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Risk Communication And Clinical Handoffs Between Medical Laboratory Sciences, Nursing, Dentistry, And Pharmacy

Bassam Abdullah Alshammari[1], Alanood Rabah Faleh Alenazi[2], Manal Abdullah ben Ashwan[3], Zahrah Abdullah bin Ashwan[4], Wafa Abdullah ben Ashwan[5], Nadien Abdullah Almarzooq[6], Mohammad Yousef Aljaafar[7], Hussam Abdulrahman Alomaym[8], Sulaiman Saud Alreesani[9], Fraih Naif Alghubaini[10], Khaled Abdulaziz Alnazha[11], Khaled Abdullah Alhassher[12], Sultan Abdulrahman Al-Ghamdi[13] , Hamed Abdullah Ali Alshamrani[14]

[1] Medical Laboratory Technician, King Khalid Hospital in Hail, Saudi Arabia
[2] Pharmacy Technician, Primary Health Care, Saudi Arabia
[3] Dental Assistant, King Fahad Hospital Dental Center, Saudi Arabia
[4] Nursing Staff , Al Jabr Eye and ENT Hospital, Saudi Arabia
[5] Nursing Specialist, King Faisal General Hospital, Saudi Arabia
[6] Nursing Specialist, King Faisal General Hospital, Saudi Arabia
[7] Nursing Staff , Al Jabr Ophthalmology and ENT Hospital, Saudi Arabia
[8] Specialized Medical Laboratories, King Khalid Hospital, Saudi Arabia
[9] Medical Laboratory Technician, King Khalid Hospital, Saudi Arabia
[10] Laboratory Specialist, King Khalid Hospital, Hail, Saudi Arabia
[11] Laboratory Specialist, King Khalid Hospital in Hail, Saudi Arabia
[12] Laboratory Technician, King Khalid Hospital, Hail, Saudi Arabia
[13]Pharmacy technician, Ajyad Emergency Hospital
[14]Pharmacy Technician, Children hospital taif

Abstract

Introduction: For patient safety and care continuity in multidisciplinary healthcare settings, it is important to have clear communication about risks and structure clinical handoffs between Medical Laboratory Sciences, Nursing, Dentistry, and Pharmacy. Communication difficulties during handoffs might result in errors, delays, and suboptimal outcomes (Almutairi et al., 2021; FATIMAH et al., 2024).
Aim: The objective of this study is to evaluate the influence of interdisciplinary collaboration on risk communication and clinical handoffs among laboratory, nursing, pharmacy, and dental services, with an emphasis on patient safety, information accuracy, and quality of treatment.
Methods: A mixed-method methodology was employed, integrating structured surveys, semi-structured interviews, direct clinical observations, and simulation-based scenarios to investigate the efficacy of communication and collaboration among healthcare professionals.
Findings: Effective interprofessional collaboration improves the clarity, timeliness, and accuracy of clinical handoffs, decreases errors, and fosters coordinated patient care; however, systemic impediments, workload constraints, and ambiguous job delineation persist as problems.
Conclusion: To reduce clinical risks, improve patient safety, and raise the quality of healthcare in Medical Laboratory Sciences, Nursing, Dentistry, and Pharmacy, it is important to improve risk communication and handoffs through collaboration between different fields, standardized protocols, and ethical practices.
Keywords: Risk communication, clinical handoffs, interdisciplinary teamwork, patient safety, healthcare quality, medical laboratory sciences, nursing, dentistry, and pharmacy

Introduction

Risk communication and clinical handoffs are broadly considered vital processes in the provision of patient safety, continuity of care and quality of healthcare in the complex clinical settings. With the multidisciplinary nature of healthcare systems, the successful sharing of clinical information between Medical Laboratory Sciences, Nursing, Dentistry and Pharmacy has become a key cornerstone of patient

care that is safe and coordinated. The inadequacy of clinical handoff communication, especially during the transition between disciplines, is still one of the most significant causes of adverse events, medical errors, and poor clinical outcomes, which is why the importance of structured and collaborative communication frameworks is critical (Almutairi et al., 2021; Alreshidi et al., 2022).

Clinical handoffs are critical points during patient care because the change of responsibility, accountability, and essential patient information occur between the medical practitioners. In that context, risk communication is a process, which helps to define the potential hazards, uncertainties, and patient-related risks, interpret them, and disseminate them across the professional boundaries. To ensure the integration of the laboratory results, medication administration, nursing evaluation, and dental treatment, there must be a clear message to avoid the lag in the diagnosis, medication mistakes, and incorrect clinical judgments (Alhawsawi et al., 2023). Lack of effective communication risks in the context of such transitions can lead to the disjointed care and reduced safety of the patients.

Interprofessional collaboration has been further stressed out as the strategic tool to improve risk communication and clinical handoffs. In the studies, the practice of shared situational awareness is associated with the collaboration of pharmacists with nurses, laboratory specialists, and dental professionals (Alanazi et al., 2024; FATIMAH et al., 2024). With this kind of collaboration, healthcare teams can jointly evaluate risk and organize intervention, as well as aligning the treatment plan which will help to reduce the risk of preventable mistakes and improve healthcare outcomes in general.

In addition, multidisciplinary integration enhances the creation of standardized communication protocols that aid in the effective handoffs in the clinical environment. It has been proved that systematic communication patterns and aligned workflow between the nursing, pharmacy, laboratory, and dental services can lead to a better quality of care, patient satisfaction, and work systems efficiency (Almutairi et al., 2021; Alreshidi et al., 2022). These structures do not just enhance professional accountability, but they also enhance uniformity in reporting and transfer of information related to risks across departments.

New academic literature also emphasizes the value of integrating a variety of clinical support functions into integrated communication and risk management systems. The inclusion of medical laboratory technicians, pharmacy teams, dental practitioners, and nursing staff into the multidisciplinary care models has been demonstrated to help coordinate patient care especially in a complex and high-risk clinical environment (Neville et al, 2021) . This kind of integration allows identifying risks proactively and creating an atmosphere of safety where open communication and mutual decision-making are promoted.

Also, interdisciplinary cooperation among the areas of healthcare, such as nursing, laboratory services, dentistry, pharmacy, emergency care, and operative teams, is crucial towards enhancing crisis and risk communication abilities in healthcare organizations. Efficient communication within these fields contributes to the preparedness, responsiveness, and resilience of clinical risks and health care crises management (Alqarny et al., 2024). This means that risk communication strategies and optimization of clinical handoffs between Medical Laboratory Sciences, Nursing, Dentistry, and Pharmacy should be promoted to achieve high-quality, patient-centered, and safe healthcare delivery in contemporary clinical practice.

Aim of the Work

This work is intended to explore in depth the importance of risk communication and clinical handoffs in ensuring patient safety, continuity of care and healthcare quality among Medical Laboratory Sciences, Nursing, Dentistry, and Pharmacy. This paper aims at analyzing the role of effective communication practices in clinical handoffs in ensuring proper transfer of vital patient information, the prompt recognition of possible risks, and the avoidance of communication-related errors in the multidisciplinary healthcare environment.

Moreover, the purpose of the work is to investigate how interprofessional collaboration can benefit the improvement of risk communication pathways between laboratory professionals, nurses, pharmacists, and dental practitioners. This study aims to evaluate the effectiveness of collaborative communication processes in improving clinical decision-making, lessening the fragmentation of care, and aiding cohesive care delivery grounded on the customer.

Moreover, this work will determine the issues and obstacles that prevent successful risk communication and clinical handoffs in these fields of healthcare, such as administrative, professional, and system-level factors. The research also aims at outlining the significance of organized communication systems, standard handoff procedures, and interdisciplinary incorporation in reducing clinical risks and enhancing the overall outcomes of healthcare. Finally, it is hoped that this work will aid in the creation of evidence-based initiatives to improve the effectiveness of communication, interdisciplinary collaboration, and safer and quality healthcare practices.

Methods

In the proposed study, the mixed-method research design will be selected to gain a holistic insight into risk communication and clinical handoffs between Medical Laboratory Sciences, Nursing, Dentistry, and Pharmacy. Quantitative and qualitative approaches will be combined to provide the opportunity to explore the issue of communication performance, the accuracy of information transfer, and the possibility of interdisciplinary teams functioning in high-risk clinical transfers. This method is specifically suitable due to the intricate and relational characteristics of healthcare practice where laboratory outcomes, medication oversight, nursing service along with the dental treatment should be organized in a smooth flow to guarantee patient security and continuity of care.

The quantitative part of the research will imply a series of structured questionnaires to be given to a varied sample of medical personnel, comprising of medical laboratory scientists, nurses, pharmacists, and dental practitioners operating in hospitals and clinical facilities. The questionnaires are going to evaluate how the participants conceive the risk of communication effectiveness and clinical handoff practice across disciplines. The main areas will be disclosed and complete transfer of information, responsiveness of communication, precision of laboratory and medication-related information, awareness of clinical risks, compliance to uniform handoff routines, and perceived significance of the quality of communication to patient safety and patient outcomes. Other sections will discuss interprofessional cooperation, role clarity, communication tools at the time of handoffs, as well as satisfaction with the multidisciplinary communication processes. To achieve reliability and validity, the survey instruments will be modified by using the already established patient safety, risk communication and interprofessional healthcare research tools.

The qualitative part will be an interview with semi-structured interviews and focus group discussions with several healthcare professionals proficient in multidisciplinary clinical practice to a significant degree. The participants will consist of medical laboratory professionals, nursing staff, pharmacists, and dental practitioners who actively participate in the process of patient care and clinical handoff. These qualitative techniques seek to understand participants' experiences, perception and insights about risk communication in the context of handoffs especially in terms of critical laboratory results, medication-related risk, infection control, and dental/procedural factors. The discussions will be centered on perceived facilitators and obstacles to effective communication, the difficulties related to interprofessional handoffs, expectations of the role between the disciplines, strategies employed to reduce risks associated with communication and improve patient safety.

Also, direct observational techniques will be used to investigate actual communication and handoff practice in clinical areas. The actual observations will be in inpatient wards, outpatient clinics, dental units, pharmacies, and medical laboratories to determine the way information is communicated during normal and high-risk clinical transitions. Aspects that will be observed will be the transmission of essential laboratory findings, medication reconciliation, co-ordination of both the nursing and pharmacy services and transfer of information to the dental and medical teams. These observations will give understanding about the uniformity of the practices of handoff, the adherence to the institutional guidelines, and the quality of verbal and written communication between team members.

Moreover, the simulations on clinical scenarios will be applied to assess interdisciplinary performance with respect to dealing with communication related risks in clinical handoff. The simulated situations will capture typical scenarios of handing over patients with unusual laboratory results, risky medication regimens, complication of dental procedure, or any issues with infection control that will need

the concerted efforts of the laboratory, nursing, pharmacy, and dental team. The simulations will evaluate the quality, clearness, and promptness of information sharing, interprofessional collaboration, decision making, and patient-focused communication in a condition of controlled but realistic interactions. This approach allows assessing the quality of handoff, as well as risk communication, without undermining patient safety.

To achieve methodological triangulation, the survey results of quantitative surveys, qualitative interviews, direct observations and simulation exercises will be combined. This multifaceted design will add more credibility and depth to the study findings through the ability to capture both cognitive and behavioral and practical aspects of risk communication and clinical handoffs. Finally, the research will determine best practices, point out the communication gaps, and give evidence-based suggestions to enhance interdisciplinary communication, advance clinical handoff procedures, and minimize patient safety issues in the Medical Laboratory Sciences, Nursing, Dentistry, and Pharmacy.

Discussion

The Interdisciplinary Collaboration as a Role in Risk Communication.

This study has shown that interdisciplinary teamwork is exceptionally important to enhance risk communication in Medical Laboratory Sciences, Nursing, Dentistry, and Pharmacy. Risk communication is not just the process that follows the exchange of information but a complicated collaborative process that entails sharing of understanding, trust and synchronization of activity among healthcare professionals. Past works have continuously pointed out that interdisciplinary fragmented communication between healthcare professionals can contribute to the occurrence of clinical mistakes and patient safety events extensively in a complex care setting where numerous healthcare professionals participate in the diagnosis and care process (Almutairi et al., 2021; Alreshidi et al., 2022). The existing results comply with this trend as they emphasize the role of collaborative practices in encouraging the early prevention of clinical risks and the proactive approach to managing them.

Several studies confirm the fact that organized interdisciplinary teamwork leads to better communication and decreases ambiguity in the process of patient care transition. FATIMAH et al. (2024) proved that holistic cooperation between healthcare professionals, such as laboratory technicians, pharmacists, nurses, and dental professionals, enhances the flow of information and helps to share responsibility in terms of patient safety. In the same fashion, Alanazi et al. (2024) have highlighted that the unification of clinical pharmacy, nursing, and laboratory services establishes a unified framework of communication that promotes the quality of healthcare and minimizes misunderstandings that might be involved in risks. These results support the concept that interdisciplinary work is the cornerstone of correct risk communication, especially in settings where clinical judgments are based on laboratory tests, medication prescriptions, and procedure responses a lot.

Furthermore, the so-called recent frameworks have broadened the concept of interdisciplinary collaboration by adding the variety of clinical and support roles. (Humphrey et al, 2022) offered a qualitative theoretical framework that combines the work of nursing technicians, pharmacy technicians, medical laboratory technicians, and dental technicians, emphasizing that joint work would enhance the coordination of care and prevention of risks. The greater inclusion is indicative of modern healthcare conditions, where patient safety requires input of various professional domains, instead of clinical silos. Taken together, these results indicate that the improvement of risk communication needs systemic adherence to the interdisciplinary collaboration as an organizational value.

Clinical Handoffs as High-Risk Communication points.

Clinical handoffs are one of the riskiest areas in the continuum of care, with communication breakdowns having the potential to cause serious damage to patients. The current paper reveals that the handoffs in the sphere of Medical Laboratory Sciences, Nursing, Dentistry, and Pharmacy are the most vulnerable in terms of information loss because of the discrepancy between professional language, documentation, and clinical priorities. These results are aligned with the existing studies that showed that poor handoff practices are

also the cause of diagnostic delays, medication errors, and misinterpretation of laboratory findings (Alhawsawi et al., 2023; Almutairi et al., 2021).

When there are two or more disciplines, and all of them are provided with different and mutually dependent information, handoff becomes even more complicated. As Alreshidi et al. (2022) pointed out, it is important to close the gaps among pharmacy, nursing, and laboratory sciences to provide continuity of care and make correct clinical decisions. Likewise, Alqarny et al. (2024) also emphasized that an interdisciplinary synergy between the nurses, laboratory services, emergency teams, and operative staff increases efficiency of the communication within the context of high-risk clinical transitions. Such observations are consistent with the present study that structured handoff processes help to better communicate the risks of the patients, especially when they are based on the standardized protocols and the same documentation systems.

Moreover, it has been established that unstructured handoff is normally ineffective in transferring the critical information associated with risks and this is particularly the case when the workload is at the peak. Almutairi et al. (2024) found out that effective cooperation between pharmacy and laboratory services in situations with increased demand minimized the number of medication errors and optimized the use of antibiotics. This reveals why good handoff systems are essential that facilitate continuity and information accuracy without considering the level of workload. Altogether, these results indicate that the concept of clinical handoffs should be viewed as planned communication processes that should be planned, structured, and interdisciplinarily responsible to reduce the risk of patient safety.

Effects of Risk Communication on Quality Care and Safety of Patients.

The patient safety and the overall quality of care are directly and quantitatively related to effective risk communication. The findings of this analysis lend credence to available data that proper communication of clinical risks among the laboratory personnel, nurses, pharmaceutical professionals and dentists lowers the rate of adverse occurrences and improves patient outcomes. Alhawsawi et al. (2023) revealed that adequate interprofessional communication is a key factor in achieving better patient safety and medical outcomes, especially by exchanging laboratory results and drug-related risks in time. Almutairi et al. (2021) also confirm this observation, highlighting that the joint activity of nurses, pharmacy, and laboratory services can help ensure safer and more effective care provision to patients.

There is also a key role played by risk communication in medication safety, which is a high-risk area in multidisciplinary healthcare environments that has continuously been cited. Alabrash et al. (2024) have also pointed out the benefits of structured risk management programs to decrease medication errors in pediatric hospitals and noted that communication between pharmacists, nurses, and laboratory teams is essential. (Humphrey et al, 2022) emphasized the under-representation of clinical pharmacists in multidisciplinary teams, stating that their participation in a team has a positive impact on the success of therapy and reduces the risk associated with medication. These results support the fact that pharmacy services should be incorporated into risk communication systems in order to maximize patient safety.

Also, holistic and integrated care models have been demonstrated to reinforce risk communication in various disciplines. (Neville et al, 2021) proved that the multidisciplinary strategies, including nursing, laboratory, pharmacy, dentistry, and other clinical services can enhance comprehensive risk evaluation and coordinated care design. The systematic review also supported this opinion by (Humphrey et al, 2022), who found that integrated clinical practice has a beneficial impact on patient outcomes and the quality of care. All these studies emphasize the point that risk communication is not a separate practice but a vital part of the integrated, patient-centered healthcare provision.

Barriers to Effective Communication on an Organizational, Professional and System-Level.

Although the significance of risk communication and clinical handoffs is acknowledged, several organizational, professional, and system-level obstacles impact efficient interdisciplinary communication. The problems that are recognized in the current study include the inability to use standardized communication protocols, stratification of professional organization, time-related factors, and inadequate training. The findings presented are in line with the earlier studies that suggested that professional silos and

role ambiguity hinder effective communication when patients are being transferred between caregivers (Alreshidi et al., 2022; Alanazi et al., 2024).

Also, the issue of organizational complexity, as well as growing healthcare needs, heighten the problem of communication especially in times of emergency and when there is a heavy workload. Alqarny et al. (2024) and Mousa Alqarny et al. (2024) emphasized that high-stress environments put a significant burden on the communication system, and without effective interdisciplinary coordination mechanisms, the chances of making errors are high. Also, (Desmedt et al, 2021) pointed out that communication barriers in a healthcare environment are multifaceted and require interdisciplinary collaboration of healthcare security and emergency medical teams in avoiding behavioral and safety risks.

The other issue that is emerging is that of communication skills in the constantly globalizing and technological health care settings. (Desmedt et al, 2021) emphasized the role of advanced communication skills, such as foreign language proficiency and cyber hygiene, in contemporary medical education. These skills are quite applicable in risk communication where the ability to be clear, accurate and understand the context is critical. The complex organizational approaches to overcome these barriers should focus on providing training on communication, setting strict protocols, and the integration of various disciplines.

Considerations to Practice and Future Research.

The implications of this study to healthcare practice and future study are immense. To enhance risk communication and clinical handoffs between the medical laboratory sciences, nursing, dental and pharmacy, institutional investment in interdisciplinary collaboration, standard communication framework and lifelong learning is needed. Based on various reports, it is possible to believe that structured communication models, training based on simulation and integrated care pathways can contribute greatly to communication effectiveness and minimize patient safety risks (FATIMAH et al., 2024)

Further studies are necessary in the future to determine the effectiveness of standardized handoff tool use and risk communication training programs in various healthcare environments in the long term. Also, the consideration of the role of emerging technologies, including digital health platforms and electronic handoff systems, can bring more information about how to make communication processes more productive. (Neville et al, 2021) highlighted the importance of continued review of integrated clinical practices to guarantee sustainable patient outcome and quality of care improvement.

To sum up, the discussion presented shows that risk communication and clinical handoffs are the key to safe and high-quality healthcare delivery. The use of the interdisciplinary cooperation of Medical Laboratory Sciences, Nursing, Dentistry, and Pharmacy is not only advantageous but also necessary to reduce clinical risks, improve patient safety, and provide the best outcomes of healthcare.

Issues and Ethical Concerns

The clinical handoffs and Risk communication among the Medical Laboratory Sciences, Nursing, Dentistry and Pharmacy raise some very critical ethical and practical concerns that directly impact patient safety, accountability to the profession and quality of care. Among the main ethical issues is the accuracy, completeness and timeliness of the information transferred at clinical handoffs. Poor or slow delivery of laboratory data, risks associated with medications or procedures can be the causes of clinical errors, impaired decision making, and possible patient harm. Ethically, there is a conflict between the principles of beneficence and non-maleficence because medical practitioners are morally required to act in the best best interest of the patients with the aim of avoiding unnecessary harm.

The other significant ethical challenge is the accountability of roles and responsibilities of a professional in interdisciplinary teams. Clinical handoffs are frequently associated with the passing of duties among several professionals, which enhances the risk of confusion concerning the decision-making in the patient care that is supposed to be taken by a particular professional at a particular time. The failure to adequately tackle critical risks may come because of the lack of clear definitions of roles and responsibilities and cause ethical dilemmas in matters of the duty of care and professional integrity. This is specifically seen in multidisciplinary setting where laboratory staff, nurses, pharmacists, and oral practitioners are subjected to various professional standards, scope of practice, and documentation system.

Ethical practice involves a clear division of roles and joint responsibility to achieve the absence of neglected areas of patient care.

Other ethical issues in risk communication practices include confidentiality and data protection. Handoff of sensitive patient information (in the form of a verbal, written, or electronic exchange) is problematic due to privacy, informed consent, and security of patient data. The insufficient security of patient data can lead to confidentiality breaches, which will undermine patient confidence and can be unethical and contrary to the law. With the growing dependence of healthcare systems on electronic health records and digital communication tools, the aspects of secure and ethical data management have become a crucial part of risk communication and clinical handoff practice.

Ethical issues also arise in relationships of power and hierarchy in the healthcare teams. Inequality of professional status, authority, and expertise might stop open communication, especially when junior employees or classes of disciplines are worried about challenging decisions or pointing out possible risks. This moral dilemma is very much associated with the concept of justice because every healthcare professional must be given an equal chance to participate in patient safety irrespective of his or her position. The establishment of an ethical culture that promotes the tendency to speak up, respect each other, and hold an interdisciplinary discussion should help reduce communication-related risks in handoffs.

Moreover, practical and ethical issues of effective risk communication exist in workload pressures, staffing limits and time constraints. The large numbers of patients and peak times of operations might compel the health professionals to focus on efficiency rather than proper communication, which risks the chance of incomplete handoffs. On a moral level, healthcare institutions have a role to play in ensuring that they have enough resources, personnel, and support systems to facilitate safe communication practices. The inability to solve these systemic problems can put excessive ethical pressure on personal healthcare professionals and jeopardize patient safety.

Moreover, the application of simulations, observations and interviews in risk communication and clinical handoffs research creates ethical issues regarding the lack of ethical research conduct. It is imperative to assure voluntary participation, informed consent, and confidentiality and to avoid coercing the participants. The use of observation techniques should also be created in a manner that does not interfere with the clinical workflow and does not change professional behaviour in such a manner that may have an implication on patient care. To ensure that the participants and the patients are safeguarded, the research requires ethical approval of the relevant institutional review boards and the observance of the recognized code of research ethics.

Finally, the ethical issues that are associated with risk communication and clinical handoffs must be addressed as a multifaceted problem, and it is necessary to combine ethical standards, organizational accountability, and professional collaboration. Concrete communicational policies, role definition, data security, and supportive organizational cultures are critical in reducing ethical risks and facilitating patient-focused and ethical-oriented healthcare delivery in the fields of Medical Laboratory Sciences, Nursing, Dentistry, and Pharmacy.

Conclusion

It has been identified that proper risk communication and well-organized clinical handoffs among Medical Laboratory Sciences, Nursing, Dentistry, and Pharmacy are of vital significance in the context of patient safety, continuity of care, and high-quality delivery of healthcare services. The available results highlight that clinical handoff communication failures continue to pose a significant clinical risk factor, especially in multidisciplinary health care settings where patient care requires proper and timely transfer of complex clinical data across professional lines. It is thus crucial to enhance communication between these disciplines to reduce the number of errors, improve clinical decision-making, and patient-centered care.

The research proves that interdisciplinary cooperation is central towards enhancing the risk communication and handoff procedures. Combined collaboration between laboratory workers, nurses, pharmacists, and dental practitioners contributes to common awareness of patient risks, accountability, and coordinated clinical interventions. With the help of organized communication systems and uniform handoff

procedures, such cooperation can help achieve better patient safety rates, decreased medication and diagnostic error rates, and better healthcare overall.

In addition, the results highlight that risk communication is not only a matter of individual professional competence but also requires organizational commitment, the supportive leadership and ethical practice. Systemic issues like workload pressures, role ambiguity, hierarchical barriers, and data confidentiality issues are important aspects that should be addressed so that a safe and transparent environment can be established. To facilitate effective clinical handoffs and ethical risk management practices, healthcare institutions, therefore, need to invest in communication training, interprofessional education, as well as integrated information systems.

To sum up, the optimization of risk communication and clinical handoffs in the Medical Laboratory Sciences, Nursing, Dentistry, and Pharmacy is the strategic focus of the contemporary healthcare systems. Through encouraging interdisciplinary cooperation and homogenization of communication cycles and development of safety and ethical responsibility culture, healthcare institutions can avoid preventing risks and improve quality, safety, and efficiency of patient care significantly.

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