urgent situations, enabling healthcare providers to make informed decisions quickly[11]. This capability can lead to faster interventions, reduced risks, and improved patient outcomes.

In summary, HIMS significantly enhance the efficiency of information access and sharing in healthcare. By digitizing and centralizing patient data, these systems optimize the way healthcare providers collaborate, diagnose, and treat patients. Patients benefit from reduced waiting times, more accurate care, and a smoother healthcare journey, ultimately contributing to an improved overall patient experience.

2.2 Personalized care and communication

Health Information Management Systems (HIMS) play a pivotal role in fostering personalized care and communication, fundamentally transforming the way healthcare is delivered and experienced by patients. These systems leverage technology to tailor medical services to individual patients, enhancing engagement, satisfaction, and overall treatment outcomes.

HIMS enables healthcare providers to access a comprehensive view of a patient's medical history, diagnoses, treatment plans, and preferences[11]. This holistic understanding empowers clinicians to customize their approach, offering treatments that align with the patient's unique needs and circumstances. Personalized care goes beyond medical interventions; it encompasses emotional and psychological aspects, addressing patients as individuals with distinct values and concerns[12].

One of the key mechanisms through which HIMS enhances personalized care is by facilitating tailored communication. Automated alerts and reminders, sent via email, text messages, or patient portals, keep patients informed about appointments, medications, and health goals[6]. This consistent engagement encourages patients to adhere to prescribed treatments and therapies, ultimately improving health outcomes.

Patient portals within HIMS allow individuals to access their electronic health records, test results, and treatment plans. This transparency empowers patients to actively participate in their healthcare decisions. They can seek clarifications, research treatment options, and collaborate with healthcare providers to formulate personalized care strategies that align with their preferences and goals[13].

In addition, HIMS supports remote monitoring and telehealth, enabling patients to receive consultations and check-ins from the comfort of their homes[11]. This flexibility is particularly valuable for patients with chronic conditions or limited mobility, enhancing their convenience and overall experience. By personalizing care and communication, HIMS transcends the one-size-fits-all model of healthcare. Patients feel valued and heard, fostering trust between them and their healthcare providers. As a result, patient engagement and satisfaction rise, and patients are more likely to actively participate in their treatment plans, leading to improved health outcomes and a more positive overall healthcare experience.

2.3 Patient empowerment and involvement

Health Information Management Systems (HIMS) have ushered in a new era of patient empowerment and involvement in healthcare, giving individuals greater control over their health information and fostering active participation in their care journey.

HIMS offer patients access to their electronic health records (EHRs) through secure patient portals[14]. This access empowers individuals to take charge of their health by viewing their medical history, lab results, treatment plans, and medication lists. Armed with this information, patients can make informed decisions about their health, engage in meaningful conversations with healthcare providers, and actively collaborate in devising personalized treatment strategies[13].

This transparency engenders a sense of ownership and accountability in patients for their health outcomes. They can better understand the rationale behind treatment recommendations, ask pertinent questions, and voice concerns, leading to more effective and patient-centered care. Moreover, patients with chronic conditions or complex medical histories can play a proactive role in managing their health, enhancing their overall quality of life[15].

HIMS also bridge the communication gap between patients and healthcare providers. Patients can use these systems to securely message their healthcare teams, seeking clarifications, discussing concerns, or requesting prescription refills[16]. This open line of communication nurtures a partnership between patients and providers, fostering trust and collaboration.

Furthermore, patient engagement is elevated through the integration of educational resources within HIMS. Patients can access reliable information about their conditions, treatments, and wellness practices, enabling them to make lifestyle choices that support their health goals.

In the context of shared decision-making, HIMS enable patients to explore treatment options, risks, and benefits. This active involvement not only improves patient satisfaction but also contributes to treatment adherence and better outcomes[5].

Ultimately, patient empowerment and involvement facilitated by HIMS transform the traditional patient-provider relationship into a collaborative partnership. As patients become informed advocates for their own health, healthcare decisions are aligned with their preferences and values. This integration of patient perspectives and engagement paves the way for more patient-centered and holistic care approaches, leading to improved patient experiences and outcomes.

3. CHALLENGES AND CONSIDERATION

While Health Information Management Systems (HIMS) offer substantial benefits in enhancing the patient experience, their implementation and utilization are not without challenges and considerations. These factors must be addressed to ensure the successful integration of HIMS and to safeguard patient information and well-being.

- **Data Privacy and Security:**

The digital nature of HIMS raises concerns about data privacy and security. Patient information stored electronically can be susceptible to breaches, unauthorized access, or cyberattacks[17]. Healthcare institutions must invest in robust encryption, authentication protocols, and regular security audits to protect sensitive patient data.

- **Interoperability:**

Healthcare systems often utilize diverse platforms and software that may not seamlessly communicate with one another. Ensuring interoperability among different HIMS and EHR systems is crucial for the comprehensive sharing of patient information across various healthcare settings [18].

- **Usability and Training:**

The complexity of some HIMS interfaces may hinder their effective use by healthcare providers and staff [19]. Adequate training and support are essential to ensure that users can navigate these systems confidently and efficiently.

- **Patient Adoption and Engagement:**

While HIMS provide patients with greater control over their health information, some individuals might struggle with using patient portals or understanding complex medical data. Efforts

are required to educate patients about the benefits of HIMS and to design user-friendly interfaces that cater to varying levels of technical proficiency[20].

- **Cost and Resource Allocation:**

Implementing and maintaining HIMS can involve significant financial investments, including infrastructure, software, and staff training. Healthcare organizations need to assess their resources and allocate funds appropriately to ensure sustainable adoption[21].

- **Legal and Regulatory Compliance:**

HIMS must adhere to various legal and regulatory standards, such as HIPAA in the United States. Ensuring compliance with these regulations is crucial to protect patient confidentiality and to avoid potential legal repercussions²⁰.

- **Ethical Considerations:**

The collection, storage, and utilization of patient data raise ethical questions about consent, data ownership, and the potential misuse of information[12]. Transparent communication with patients about data usage and informed consent processes is imperative.

- **Data Accuracy and Integrity:**

Errors in data entry or updates within HIMS can lead to inaccuracies in patient records. Implementing data validation processes and regular quality checks are necessary to maintain data accuracy and integrity[17].

- **Resistance to Change:**

The shift from paper-based to electronic systems can be met with resistance from healthcare providers accustomed to traditional methods. Overcoming this resistance requires effective change management strategies and clear communication about the benefits of HIMS.

In conclusion, while HIMS offer transformative potential in enhancing patient experience, addressing challenges related to data security, interoperability, and user engagement is critical. By approaching these considerations thoughtfully and proactively, healthcare institutions can harness the full potential of HIMS to provide safer, more efficient, and patient-centered care.

4. REAL-WORLD EXAMPLES:

Health Information Management Systems (HIMS) have been successfully implemented in various healthcare settings, demonstrating their transformative impact on patient experience, care quality, and overall operational efficiency. Here are a few notable real-world examples:

1. Cleveland Clinic: MyChart Patient Portal: The Cleveland Clinic, a renowned healthcare institution,

implemented the MyChart patient portal powered by its HIMS²². This portal allows patients to securely access their medical records, test results, and appointment schedules. Patients can also request prescription refills and communicate with their healthcare providers through secure messaging. By enabling patients to take an active role in their care, the MyChart portal enhances patient engagement and empowers individuals to make informed decisions about their health.

2. Veterans Health Administration: Veterans Affairs (VA) EHR Modernization[23]: The VA embarked on a massive EHR modernization project to improve the quality and continuity of care for veterans. By transitioning from paper-based records to a modern HIMS, the VA aims to enhance interoperability across its healthcare network. This transition facilitates seamless sharing of patient information among VA facilities, ensuring that veterans receive consistent and high-quality care, regardless of their location.

3. Providence St. Joseph Health: Telehealth Integration: Providence St. Joseph Health, a healthcare system serving multiple states, integrated telehealth services with its HIMS[24]. Through this integration, patients can access virtual appointments with healthcare providers, receive remote monitoring for chronic conditions, and access their medical information online. This approach not only enhances convenience for patients but also expands access to care, particularly in underserved or remote areas.

4. Epic Systems: Comprehensive EHR Solutions [25]: Epic Systems, a prominent healthcare software company, offers comprehensive EHR solutions to healthcare organizations worldwide. These systems enable seamless data sharing and communication among healthcare providers, leading to improved care coordination and reduced medical errors. Patients benefit from better-informed healthcare decisions and increased involvement in their treatment plans.

5. Partners HealthCare: Population Health Management [26]: Partners HealthCare, a prominent Boston-based healthcare system, utilizes its HIMS to implement population health management strategies. By analyzing patient data across its network, the organization identifies trends, risks, and gaps in care. This proactive approach enables healthcare providers to intervene early and provide targeted interventions to improve patient outcomes and overall population health.

These real-world examples underscore the versatility and impact of HIMS in enhancing patient experience and healthcare delivery. From patient portals and telehealth integration to comprehensive EHR solutions, these systems demonstrate the potential for technology to revolutionize how healthcare is provided and experienced by patients.

4.1 Telehealth and remote monitoring

Telehealth, enabled by Health Information Management Systems (HIMS), has emerged as a transformative approach to healthcare delivery, particularly in providing remote consultations and monitoring for patients. This approach offers convenience, accessibility, and improved patient experiences. A notable example of successful telehealth implementation is the Massachusetts General Hospital (MGH) Virtual Visits program [27].

Massachusetts General Hospital: Virtual Visits Program²⁸

MGH, a prestigious healthcare institution, implemented the Virtual Visits program powered by its HIMS. This program allows patients to schedule and conduct video consultations with healthcare providers from the comfort of their homes. Patients can receive medical advice, discuss treatment options, and seek follow-up care without the need for in-person visits.

The program has been particularly valuable for patients with chronic conditions, minor illnesses, or follow-up appointments. Patients can avoid the challenges of traveling to the hospital, reduce waiting times, and minimize potential exposure to infections. The program also enhances access to specialized care, allowing patients to consult with experts regardless of their geographical location.

Furthermore, HIMS-enabled remote monitoring is an integral part of MGH's telehealth initiatives. Patients with chronic conditions, such as diabetes or hypertension, can use wearable devices and mobile apps to monitor their health metrics, such as blood pressure or blood glucose levels. These devices transmit data securely to the hospital's HIMS, allowing healthcare providers to track patients' progress and intervene if any concerning trends are detected.

The Virtual Visits program and remote monitoring have demonstrated several benefits, including improved patient convenience, reduced healthcare costs, and enhanced patient-provider relationships. Patients appreciate the flexibility and reduced disruptions in their daily lives, while healthcare providers can allocate resources more efficiently and focus on patients requiring in-person care.

At the end, the Massachusetts General Hospital's Virtual Visits program exemplifies the successful integration of telehealth and remote monitoring through HIMS. This real-world example showcases how technology-driven solutions can extend healthcare services beyond traditional settings, offering patients a more convenient and patient-centric experience while maintaining the quality of care.

4.2 Patient feedback and continuous improvement

Health Information Management Systems (HIMS) play a pivotal role in capturing patient feedback and driving continuous improvement in healthcare services. A notable real-world example highlighting the power of patient feedback and its integration into HIMS is the University of Pittsburgh Medical Center (UPMC) and its patient engagement initiatives [29].

University of Pittsburgh Medical Center: Patient Feedback Integration UPMC, a renowned healthcare system, leverages its HIMS to systematically gather and analyze patient feedback[30]. Through patient portals and online surveys, patients are encouraged to provide feedback on their experiences, including the quality of care, communication with healthcare providers, and overall satisfaction.

The feedback collected through HIMS is not only used for immediate patient concerns but is also analyzed on a broader scale. UPMC employs data analytics tools to identify trends, areas for improvement, and opportunities for enhancing the patient experience across its network of facilities.

This approach has led to tangible improvements in various aspects of care delivery. For instance, insights from patient feedback have led to changes in appointment scheduling procedures, communication protocols, and the design of patient education materials. By integrating patient feedback into the HIMS, UPMC demonstrates its commitment to patient-centered care and its responsiveness to patient preferences and needs.

Additionally, patient feedback serves as a vital component of UPMC's performance evaluation and staff training³¹. Healthcare providers are informed about their strengths and areas for improvement based on patient feedback, fostering a culture of accountability and continuous learning.

By systematically collecting and utilizing patient feedback through HIMS, UPMC showcases the potential of technology-driven strategies to enhance patient experience and drive positive change. The real-time nature of this feedback loop allows healthcare organizations to make informed decisions, prioritize patient preferences, and continually evolve their services to meet the evolving needs of patients.

Finally, the University of Pittsburgh Medical Center's integration of patient feedback into its HIMS demonstrates how technology facilitates a data-driven approach to continuous improvement in healthcare services. This example underscores the importance of patient engagement and how their insights, when incorporated into HIMS, can lead to

meaningful enhancements in care quality and patient satisfaction.

5. CONCLUSION:

Health Information Management Systems (HIMS) have ushered in a new era of patient-centric healthcare, transforming the way patients interact with the healthcare system and experience medical services. This article has explored the manifold ways in which HIMS enhance the patient experience, from personalized care and communication to empowerment, telehealth, and continuous improvement.

HIMS have revolutionized the accessibility and sharing of patient information, ensuring that healthcare providers have timely access to accurate data for informed decision-making. This streamlining of information exchange reduces redundancies, waiting times, and potential errors, ultimately contributing to smoother healthcare journeys and improved outcomes.

Moreover, HIMS have placed the power of healthcare in the hands of patients. Through patient portals, individuals can access their electronic health records, fostering transparency and informed decision-making. Patients are empowered to actively participate in their care, communicate with healthcare providers, and take ownership of their health outcomes.

Telehealth, a product of HIMS integration, has extended healthcare services beyond traditional settings, enabling remote consultations and monitoring. This accessibility has improved patient convenience, particularly for those with chronic conditions or limited mobility, enhancing the overall patient experience.

The feedback loop between patients and healthcare providers, facilitated by HIMS, drives continuous improvement. Patient insights collected through HIMS are analyzed to refine care strategies, enhance services, and ensure that patient preferences are prioritized.

In short, the integration of HIMS into healthcare practices has paved the way for a patient-centered approach that encompasses transparency, personalization, and empowerment. As the healthcare landscape continues to evolve, the role of HIMS in enhancing patient experience remains paramount. By embracing these technological solutions and addressing associated challenges, healthcare institutions can achieve the shared goal of providing high-quality, patient-centered care that truly transforms the lives of those they serve.

REFERENCES

- 1- Spath PL. The role of HIM professionals in quality management. *Perspect Health Inf Manag.* 2009 Sep 16;6(Summer):1j. PMID: 20052325; PMCID: PMC2781733.
- 2- Starfield B. Is patient-centered care the same as person-focused care? *Perm J.* 2011 Spring;15(2):63-9. doi: 10.7812/TPP/10-148. PMID: 21841928; PMCID: PMC3140752.
- 3- McCaffrey R, Hale D, Kunupakaphun S, Kaufman L, Eamranond P. A Multifaceted Approach to Improve Physician Communication Scores. *J Patient Exp.* 2020 Aug;7(4):522-526. doi: 10.1177/2374373519860041. Epub 2019 Jul 9. PMID: 33062873; PMCID: PMC7534122.
- 4- Gibson CJ, Dixon BE, Abrams K. Convergent evolution of health information management and health informatics: a perspective on the future of information professionals in health care. *Appl Clin Inform.* 2015 Mar 18;6(1):163-84. doi: 10.4338/ACI-2014-09-RA-0077. PMID: 25848421; PMCID: PMC4377568.
- 5- Krist AH, Tong ST, Aycok RA, Longo DR. Engaging Patients in Decision-Making and Behavior Change to Promote Prevention. *Stud Health Technol Inform.* 2017;240:284-302. PMID: 28972524; PMCID: PMC6996004.
- 6- Perri-Moore S, Kapsandoy S, Doyon K, Hill B, Archer M, Shane-McWhorter L, Bray BE, Zeng-Treitler Q. Automated alerts and reminders targeting patients: A review of the literature. *Patient Educ Couns.* 2016 Jun;99(6):953-9. doi: 10.1016/j.pec.2015.12.010. Epub 2015 Dec 21. PMID: 26749357; PMCID: PMC4912908.
- 7- Batko K, Ślęzak A. The use of Big Data Analytics in healthcare. *J Big Data.* 2022;9(1):3. doi: 10.1186/s40537-021-00553-4. Epub 2022 Jan 6. PMID: 35013701; PMCID: PMC8733917.
- 8- Institute of Medicine (US) Committee on Improving the Patient Record; Dick RS, Steen EB, Detmer DE, editors. *The Computer-Based Patient Record: Revised Edition: An Essential Technology for Health Care.* Washington (DC): National Academies Press (US); 1997. 5, Improving Patient Records: Conclusions and Recommendations. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK233051/>
- 9- O'Daniel M, Rosenstein AH. Professional Communication and Team Collaboration. In: Hughes RG, editor. *Patient Safety and Quality: An Evidence-Based Handbook for Nurses.* Rockville (MD): Agency for Healthcare Research and Quality (US); 2008 Apr. Chapter 33. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK2637/>
- 10- Bali A, Bali D, Iyer N, Iyer M. Management of medical records: facts and figures for surgeons. *J Maxillofac Oral Surg.* 2011 Sep;10(3):199-202. doi: 10.1007/s12663-011-0219-8. Epub 2011 Apr 20. PMID: 22942587; PMCID: PMC3238553.
- 11- Haleem A, Javaid M, Singh RP, Suman R. Telemedicine for healthcare: Capabilities, features, barriers, and applications. *Sens Int.* 2021;2:100117. doi: 10.1016/j.sintl.2021.100117. Epub 2021 Jul 24. PMID: 34806053; PMCID: PMC8590973.
- 12- Coulter A, Oldham J. Person-centred care: what is it and how do we get there? *Future Hosp J.* 2016 Jun;3(2):114-116. doi: 10.7861/futurehosp.3-2-114. PMID: 31098200; PMCID: PMC6465833.
- 13- Légaré F, Adekpedjou R, Stacey D, Turcotte S, Kryworuchko J, Graham ID, Lyddiatt A, Politi MC, Thomson R, Elwyn G, Donner-Banzhoff N. Interventions for increasing the use of shared decision making by healthcare professionals. *Cochrane Database Syst Rev.* 2018 Jul 19;7(7):CD006732. doi: 10.1002/14651858.CD006732.pub4. PMID: 30025154; PMCID: PMC6513543.
- 14- Dendere R, Slade C, Burton-Jones A, Sullivan C, Staib A, Janda M. Patient Portals Facilitating Engagement With Inpatient Electronic Medical Records: A Systematic Review. *J Med Internet Res.* 2019 Apr 11;21(4):e12779. doi: 10.2196/12779. PMID: 30973347; PMCID: PMC6482406.
- 15- Grady PA, Gough LL. Self-management: a comprehensive approach to management of chronic conditions. *Am J Public Health.* 2014 Aug;104(8):e25-31. doi: 10.2105/AJPH.2014.302041. Epub 2014 Jun 12. PMID: 24922170; PMCID: PMC4103232.
- 16- Hartley S. Bridging the gap between health care professionals and communities. *Community Eye Health.* 2004 Oct;17(51):38-9. PMID: 17491813; PMCID: PMC1705732.
- 17- Basil NN, Ambe S, Ekhaton C, Fonkem E. Health Records Database and Inherent Security Concerns: A Review of the Literature. *Cureus.* 2022 Oct 11;14(10):e30168. doi: 10.7759/cureus.30168. PMID: 36397924; PMCID: PMC9647912.
- 18- Li E, Clarke J, Neves AL, Ashrafian H, Darzi A. Electronic Health Records, Interoperability and Patient Safety in Health Systems of High-income Countries: A Systematic Review Protocol. *BMJ Open.* 2021 Jul 14;11(7):e044941. doi: 10.1136/bmjopen-2020-044941. PMID: 34261679; PMCID: PMC8280868.
- 19- Institute of Medicine (US) and National Academy of Engineering (US) Roundtable on Value & Science-Driven Health Care. *Engineering a Learning Healthcare System: A Look at the Future: Workshop Summary.* Washington (DC): National Academies Press (US); 2011. 3, Healthcare System Complexities, Impediments, and Failures. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK61963/>

- 20- Ileri, Yusuf. (2016). Implementation Processes of Hospital Information Management Systems: A Field Study in Turkey. *Journal of Information & Knowledge Management*. 15. 1650031. 10.1142/S0219649216500313.
- 21- Harris C, Green S, Elshaug AG. Sustainability in Health care by Allocating Resources Effectively (SHARE) 10: operationalising disinvestment in a conceptual framework for resource allocation. *BMC Health Serv Res*. 2017 Sep 8;17(1):632. doi: 10.1186/s12913-017-2506-7. PMID: 28886740; PMCID: PMC5590199.
- 22- <https://my.clevelandclinic.org/online-services/>
- 23- <https://digital.va.gov/ehr-modernization/>
- 24- Evan Sweeney, Providence St. Joseph Health launches telehealth network with more than 100 facilities. Apr 30, 2018. <https://www.fiercehealthcare.com/tech/providence-st-joseph-health-telemedicine-stroke-emergency-care>
- 25- <https://www.epic.com/>
- 26- <https://www.massgeneralbrigham.org/en/research-and-innovation/centers-and-programs/population-health>
- 27- Karen Donelan et al. Patient and Clinician Experiences With Telehealth for Patient Follow-up Care. *TRENDS FROM THE FIELD*, JANUARY 2019. <https://connectwithcare.org/wp-content/uploads/2021/01/Patient-Clinician-Experiences-Jan-Research.pdf>
- 28- <https://www.massgeneral.org/telehealth/virtual-visit-setup>
- 29- Berger S, Saut AM, Berssaneti FT. Using patient feedback to drive quality improvement in hospitals: a qualitative study. *BMJ Open*. 2020 Oct 23;10(10):e037641. doi: 10.1136/bmjopen-2020-037641. PMID: 33099495; PMCID: PMC7590344.
- 30- Hooker, Kelsey (2019) Enhancing the patient experience: a challenge for leadership in health care. Master's Thesis, University of Pittsburgh.
- 31- Wong E, Mavondo F, Fisher J. Patient feedback to improve quality of patient-centred care in public hospitals: a systematic review of the evidence. *BMC Health Serv Res*. 2020 Jun 11;20(1):530. doi: 10.1186/s12913-020-05383-3. PMID: 32527314; PMCID: PMC7291559.