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Developing interdisciplinary protocols to enhance communication between pharmacists, nurses, and laboratory technicians

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***Abstract*---Background:** Multifaceted communication occurs throughout the healthcare system, thereby incorporating the interaction between pharmacists, nurses and laboratory technicians and the patients they serve. Unfortunately, analyzing communication between these disciplines indicates that such gaps create errors and potential threats to patients' safety. Communication protocols between these disciplines have been suggested in countering such issue. **Aim:** This research will seek to look at the standards of communication protocols between different healthcare disciplines and the best ways that the standards can be adopted. Methods: This paper discusses

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literature, case, and field studies of effective communication that have been applied and adapted in healthcare facilities, with emphasis on technological innovation, training, and protocol formulation and implementation. **Results:** The results include that the planned communication, in form of structured communication meetings and use of Electronic health records facts the team and enhances patient safety. It also reveals that the training delivered in technical and soft skills help in the improvement of the communication flow. **Conclusion:** The framework of cross-disciplinary working is crucial for improving communication and consequently for reducing medical risk. If these barriers including structure, or lack of standardization could be resolved, it becomes easy to enhance communication and do away with errors which in the end enhance the handling of patients and delivery of healthcare.

***Keywords*---**Healthcare workers, interprofessional communication, patients, health communication, collaborative process, documentation in the Electronic Health Records (HER), adverse events.

Introduction

Healthcare professional should always be able to work as a team in order to provide quality services to the clients. However, as a result of either failure or omission, lack of effective communication in between the different members of the health care team; pharmacist, nurse, laboratory technician among others, always results to misunderstandings, mistakes and finally, putting the lives of the patients at risk. In response to these issues, it has become important to create interdisciplinary communication standard operating procedures in order to provide a health care team-centered, efficient means of delivering quality care. Interdisciplinary protocols are frameworks formulated to describe the manner and format of communication and professional relationships between healthcare practitioners of different disciplines to achieve the improvement of clients' conditions, decrease of adverse effects, and optimization of the efficacy of healthcare delivery. This research focuses on the Interdisciplinary Communication needs, Challenges, and development of implementation protocols for intraprofessional/interprofessional communication between pharmacists, nurses, and laboratory technicians.[1,2] Therefore, this paper uses the protocols applied in key healthcare organizations and provides examples of their implementation in various healthcare organizations to give recommendations on how to implement these protocols depending on the context of the health-care setting.[3]

Communication Barriers in Today's World of Healthcare

Health care communication is an essential element of great patient relationships; however, there are numerous barriers even between pharmacists, nurses, and laboratory technicians. These difficulties are numerical, organizational, and structural or involve power discrepancies and the absence of clear communication guidelines. The staff members are grouped in these roles as they have specific

duties and tasks to accomplish, however, its members depend on one another and so should share information effectively to offer improved patient care outcomes. Lack of effective communication hampers productivity, causes delays in diagnosis and treatment processes or provides adverse health risks to patients. Even now in this technical era and in the improved form of health care systems, it is a very much common and tough attempt to overcome these types of barriers in communication. [4]

The Nature of Hierarchical Disconnection between Pharmacists, Nurses and Laboratory Technicians

Another challenge in health communication is the failure to fill important communication gaps between the key team members including the pharmacists, nurses, and laboratory technicians. Such gaps have been found to result from variations in work flow, emphasis and ability to access patient details. For instance, pharmacists are mainly concerned with drug administration while nurses are consider as main caregivers and laboratory technicians main concern involves tests. If these professionals do not collaborate they may work independently hence leaving the patient with fragmented care. Off-sync schedules also deepen these disparities since critical laboratory results could not be immediately reported to pharmacists or new orders may not reach nurses in time. Besides, jargon as well as profession-specific terms also bring misunderstandings in general and more so during emergence of a particular situation where precision is vital.[5]

Situations that People Encounter Incorrectly

Interpersonal concepts miscommunication in health care givers is apparently prevalent and can result from poor communication or inadequate information sharing. For instance, laboratory results may be interpreted by nurses in the wrong context or may not provide sufficient information, which causes a delay in right interventions. Likewise, the urgency of any nurse to obtain some specific medications may be barely comprehensible to the pharmacists in case the request does not include the necessary critical patient history. These errors are realized even more in circumstance that arise out of handwritten prescriptions, verbal instructions or through obsolete communication means such as beeping pagers or faxes. Mistakes of such nature not only consume precious time but also have a potential of producing negative patient consequences such as wrong medication doses, failure to diagnose or treat, and offered treatments that could otherwise have been avoided. [5,6,7]

Effect on Patients' Safety and Health care Organization Efficiency

Failure in communication affects all patients and organizational operations, presenting a great concern for health care systems. By this, a patient can receive incorrect dosages, delayed treatments, or wrong diagnosis, all of which worsen the patient's status. For instance, the laboratory test that a doctor fails to see or misunderstand may result to the patient receiving treatment that is Aaden time too late that complications or even deaths set in. Most of these communication breakdowns lead to extra work load and stress to the health care staff since they

have to explain or correct misunderstandings. Inefficiency in this area can also overwhelm already stretched health facilities, and this will ensure high costs besides providing low quality services. The relationship between health IT, combined with efficient protocols and ongoing staff development, is critical for modern healthcare organizations in order to reduce the challenges affecting them. [8]

Preliminary Concept of Multidisciplinary Regimens

Interdisciplinary protocols form a communicational blueprint which is geared towards enhancing cooperation between practitioners drawn from different fields but who share the same purpose clause. In healthcare these protocols are very important because they enable the creation of total teams that include the pharmacists, the nurses, the laboratory technicians among others to offer care to the patients. In their essence, interdisciplinary protocols focus on harmonising communication, defining responsibilities, and setting best practices meant to reduce the risks of mistakes and increase productivity Such protocols help create structures that allow those numerous and diverse healthcare teams to manage modern patients' needs in a better way, or to collaborate.[9]

Definition and Key Principles

Team working protocols are therefore pre-existing frameworks that describe how multi-disciplinary staffs can interface and communicate in a team. This is true since these protocols are anchored on principles of roles, respect, and state of affairs. Role definition makes sure that each of the members understands what he or she has to do and how the job of the other relates to it. Respect entails the importance of every discipline and profession to seek inputs from other professionals. Also, interdisciplinary protocols are made relatively general so that they would be still effective when something interrupts the regular process, like a health issue, while essays remain formal and uniform at the same time. They also use mechanisms of continuous feedback in the improvement and transformation process due to the emergence of new challenges.[10]

Some Information from Other Fields or Systems

The application is not only relevant for health care as interdisciplinary protocols have been utilized and effective in other areas that provide instructive reflections to health care. For instance, everyone who is involved in airliners communicates within set protocols to protect the lives of million passengers who fly daily. protocols focus on; accuracy and simplicity of the message, and always ensuring that important information is repeated, so that there can hardly be a mistake made. As well, in disaster management the emergency response team consists of police and firefighters and medical officers so they follow clear protocols in handling the crisis. These examples underscore the need for working and ready-made models for handling delicate large-scale situations. Applying the same concepts to healthcare can do wonders to the teamwork & patients. [11]

The Need for Personalized procedures in Health Care

Several standardized models from other disciplines form the basis of the framework but due to the complexity of health care management, these require unique interprofessional protocols. Patients being different, every healthcare facility has its patents' population, available resources, and organizational culture different from others, and thus, generic solutions do not work. Customization means that protocols meet certain needs including incorporating local languages, matching the procedural flow of institutions and corresponding to current technological limitations. For instance, a procedure for addressing the medication errors may vary across the big city teaching hospital and a remote clinic, due to variation in staff population and availability of technology. Furthermore, the quantitative nature enables one to incorporate the cultural factors into the protocol while attending to patients in multicultural systems. Finally, specifically developed interdisciplinary protocols assist in eliminating barriers between such professionals, reconcile patient care chains, and guarantee that every specialist acts according to a unified goal of providing quality health services.[12]

Stakeholders in Interdisciplinary Communication

Teamwork in healthcare involves multiple people, who bring their knowledge to bear in providing a wholesome solution to the problem at hand. Of these, the pharmacist, the nurse and the laboratory technician have a very prominent part to play. Identifying the details of their roles within multi-professional patient-care delivery systems helps demonstrate the role that each team-player's contributions enhances patient health management. When all these professionals start to combine efforts they reach across divides inter professional communication that eliminate confusion and enhance the performance of healthcare delivery systems. [13]

Pharmacists as Members of Patient Care Teams

Pharmacists are patient focused members of the healthcare team which specialize in the proper use of drugs in the treatment of diseases. The involvement in interdisciplinary relationships can be about medication information; checking prescriptions; and discussing possible drug interactions or contra-indications. Working closely with nurses and physicians, pharmacists involve themselves in the elaboration of a patient treatment plan and particularly in the case of multi-morbidity conditions. They also have responsibility to increase patients and caregivers' awareness about how and, when, and whether to take numerous medications, as well as the side effects and the ways how to stick to the schedules. When residents, interns, attending's, and administrators work in combination, pharmacists participate in shared decision making with information that considers treatment efficiency, safety, and economical approaches. Such direct involvement in care rounds as well as meetings also guarantees that potential medication-related complications are prevented.[14]

Roles of Nurses in RT Communication Process

Nurses is core to direct patient care for they are the first and probably the most frequent contact that a patient, or the family has with the health care setting. These tasks in communication across professional boundaries deal with communication of important patient information in addition to care and patient progress coordination. Nurses act as the intermediaries between pharmacists/ laboratory technician and physicians all their recommendations are communicated by and implemented by the nurses. It is crucial in emergency or when a patient's condition changes for the worse in order for the appropriate action to be made. They also identify essential function of charting and recording important information regarding the patient's progress, this information is fundamental to care since it is utilized by all members of the team. This paper has presented how the openness of communication systems as well as being a voice to patient needs improve the quality and safety of healthcare services.[15,16,17]

Diagnostic accuracy of laboratory tests and the contribution of Laboratory Technicians

Laboratory technicians can be viewed as important members of the interprofessional healthcare teams for they produce the data on which effective clinical decisions are made. They specialize in performing laboratory investigations including haematology, microbiology, blood chemistry, microbiological cultures, radiological investigations and imaging which form the basis of assessing disease processes The primary duties of Medical Laboratory Scientists is a subject of interest in this study. Laboratory technicians need to protect the specimen integrity and adhere to protocols and convey results without ambiguity to other members of the healthcare providing team. They use communication with the nurses to explain aspects such sample collection whereas using dialogue with pharmacists to confirm tests that influence medications. Slight discrepancies in their work lead to drastic consequences for patients, which has a multiplier for efficiency with other participants in the process. Technicians people the gap between clinical observation and laboratory results to provide the necessary information to health care teams in order to provide adequate diagnosis and recommended treatment plans.[18]Currently, pharmacists, nurses and the laboratory technicians are the corporate wall that embodies the patient-centric approach. Ideally, they have to communicate and convey within the sphere of interdisciplinary protocols to be able to gain most favorable health outcomes and to increase the quality of health systems.[19,20}

Main Challenges to Communication

The cohesive profile of healthcare, indicating the necessity of efficient communication has nonetheless states that hindered communication among professionals. Such challenges originate from system, cultural, and process interferences that blur the communication and invades the squad's coordination. The most important barriers to effective communication in the interdisciplinary health care environment include structural and hierarchy related barriers, differences in culture and language, and work related procedures that differ from

practice to practice. These barriers should be eliminated to encourage patient care cooperation, discourage mistakes and enhance patient success.[20,21]

Structural organizational hierarchical challenges

The communication process tends to be highly influenced by structural and hierarchical characteristics within healthcare organizations. In a variety of organizations, top-down organizational cultures where physicians, administrators or other senior staffer bear hierarchical control over pharmacists, nurses and laboratory technicians contribute to unequal communication. They are likely not to be allowed an opportunity to contribute their idea or express fear since this to the higher-ranking team members. For example a nurse may be reluctant to confront a physician over prescription issue if the later is wrong despite the safety of the patients being at risk. In addition, the existing organization of care settings, including separated departments and scattered workplaces, contributes to communication challenges because of a lack of direct interactions. Such structural problems frequently lead to information delay or sharing of limited information across the teams and facilities thus creating inefficiencies and lack of unity.[22]

Literature and culture diversity

While cultural and language diversity among the healthcare/workforce staff can enhance the quality of delivered patient care it does present several interferences with/communication. Multiculturalism can also be a challenge to organizational culture because the different nationalities of people within a certain team have their way of communicating, carrying out their tasks, and their perception about the level of authority within an organization may differ from that of the other team members.[23] For example, in some cultures, people tend to be vague, and this may well be seen as weakness or uncertainty in a highly charged healthcare environment. Language issues also make interaction difficult, for example, if there are several interpreters, or when one provider uses terms that others do not comprehend. Such problems can also manifest in patient relations, for example, language barriers may complicate a concise extraction of a patient's medical history or may prevent the clear explanation of directions given. Lack of cultural competence and linguistic clarity on the other hand creates a foundation that diminishes trust among health care teams. [24,25]

A lot of companies lacked standardized processes.

Lack of consistent communication processes is another significant challenge in healthcare organization is another significant challenge in healthcare organizations. When team members are working in a great distance and depend on inefficient means of communication, including verbal communication, the probability of getting erroneous information is high. For instance, when laboratory technicians convey highly sensitive results, they may do it casually and pass them being unnoticed or overlooked. Also, the continuity of care gets affected due to inefficiency in the hand offs between shift, with little details passed to the hand offs. This problem is worse in emergency situations where there is poor supplication of formal communication protocols that results in delay in decision

making or wrong interventions. Having guidelines, for example, in the hand-off process or using other tools that are aligned to existing information flow standards – these all prove to be vital in the sense that all the involved stakeholders get all the necessary and updated information in a properly formatted means.[26] These barriers need to be overcome using a holistic approach in form of encouraging good culture of talking about the barriers, training people on cultural understanding, and having clearly stated policies on matters concerning cultural sensitivity and designing action plans in simple language in order increase the use cross cultural interaction. Mentioned challenges can be closely addressed and solved to provide better cooperation of healthcare teams, patient safety, and, as a consequence, the desired quality of given care.[27,28]

Effective Communication: Policy Enhancements

Reducing ineffective communication in clinical areas, particularly, between and among care providers, must therefore be planned and executed. In order to address the barriers discussed above and cultivate a better integrated environment it is possible to use particular measures as, for example: Steady SOPs; Appropriate use of the digital means of communication; Regular ICMs. All these strategies benefit the flow of information and promote collaboration and the quality of patient care.[29]

Adopting the Standard Operating Procedures

SOPs are necessary to avoid confusion and make health care professionals operate in unison regarding communication. SOPs outline roles, accountability, procedures that guarantee that all group members are familiar with and working within consistent practices for disseminating information within the team. For instance, policies to guide the acknowledgment of patient handoffs for pertinent information guarantee that something is not missed. It could apply in communicating relevant issues within the organization especially during the patient admission, during discharge processes or during emergency situations when every procedure must not be overlooked. It also minimizes error risks caused by misunderstandings and miscommunications and increases work responsibility among delivery teams. Also, SOPs can be customized therefore having general policies that can be implemented in various specialties, and the department to be more specific to meet the needs of a number of healthcare institutions. Last but not least, SOPs facilitate the provision of clear communication guidelines hence ensuring that all team players are aware of what is being planned and achieve on behalf of the patients a marked up improvement.[30,31]

The Efficient Use of Information and Communication Technology

In many areas of communications experienced by health care there are solutions that can be offered by digital communication tools. These tools allow treatments to be synchronized, provide support for shared decision making and also support the process of documentation. Electronic Health Records or EHRs have changed the approach to the exchange of data among clinicians since they contain

patient's histories, test results, medications, and treatment plans. [32] EHRs enhance the efficiency of communication between pharmacists and nurses as well as the laboratory technicians whenever there is need to refer to the progress of the patient with a decisive mentality. Others include, but not limited are electronic Health record, secure Message system, telemedicine and task management applications. For example, SSI allows the organization to have secure messaging, which allows messaging between the staff without consuming time like in email. Telemedicine means that people can consult with other professionals without visiting them physically thus increasing the list of interdisciplinary communication possibilities, especially in districts or after hours. Through the use of such applications, the healthcare teams can be able to minimize on the number of communication breakdowns hence minimize on the number of errors that might be produced regarding the patients hence making the care provided to be of high yields.[33,34]

Having Frequent and Coordinated Cross Disciplinary Appointments

Interdisciplinary staff meetings are also another way to improve communication in healthcare organization: These meetings feature a set format through which team members can review client matters, communicate the latest developments, raise concerns as well as coordinate on how best to approach clients for treatment. Interdisciplinary meetings make it possible for groups of people such as pharmacists, nurses, laboratory technicians and many others to engage in discussion and share views. These meetings also make it possible for the members of the team to have their responsibilities defined, questions answered, and whenever necessary, to give their professional input, thus minimizing professional sectionalism that is normally common among the various health profession disciplines. In addition, meetings would also allow the team to share ideas and receive updates on the overall patient condition in a manner that affords proper considerant of clinical decisions. For instance, a group of workers may be involved in discussing the patient's condition following reception of laboratory tests with the team including pharmacists in matters that relate to modifying medications, nurses in matters concerning patient's response, and laboratory technicians in issues to do with results. That is why it is important to schedule these meetings frequently, on a daily basis, weekly or pro re nata to maintain frequent communication and patient-centred collaborative approach.[35] Implementing these strategies can dramatically improve communication within healthcare teams, leading to better patient outcomes, more efficient workflows, and a more cohesive working environment. By establishing SOPs, leveraging digital tools, and scheduling regular meetings, healthcare institutions can address common communication barriers, enhance interdisciplinary collaboration, and create a culture of continuous improvement.[36]

Designing Interdisciplinary Protocols

The development of efficient cross-professional plans of actions is crucial for increasing the interaction, integration and cooperation with other colleagues, particularly with pharmacists, nurses and lab technicians. When well developed, protocols give the members of these teams direction in handling information,

tasks and patient outcomes for improved efficiency. To be successful these protocols need to have respect to these factors: key elements in protocols that are compliant with structured processes, and flexibility features that are incorporated into them. When implemented with a right approach in consideration to these factors, interdisciplinary protocols enhance group composite and productivity thereby increasing the quality of out put of the healthcare teams.[37] Some of the things that must always be incorporated in the protocols are It has been argued that protocols linking up different scientific disciplines should contain some essential features that help meet complex needs of multi-professional teams and enhance cooperation. Above all it requires consistency in communication rules. Examples of these are defining which kind of information should be disclosed, through which channel (may be digital or face to face) and how frequently these updating/checking should occur between the members. Another critical element is role clarity: it is important that each member within the protocol has to understand the assignments and functions expected of him or her as well as how such functions interconnect with other functions. For instance, pharmacists need to know when to change the medication of a patient, nurses need to know their responsibilities regarding the patient and laboratory technicians need to understand how to report results that are alarming to the physician on time. A third work element relates to a decision making model whereby all the involved parties makes decisions in the overall interest of the patient. This framework respects each and every member and recognizes that everyone is an expert in their field of practice. Last but not the least, the protocol established must also have clear stipulations as regards the European Emergency, Exceptions or Complication. Thus, the team members are prepared to work together and respond instantly if a contingency arises on the set project. Thus, interdisciplinary protocols to some extent form a basis for effective change of teamwork and patients' conditions.[38,39,40]

Stages of the Development of Collaborative Protocol

Interdisciplinary protocols are developed possibly through interdisciplinary consensus thus implying the active involvement of all the stakeholders. The first of these three steps is the needs assessment wherein the healthcare team determines where there are short comings on the formulation, realization and delivery of communication, coordination, and care. This can be done using surveys, interviews or focus groups among pharmacists, nurses , laboratory technicians and clinical staff. After the problems have been analyzed the parties must then determine the objectives of protocol. These goals should be concrete and quantifiable and relevant to increasing safety for patient and staff, collaborating, and increasing efficiency**.(Figure 1)**[41] The process of development then proceeds to another dimension where the actual protocol is drawn. This phase is characterized by document creation and content discussion of the protocol structure. Every member of the team is expected to contribute their input bearing in mind that they have

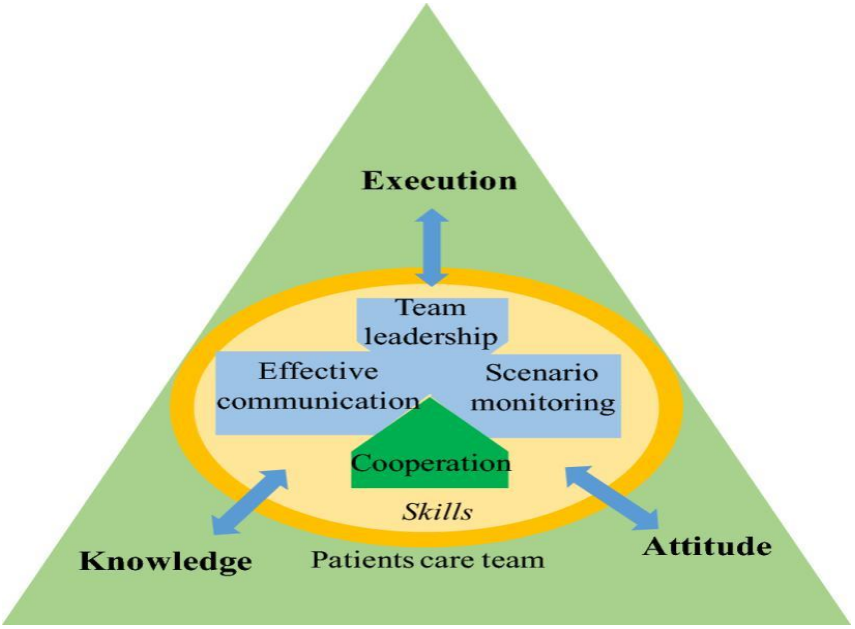

Figure 1: Teaching mode associated with the Team STEPPS approach

specialized in specific tasks in their line of duty, roles and responsibilities and communication patterns. For instance, as HL7 processes general patient messages during data exchange, nurses could describe how information regarding patients flows, while pharmacists could describe processes of medication alteration. After a draft has been created, the next step is to implement the protocol among a limited number of practitioners to find out about possible difficulties and comments. As such there is a need to modify the protocol in order to match the current set up based on these sentiments.[42] Last, the protocol should be systematized throughout the entire range of the healthcare team. Further, training sessions must be conducted to make sure that all members are aware of what process must be followed, and how this will be useful in practice. Simplest, the effectiveness of the said shall have to be checked and restated after sometimes to ascertain that the protocol is still useful. The collaboration enhances the development of the protocol to embrace and meet practical needs applicable to the health care setting The last common measure that was in the interest of both parties was to guarantee flexibility and adaptability.[43]Although standardization refers to the right approach in order to avoid confusion and insecurity it is still significant to case certain flexibility in interdisciplinary protocols due to constantly changing conditions of healthcare organizations. Healthcare teams work in environments where rapid developments occur, for instance, in emergency situations, change of the patients' state or new developments in the available technologies, among others, can result in deviations from the set norms. As such, protocols should exist in a form where they can be altered when necessary but not allow the quality of care to suffer as a result.[44]There is always the need to accommodate for any surprises, therefore, protocols should come with norms or procedures for special cases. For instance, where a patient has peculiar signs or a compliance with the laid down protocol that the team has not encountered before, they should be able to contact a

supervisor or an expert to guide them. On the same note it should also be possible to provide feedback and make changes on an as needed basis. After sometime or appearance of new information, existing methods have to be changed to fit present standards. Structured interdisciplinary case review sessions can guarantee that protocol remains up to date and relevant to practical functioning of health care professionals.[45,46] Besides, flexibility in protocol development can further improve the response team engagement. As healthcare professionals get to give input and change the timings to their convenience, they are more likely to feel committed to the protocol. This can enhance implementation and compliance because team members believe that the identified protocol is their creation resulting from cooperation and understanding.[47]Finally, it should be noted that the creation of efficient interdisciplinary protocols presupposes the compliance with key factors and principles, an interactive approach to designing, and the ability to adjust to the corresponding environment. When the above considerations are made, healthcare teams can ensure that they provide mechanisms that ensure the patients get the best results in their care.[48]

Technology and Communication

Technology has been widely integrated in the current molecular and dynamic health sector whereby communication is crucial. Therefore, as healthcare grow in term of specialty the technology has advanced in such a way that communication among care providers and the patient is also affected. Some of the most prominent technologies include EHR, Instant Messaging and Collaboration, and error minimization technologies for workflow. All of these technological advances are useful in reducing communication gaps, improving processes, and increasing organized system effectiveness and security within health.[49]

An EHR or Health Information Technology (HIT)RH The following is an outline of all the aspects of EHR:

Electronic Health Records (EHR) have brought transformation in the communication in healthcare field elevating the possibilities of conveyed record in a digital format. EHR systems facilitate the functionality, content, and achievement of data exchange and use for and by distributive work in health care that benefits pharmacists, nurses, laboratory technicians, and other health care learners and clinicians as major users of such systems. With EHR, patient histories, tests, prescriptions, and treatment plans are recorded in one place for the total care givers team. This eradicates paper work to some extent with minimized risks for lost documents or documents that are difficult to find; every member in a given team gets the latest and most accurate patient records.[50] Another benefit accrued from the use of EHR is due to the fact that it optimizes the flow of information among different carers. For instance, a pharmacist would only observe the client's records when it comes to the medication history or interaction and allergic reactions, the nurses, on the other hand, would be observing the client's vital signs and record the changes in the health record. Pharmacy personnel such as laboratory technicians can input the results of tests conducted directly into the system thereby making it possible for physicians, pharmacists, and nurses to get the information within the shortest time. Additionally, EHR systems may include clinical decision support tools, which alert

the system, for example, to a drug interaction or allergy or to deviations from a guideline so that action is required by the care team. Such a high level of integration allows exemplifying that all employees are informed about each patient's situation to maximize team cooperation and guarantee safe patient care.[51,52]

Applications of Mobile Devices for Real-Time Collaboration

The use of mobile applications has continued to rise as a tool of enhancing real-time communications within healthcare organizations because, through such gadgets, one healthcare professional can communicate with another regardless of location. Inter-stakeholder communication platforms in mobile allow pharmacists, nurses, laboratory technicians as well as other healthcare caregivers to share information and communicate in a secure way. These apps offer features for protected messaging that may preserve patients' identity and permit team contributors to discuss any cases or share updates about patients' statuses. For example, a nurse who spots a change of status in of a patient is in a position to communicate this development to the physician or pharmacist using a secure messaging app which decreases the response time, and make certain that the appropriate interventions are initiated.[53]Moreover, owing to the use of messages, patient information, the medical images, and lab results' sharing is faster and accurate in treating employing mobile applications. Some of the mobile apps also link with the EHR systems so that the health care professional can have look at the patients record on his/her mobile devices such as smart phones or tablets, time of increased decision making in rounds or in emergencies. **(Figure 2)** In addition, mHealth can include functionality in the form of schedule and, thereby, contributing to better organization of meetings and consults of interdisciplinary teams. Since mobile applications replace face-to-face communication, which may not always be possible, or to use less effective means such as telephone calls or pagers to convey information, mobile applications enhance timely collaboration.[53]Mobile application is relevant not only to augment internal communication of the healthcare teams but also to increase the level of patients' engagement. For example, patients' personal accounts or mobile applications enable them to engage directly with their healthcare providers, monitor their health improvements, and acquire essential information, other strategies also working to close the gap between the healthcare providers and patients.[54]

Figure 2: Mobile application is relevant not only to augment internal communication of the healthcare teams but also to increase the level of patients' engagement

Case Studies and Actual Business Uses

The use of case and managerial application gives practical considerations of how protocols of interdisciplinary communication can be effectively employed in healthcare system. These examples are real life case which portrays that If implemented right communication strategies and protocols enhance the quality of care for patients, augment the productivity of the group work and decrease the occurrence of medical errors. Successful and challenging experience cited provide a way for a healthcare organization to draw from a pool of such occurrences to enhance effective practices of similar organizations. These protocols to be debatable because they are so central to interdisciplinary cooperation and problem solving that care delivery and case management rely on them, which are case studies make utilizable instrument, when speaking about the practical application of new and better protocols in communication and the best ways to avoid pitfalls.[40,41]] Further down is the litigation of the protocol implementation in court: A large academic medical center, one example of successfully implemented protocol is a large academic medical center that has initiated the interdisciplinary protocol communication to enhance patient care for the ICU. It included the development of daily treatment conferences, where the client involved pharmacists, nurses, physicians, and the laboratory technician. Through these rounds, detailed by the protocol here, all the multidisciplinary team members can participate and present their knowledge, and any questions or

concerns, for example, drug-drug interactions, or a delay in the laboratory test results will be immediately voiced. The protocol paid a lot of attention to communication and coordination, as well as frequent exchange of information accomplished with the help of a specially designed EHR that enabled the team members to view the patient's records and make changes in them in case it was necessary.[42]

Another example may be taken from a community hospital where a communication program was devised to improve relations between the pharmacists and the nurses. Some of these solutions implemented into this hospital were using an actual-time messaging system where nurses only had to write their concerns regarding drug dosages or possible drug-drug interaction with pharmacists directly to their EHRs**.(Figure 3)** It would enable the pharmacist to give instant response with suggestions in order to reduce the rates of medication errors and enhance patient safety. Apart from the above protocol, this helped in increasing communication between the mentioned two disciplines and most importantly, these helped in decreasing medication errors and improving the overall flow of the hospital.[43]Such real-life instances prove that successful implementation of a protocol depends on planning, design of roles, and available technology that will enable easy cross-disciplinary communication. The then called implemented protocols are beneficial when they are well developed and instituted into the system and daily practices so as to transform the health organization and enhance the patient experiences.

Figure 3: communication program between healthcare specialists

Case Studies from the Best Healthcare Companies

The very number of well-developed healthcare facilities across the world can demonstrate that the interdisciplinary communication standards have been successfully implemented there, so there are many success stories. An example of such institution is Mayo clinic, which is well established due to its patient oriented care, and use of interprofessional collaboration. The mayo clinic has formulated a multimodal model of care for the care team that may include physicians, nurses, pharmacists among other professionals in chronic care. By having the patient care SALE and regular staff meetings, the amount of communication improves, and the patients benefit from better, more consistent care. The clinic also uses Electronic Health Records (EHR) in treatment process promotes this integration since different team members can monitor progress and results as they occur. It has therefore consequent benefits of patient satisfaction and reduction in the number of complications that would have otherwise occurred.[44,45]Another excellent practice example is the Cleveland Clinic which experimented with protocols of communication throughout disciplines in order to decrease hospital acquired infections. The hospital implemented daily safety huddles with infection control practitioners, nurses, physicians, and laboratory technologists to identify at risk patient, scrutinize lab results and try to ensure appropriate actions. Imposing collaboration and constant communication within the organizational system, the Cleveland Clinic was able to lower the figures of infection significantly. This was about bringing all individuals in the team to a platform where they can share information and advance their functionality as a result of finding themselves in a better team. [46]These examples illustrates shows how major health care organizations have implemented and use communication protocol in improving the quality of a patient's care, preventing errors and promoting teamwork. Thus, the staff of healthcare organizations can enhance their own organization communication and interdisciplinary cooperation. [47]

Conclusion

Nevertheless, a new course of establishing and launching protocols in communication between pharmacists, nurses, and laboratory technicians can be beneficial for improving the overall results in patients' safety and health care organization. Communication is not a mere process of sharing information but is the development of culture of working together, valuing each other and mutually exposing to learning. Thus healthcare institutions can find out efficient strategies to minimize barriers to communication at the workplace these barriers include structural barriers, cultural barriers and lack of standard operational procedures. To enhance interdisciplinary communication, few recommendation are essential steps including use of digital technology, holding meetings and development of protocols specific to interdisciplinary education that are responsive to changed and dynamic. Also, continuing education focus encompasses technical competencies as well as interpersonal communication abilities of healthcare staff. These accomplishments show that the leaders from prominent healthcare organizations understand that properly architected, integrated, and collaborative communications processes can drive positive patient outcomes, enhance safety and save time for overworked healthcare professionals across disciplines and/or

settings. Therefore, improving and sustaining staff communication can be achieved by providing continuing education focusing on the value of effective communication, building capacity for staffs to embrace other accepted best practices and procuring the culture for patients-center.

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تطوير البروتوكولات متعددة التخصصات لتعزيز التواصل بين الصيادلة والممرضين وفنيي المختبرات

الملخص
الخلفية: يحدث التواصل متعدد الأوجه في جميع أنحاء نظام الرعاية الصحية، مما يتضمن التفاعل بين الصيادلة والممرضين وفنيي المختبرات والمرضى الذين يخدمونهم. وللأسف، تشير دراسة التواصل بين هذه التخصصات إلى أن هذه الفجوات تخلق أخطاء وتهديدات محتملة لسلامة المرضى، وقد تم اقتراح بروتوكولات تواصل بين هذه التخصصات لمعالجة هذه المشكلة.
الهدف: يهدف هذا البحث إلى دراسة معايير بروتوكولات التواصل بين التخصصات الصحية المختلفة وأفضل الطرق التي يمكن من خلالها تبني هذه المعايير.
الطرق: يناقش هذا البحث الأدبيات، ودراسات الحالة، والدراسات الميدانية للتواصل الفعّال التي تم تطبيقها وتكييفها في مرافق الرعاية الصحية، مع التركيز على الابتكار التكنولوجي، والتدريب، وصياغة البروتوكولات وتنفيذها.
النتائج: تشمل النتائج أن التواصل المخطط له، في شكل اجتماعات تواصل منظم واستخدام السجلات الصحية الإلكترونية، يوجه الفريق ويعزز سلامة المرضى. كما تكشف أن التدريب المقدم في المهارات الفنية والناعمة يساعد في تحسين تدفق التواصل.
الخاتمة: يعد إطار العمل بين التخصصات ضرورياً لتحسين التواصل وبالتالي لتقليل المخاطر الطبية. إذا تم حل هذه العوائق، بما في ذلك الهيكل أو نقص المعايير الموحدة، يصبح من السهل تعزيز التواصل والتخلص من الأخطاء، مما يعزز في النهاية التعامل مع المرضى وتقديم الرعاية الصحية.
الكلمات المفتاحية: العاملون في الرعاية الصحية، التواصل بين التخصصات، المرضى، التواصل الصحي، العملية التعاونية، الأحداث السلبية. HERالتوثيق في السجلات الصحية الإلكترونية