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THE ROLE OF HEALTH INFORMATICS IN NURSING PRACTICE: ENHANCING EMERGENCY CARDIOLOGY CARE THROUGH COLLABORATION WITH PHARMACY AND HEALTH RECORDS

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ABSTRACT

Background: Over the last decade, patient safety during transitions of care has gained significant attention, particularly due to increased rates of hospital readmissions in the United States. A major contributing factor is the inadequate under- standing of complex medication regimens, which can lead to adverse drug events (ADEs) and subsequent readmissions. **Aim of work:** This study aims to delineate the roles and responsibilities of pharmacists in ensuring optimal pharmaceutical outcomes during care transitions, addressing barriers to effective transitions and highlighting populations at risk for ADEs. **Methods:** The research includes an analysis of existing literature on care transitions and the involvement of pharmacists, examining national efforts and contemporary care transition models. It also reviews the educational requirements for pharmacy programs to enhance skills related to care transitions. **Results:** Pharmacists are identified as vital participants in multidisciplinary teams, responsible for activities such as medication reconciliation, communication of drug regimen changes, and evaluating patient comprehension of medication. However, several obstacles impede greater pharmacist involvement. The study suggests that pharmacy education needs reform to incorporate care transition concerns and emphasizes the potential of health information technology in making these transitions safer. **Conclusion:** This research concludes by emphasizing the significance of acknowledging and tackling health literacy concerns in order to enhance patient empowerment during and aftercare transitions.

KEYWORDS: *Patient safety – Care transitions – Pharmacists – Adverse drug events (ADEs) – Medication reconciliation – Health literacy.*

INTRODUCTION

Care transitions, sometimes referred to as transitions of care, may occur at many levels and include the whole of the healthcare continuum. Care transitions may occur within healthcare systems, such as moving from the intensive care unit (ICU) to a regular medical ward, or across healthcare systems, such as transferring from a hospital to a long- term care facility (LTCF).[1-3] Care transitions can also take place between healthcare providers, such as when a patient is referred to a specialist by their primary care provider or during shift changes while the patient is in the hospital. These transitions have the potential to either positively or negatively impact clinical outcomes. While an adverse drug event (ADE) may happen at any point, there is a higher likelihood of ADEs happening during care transitions. In 2011, the Joint Commission recognized the importance of accurately maintaining and sharing patient medication information as a National Patient Safety Goal (NPSG). The 2010 ACCP Public and Professional Relations Committee was tasked with creating a document that outlines the duties and obligations of pharmacists in achieving the best possible outcomes in pharmacotherapy during transitions in care.[4-6]

Transitions between different care settings may be daunting for both patients and their families and caregivers. Undesirable patient outcomes have been recorded in every kind of care transition. Issues with transitions commonly arise when patients enter a healthcare facility and, if not addressed, can result in harm to the patient. A pioneering study revealed that 54% of medication errors made by doctors in hospitals were due to mistakes made when prescribing medications upon a patient's admission to the hospital.[7,8]

Transitioning between inpatient and outpatient settings is a regular aspect of patient treatment and has been

widely researched so far. This kind of transitioning has been linked to avoidable read- missions to the acute care hospital, as well as a rise in the use of emergency departments. A significant proportion of hospital readmissions and emergency department visits are attributed to drug-related issues. A comprehensive study revealed that 20% of Medicare beneficiaries who were hospitalized experienced a readmission to the same hospital within 30 days, and 34% within 90 days after being discharged. Additionally, approximately half of the patients readmitted within 30 days did not have any visits to their primary care provider between hospitalizations. The readmission cases had diverse explanations, but one significant element was the occurrence of Adverse prescription Events (ADEs) due to an insufficient comprehension of the prescription regimens prescribed for home and discharge.[2,4,9]

Issues in the process of transferring patients between different healthcare settings

During care transitions, there are often issues related to inadequate communication and poor care coordination. Inadequate communication between healthcare providers in the hospital and outpatient settings, coupled with the absence of a reliable communication system, leads to unfavorable patient outcomes.[10,11] Research suggests that direct communication regarding patient discharge between hospital physicians and the patient's primary care physician (PCP) happens in only 3-20% of cases, and discharge summaries are accessible to the PCP during only 12-34% of the initial follow-up appointments.[10]

Enhancing the communication of discharge instructions to patients is also possible. There is currently no universally accepted document for discharge instructions that is used when transfer- ring a patient from one healthcare environment to another.[10] Discharge instructions sometimes lack vital information, such as pending test results or a comprehensive list of medications and may be difficult for patients to comprehend. Additionally, patients are often left with unresolved medical problems, necessitating a follow-up appointment as an outpatient. Many patients may find it tough to comprehend the need of a follow-up and effectively manage its coordination. An analysis of 693 hospital discharges revealed that 27.6% of patients were advised to undergo outpatient evaluations, but only one-third of them actually followed through. Currently, neither inpatient nor outpatient pharmacists are consistently involved in facilitating and enhancing the transition from hospital to outpatient care.[12]

Transitioning between different ambulatory settings can pose difficulties in maintaining an accurate medication list. The community pharma- cist has the potential to play a crucial role in these transitions. However, pharmacies are frequently situated far from medical centers or physician offices, and the pharmacist may not be perceived as an easily accessible member of the team. Furthermore, there may be insufficient transmission of patient-related information to the community pharmacist. This deficiency pertains to the communication between the doctor and the community pharmacist, as well as the communication between various pharmacies. Pharmacy dispensing systems and electronic health records may not be able to communicate with each other due to limitations in information technology systems, even in the case of community pharmacies that are connected to medical facilities.[13] Patients have the option to visit many pharmacies, using their insurance benefits at some pharmacies and paying out-of-pocket for generic medications at others. The community pharmacist's access to medical information may be restricted to acquiring it directly from the patient and caregiver. They depend on the patient and caregiver to correctly communicate the details of what was discussed upon discharge.

The process of transitioning from home or an acute care hospital to a Long-Term Care Facility (LTCF) may be challenging due to the absence of both the pharmacist and the physician who are responsible for the patient's treatment on a daily basis at the LTCF. These changes pose difficulties, particularly when it comes to explaining medicine orders and addressing inquiries from the nursing staff responsible for daily care. Assisted living facilities may not have access to a pharmacist-pro- vided medication regimen review (MRR), which might put patients or residents at risk of prescription mistakes, adverse drug reactions, and needless medication usage after a hospitalization.[14]

Issues pertaining to the coordination and continuation of care persist as prevalent challenges. For instance, numerous elderly patients who are ad- mitted to the hospital are later arranged to receive ongoing care at home through home care services. This situation can pose distinctive difficulties. However, hospital clinicians frequently overestimate the range of services that are accessible at home, and hospital pharmacists are often excluded from the discharge planning process for patients who will be receiving home care services. Further- more, due to multiple misinterpretations of the privacy regulations set forth by the Health Insurance Portability and Accountability Act (HIPAA), crucial information may not be effectively transmitted to the home care provider. Additionally, patients with multiple acute and chronic conditions often need numerous medical appointments after being discharged, and inadequate care coordination can easily overwhelm them.[15-17]

The primary obstacle is in the absence of a single physician or cohesive team that has the ultimate duty of coordinating a patient's treatment across various healthcare environments. More re- cent models, such as the patient-centered medical home (PCMH) or the accountable care organization (ACO), prioritize care

coordination. However, despite ongoing developments in these models, improved coordination remains crucial in numerous care transitions, and pharmacists must play integral roles in these models.[18-23]

Vulnerable populations

Every patient is susceptible to encountering an Adverse Drug Event (ADE) when undergoing care transitions. Populations with an elevated risk include older adults, individuals with limited health literacy, individuals nearing the end of their lives, children with special healthcare needs, and patients who take more than five medications daily. Additionally, individuals with cognitive impairment, complex medical or behavioral health conditions, coexisting disabilities, and lower incomes are at risk. This also applies to those who are newly admitted to long-term care facilities, those who frequently move or are homeless. Homeless or medically underserved individuals may have multiple primary care providers or none at all and may resort to using the emergency department as their primary source of care due to insufficient financial resources.[25-32]

National Programs and Frameworks for health- care delivery

Better Care, Lower Costs was introduced in April 2011 as a public-private program under the Affordable Care Act. Its main objective was to enhance the quality of healthcare in the United States. Specifically, it aimed to achieve a 20% reductionin readmissions by 2013. While this project aimed to address all sources of damage in the hospital, its main objective was to achieve a 50% reduction in the occurrence of Adverse Drug Events (ADEs) during the following two years. In order to achieve these objectives, the Centers for Medicare & Medicaid Services (CMS) have introduced a new grant program called Community-Based Care Transitions. This program aims to provide assistance in meeting these goals.[33-37]

Many quality improvement projects prioritize the discharge process. The Agency for Healthcare Research and Quality (AHRQ) has officially sup- ported four objectives aimed at reducing avoidable hospital readmissions. The following objectivesare applicable to every patient and/or caregiver. (i) Possess knowledge of the appropriate medicine to consume and have the capability to consume it. (ii) Familiarize yourself with the indicators of danger and be aware of the appropriate individuals to contact in the event that they manifest. (iii) Schedule a timely and uninterrupted follow-up appointment and ensure attendance. (iv) Comprehend and have the capability to adhere to a self- care regimen.[38] In 2009, a Transitions of Care Consensus Conference was held involving over 30 professional organizations, governmental agencies (including AHRQ), patient groups, and developers of performance measures.[39] The purpose of this conference was to establish standards for the transition between inpatient and outpatient settings. One of the key areas identified for improvement in healthcare quality was care coordination, which was deemed a priority for enhancing the care of patients across various care settings.

RED Project

Developed by investigators at Boston Medical Center and Boston University, the AHRQ-funded Project RED evaluated strategies to improve the hospital discharge process by promoting patient safety and reducing readmission rates.[40] In their initial steps to reengineer the discharge process,investigators identified factors that could be modified to reduce adverse events and rehospitalizations.[41] These included, but were not limited to, (i) education about the diagnoses throughout hospitalization; (ii) coordination and education about follow-up appointments and home care needs as well as the provision of contacts for patients, especially for emergency requirements; (iii) confirmation of the medication plan and a review of this plan with the patient, including identification of potential ADEs; (iv) expedited transmission of the discharge summary to physicians, visiting nurses, and others accepting responsibility for patient care after discharge; (v) provision of a written discharge summary plan, details of which patients should verbally explain so that their understanding can be assessed and the information clarified; and (vi) telephone reinforcement of the discharge plan and problem solving 2–3 days after discharge.

An assessment was conducted on the impact of Project RED using a randomized study including 738 patients who had been released from Boston Medical Center. Patients in the intervention group were given education and a tailored instruction booklet by a nurse discharge advocate. The advocate also conducted medication reconciliation, scheduled follow-up visits, and submitted the instruction booklet and discharge report to the primary care physician. A pharmacist contacted the patient by phone 2-4 days after being releasedfrom the hospital. Patients in the control group underwent the standard discharge procedure. The intervention group exhibited a 30% reduction in hospital use, which includes rehospitalization and emergency department visits, during the first 30 days after discharge, compared to the control group (p=0.009). Patients in the intervention group had a higher likelihood of recognizing their diagnosis, comprehending their prescriptions, and adhering to follow-up appointments with their primary care physician.[42]

The roles and Responsibilities of pharmacists in enhancing care transitions

Pharmacists are not fully used throughout the process of transitioning care. According to a study on pharmacists' services in U.S. hospitals, only 5%of hospitals included pharmacist-provided admission medication histories, while 49% of hospitals reported pharmacists providing drug therapy counseling. This is not ideal because research shows that involving pharmacists in medication

recon- ciliation processes during care transitions, such as admission, transfer from the ICU, and immediate hospital discharge, has proven benefits.[43-45]

Typically, research on the impact of pharmacists in enhancing care transitions is primarily focused on the inpatient setting, specifically in the areas of admission drug histories and their involvement in interdisciplinary programs during discharge. In the Medications at Transitions and Clinical Handoffs (MATCH) study, pharmacists collected medication histories from patients within 24-48 hours of admission and compared them with the histories obtained by hospital physicians. Over the course of 14 months, a total of 5701 prescription medicines were examined for 651 individuals who were admitted to the adult medicine wards. Over 33% of patients had order mistakes, with the physician- obtained medication history being responsible for 85% of these errors. Other studies have shown that when a pharmacist takes the admission drug his- tory of older, medically complicated patients, it is more accurate and comprehensive.[46-49]

A separate and well recognized research examined the results of 178 patients who were released to their homes from a general medicine service at a prominent teaching hospital. The intervention group had discharge counseling conducted by a pharmacist, followed by a subsequent telephone call 3-5 days later. The pharmacist's responsibilities included elucidating prescription regimens, examining indications, instructions, and probable side effects, identifying obstacles to adherence, providing guidance to patients, and getting input from physicians. The main measure of interest was the incidence of avoidable adverse drug events (ADEs), which were identified in 11% of the control group and in 1% of the pharmacist intervention group (p=0.01). The intervention group exhibited a lower incidence of avoidable medication-related emergency department visits or hospital readmissions compared to the control group (1% vs 8%, p=0.03). No disparities were seen in the overall occurrence of adverse drug events (ADEs) or use of healthcare services.[49]

Hospital-based care facilities

Typically, pharmacists who work with hospitalized patients should join medical rounds (if they are conducted), conduct comprehensive medication reconciliation and admission drug histories, utilize their understanding of drug therapy to predict and address issues during transitions, and evaluate the suitability of drug regimens, adherence problems, and health literacy.

A highly reliable method for medication reconciliation involves inpatient pharmacists gathering a comprehensive medication history before admission, using all available sources of information, and recording their findings on standardized forms. While other members of the healthcare team can also perform the medication reconciliation process, pharmacists are crucial in guaranteeing the precision and suitability of a medication list. The Joint Commission does not explicitly designatea specific individual as the "owner" of the medication reconciliation process, but it does require the existence of a process. While other healthcare professionals, such as medical assistants, are capable of obtaining a medication history, pharmacists possess the specialized expertise in drugs necessary to guarantee the thoroughness and precisionof the medication history. It is essential to consistently share any updated information about a patient's medication history with all members of the healthcare team.[50-53]

Pharmacists play a significant role in patient and caregiver education, both during hospitalization and at the time of release. The hospital pharmacist has the necessary qualifications to thoroughly assess drug additions, deletions, and other modifications with the patient, their family, or their caregiver. Pharmacists are the most knowledgeable professionals to provide explanations for the reasoning behind therapeutic choices, replacements, or exchanges. Additionally, they may pro- vide reassurance to the patient or caregiver that the prescribed medication regimen is suitable for the person. While other healthcare practitioners may also possess this knowledge, pharmacists are likely to possess the most comprehensive understanding of the rationale behind certain pharmaceutical choices or adjustments and are thus most equipped to address inquiries pertaining to prescription specifics.[54]

Inpatient pharmacists should regularly conduct a "handoff" to their counterparts in the hospital when a patient is transferred, such as fromthe Intensive Care Unit (ICU) to the main wards. Implementing this mode of communication would facilitate the maintenance of consistent healthcare and enable the substitute pharmacists in the ICU to comprehend the patient's treatment strategyand medication background. It would also provide them with the most up-to-date medication list and a duplicate of the patient's medication history upon entrance.[55]

Patients being released from the Hospital and Returning to their own homes

It is essential for a hospital pharmacist to participate in multidisciplinary discharge rounds, particularly when patients with complicated medical conditions are being released. The pharmacist is responsible for conducting patient discharge interviews, evaluating the suitability of discharge medicines, and conducting medication reconciliation to detect and resolve any inconsistencies. The pharmacist should also ensure that a post-discharge drug monitoring strategy is addressed with the patient or caregiver. Furthermore, the pharmacist has the ability to offer medication counseling, which includes providing written information about the medication. They can also ensure that the patient understands the instructions for taking the medication, address any concerns about adherence, and communicate a complete list of

medications to the patient's follow-up provider and community pharmacist. A pharmacist working in a hospital or out- patient setting should do a telephone follow-up 2-4 days after a patient is discharged. This practice has been shown to be helpful in lowering the likelihood of the patient being readmitted to the hospital.[18,49,51]

Extended care facilities

The consultant pharmacist plays a crucial role in conducting medication reconciliation for fragile, medically complicated, older persons who are being moved to a Long-Term Care Facility (LTCF). The consultant pharmacist has the necessary expertise to guarantee that the inhabitants of this high- risk demographic get a prescription regimen that maximizes benefits and reduces risks, while also evaluating for possibly unsuitable drugs. While the nursing staff may have some familiarity with common drugs used by older adults, the pharma- cist possesses a more extensive knowledge base. This includes understanding how advancing age, and the presence of other diseases can impact the way drugs are absorbed, distributed, metabolized, and eliminated from the body. Furthermore, the consultant pharmacist has a deeper understanding of the "prescribing cascade," where adverse drug events are mistakenly attributed to new medical conditions, and the importance of discontinuing unnecessary medications.[57]

The consultant pharmacist is accountable forassisting the institution in maintaining prompt and suitable pharmaceutical services that uphold the healthcare needs of residents, align with cur- rent practice standards, and comply with state and federal regulations. This duty includes working together with the LTCF and medical director to develop protocols that specifically deal with MRRs for residents who are anticipated to have a stay of fewer than 30 days or for residents who have a sudden and severe change in their health state.[58]

Medication reconciliation must be conducted within a period of 5 days after readmission to the long-term care facility (LTCF) subsequent to a hospitalization or significant alteration in health condition. This measure may help avoid the permanent discontinuation of drugs that were temporarily halted during the hospital stay. In addition, the consultant pharmacist should provide guidance to family members on any modifications made to the patient's medication regimen.[59]

In order to maintain the well-being and proper care of residents in assisted living facilities, it is essential that a pharmacist conducts monthly medication regimen reviews (MRR) and medication reconciliation. An exceptional aspect of this evaluation might be the pharmacist's appraisal of the resident's capacity to independently handle their prescriptions after a hospital stay. The evaluations may significantly affect the resident and their family's economic situation and quality of life when the pharmacist determines that the resident is no longer capable of properly administering medicine on their own and is unwilling to accept a higher level of patient care.

Community pharmacies

The main duty of the community pharmacist is to resolve any possible inconsistencies between newly prescribed drugs after a change in treatment and the patient's existing drug regimen at home. To do this, it is necessary to communicate with the primary care practitioner and/or specialist, and maybe with other pharmacists if a patient utilizes several pharmacies. The community pharmacist plays a crucial role in assuring the proper use of a patient's prescriptions and creating a precise and comprehensive list of a patient's drugs. This aligns with the fundamental components of a medication therapy management (MTM) practice model out- lined by the American Pharmacists Association/ National Association of Chain Drug Stores. These components emphasize conducting a thorough medication review and addressing any identified issues with drug therapy. This includes providing the patient with a personalized medication record, developing a medication-related action plan to address any concerns, and documenting interventions and referrals to effectively communicate with healthcare providers and follow up with the patient.[60]

In addition, pharmacists may do home visits to ensure appropriate storage of prescriptions and prevent the unintended reinitiation of terminated medications. Community pharmacists should thoroughly evaluate any automatic refill programs in which the patient may have joined, particularly if the specific medicine was stopped upon hospital release. Community pharmacists also aid in ad-dressing third-party formulary concerns, since pre- scribers may lack awareness of the prescriptions authorized by a patient's insurance and the need of obtaining prior permission. Furthermore, com- munity pharmacists may make a valuable contribution by assisting patients and caregivers in com- prehending their discharge documentation, as well as any modifications to their medication schedule.

Ambulatory care

The responsibilities of the pharmacist, as out- lined in the shift from inpatient to outpatient care and community practice, also pertain to the ambulatory care pharmacist. Furthermore, the ambulatory care pharmacist should assume explicit responsibility for ensuring the precision and comprehensiveness of medication lists in the patient's electronic medical records inside the health system.[61]

Residential medical care

Institutions should include a specialized hospital pharmacist in their discharge planning team, particularly when a patient is scheduled to receive home care services. Pharmacists possess the ability to provide comprehensive information on the patient's medicines,

including the extent of insurance coverage for drugs supplied in the home care environment, since not all medications provided to inpatients will be reimbursed. Prior to the patient's release, it is necessary to get the necessary authorizations for home infusion treatment. Hospital pharmacists should actively engage in collaboration and education with other healthcare professionals, such as intravenous infusion pharmacists employed by home health care companies, wherever feasible.

Medically underserved refers to individuals or communities who have limited access to healthcare services. Homeless refers to those who lack a fixed, regular, and adequate nighttime residence. Pharmacists should position themselves inside any integrated health system that caters to these patients. It is crucial to evaluate the patient's adherence to treatment by assuring their access toprescriptions. Additionally, it is important to assess the patient's health literacy to ensure they can understand and follow directives and instructional materials. Patients should be evaluated to determine their capacity to keep drugs in a suitable manner. Pharmacists are now recognized as providers of the HRSA 340B program, administered by the Health Resources and Services Administration. This program helps people get cheap prescriptions, which is especially important during a care transfer.[62]

Suggestions for systematic modifications to enhance care transitions

Education and training for health care providers:

The existing standards set by the Accreditation Council for Pharmacy Education (ACPE) for pharmacy education do not specifically cover education regarding care transitions. However, various publications have discussed the involvement of student pharmacists in advanced pharmacy practice experiences (APPEs) for tasks such as medication reconciliation and other activities related to care transitions. It is recommended that these activities be incorporated as a regular component of both inpatient and outpatient APPEs during the final year of the Pharm.D. Program Software applications. IPPEs should provide chances for student pharmacists to see medication reconciliation and get familiar with prevalent drug-related issues that arise during care transitions. These tasks may include detecting and resolving differences discovered during medication reconciliation in their professional practice laboratory courses, as well as addressing care coordination and other aspects that impact patients throughout care transitions. Furthermore, it is crucial for students to understand how to collaborate efficiently in multidisciplinary teams, particularly when it comes to preparing patients for care transitions. This should be considered an essential component of their overall learning experience.[63,64]

Residency training provides an additional chance to strengthen the pharmacist's involvement in the process of transferring care. Postgraduate pharmacy training, particularly the postgraduate year one (PGY1) pharmacy practice residency, aims to improve the pharmacist's capacity to oversee the medication use process and facilitate optimal medication outcomes for a wide range of illnesses. One of the objectives of PGY1 residency programs accredited by the American Society of Health-System Pharmacists is to effectively communicate medication information during transitions of care.

Other health professions' professional curriculum and residency programs also provide minimal education and training on care transitions. There are not many programs that provide formal education on discharge planning, and internal medicine residency programs have limited curricula on this topic. A study has demonstrated that educating medical students about the important aspects ofcare transitions can enhance their knowledge, behaviors, and self-perceived competency. This educational intervention was conducted during a 12-week internal medicine clerkship and involved two learning sessions. During these sessions, students learned about various topics related to care transitions, such as the negative consequences of poor transitions, collaborating with interdisciplinary teams, Medicare and Medicaid reimbursement, functional assessment, and community reimbursement. The intervention also highlighted the crucial significance of the discharge report in facilitating care transfers.

Medical informatics

There is a scarcity of published data on the true impact of health information technology on care transitions, and existing research have shown contradictory findings. One study found that using electronic discharge summaries improved the quality and speed of discharge summaries. However, another study suggested that discharge software with CPOE (Computerized physician order entry) did not have an impact on readmissions, emergency department visits, or adverse events after discharge. It is important to put in significant effort to maintain systems and ensure the accuracy of existing information. If the information being transmitted is incorrect, particularly in relation to computerized prescription lists, technology might potentially exacerbate issues during care transitions. Providers may acquire a misguided confidence in the veracity of the drug list due to its computerized nature.[65]

The necessary technology for facilitating thetransmission of health information during care transitions is currently available. While some individual providers and health systems have implemented electronic health records, the overall adoption of an optimal system is not yet complete. However, the federal government has offered incentives through the American Recovery and Reinvestment Act of 2009 to encourage the implementation of electronic health records, and this approach seems to be effective. While the adoption of new technology is an important first step,it is crucial to

ensure that individual systems can seamlessly communicate with each other. This necessitates the establishment of comprehensive interoperability standards. Ultimately, clinicians and health care systems must adjust their workflow and process norms to align with the heightened use and enhancement of current technology.[66,67]

In order for pharmacists to play a significant role in care transitions, it is crucial that their use of information technology be seamlessly incorporated into national efforts. The formation of the Pharmacy e-Health Information Technology Collaborative was driven by the aim of fully incorporating pharmacists into national technology initiatives. A key objective is to establish the essential data set and functional capabilities of electronic health records for pharmacy practitioners, enabling their participation in national initiatives.[68]

The ability of patients to safely move between care settings is contingent upon their capacity to effectively communicate their requirements to healthcare personnel. Individuals with inadequate health literacy may find this task difficult. Numerous studies have been undertaken to investigate if various treatments prior to a patient's appointment with a healthcare professional might improve the transmission of comprehensible information. A systematic review conducted by Cochrane, which included 33 research, revealed that target- ed treatments such as providing written materials or coaching before to consultation had a modest but statistically significant impact on patients' in- creased questioning and satisfaction. The amount of patient apprehension, initially elevated before to the appointment, subsequently diminished. Coaching led to increased satisfaction and improved efficiency in patients' ability to ask essential questions. However, it is vital to consider that coaching is a more expensive intervention compared to using written materials, and this cost should be taken into account during implementation.

The National Patient Safety Foundation has partnered with other organizations to develop a program that improves communication between patients and healthcare providers, ensuring that accurate and comprehensive information is shared and understood by the patient. Recognizing and implementing strategies to enhance health literacy and empower patients during care transitions are crucial in overcoming obstacles to healthcare access.[69]

CONCLUSION

Patients who transition between different treatment settings are at a heightened risk of experiencing adverse drug events (ADEs) when there is inadequate communication and care coordination. Given the reduced duration of hospital stays and the increased severity of patients' conditions, the period of care transitions becomes crucial for ensuring the best possible treatment and avoiding unnecessary hospital readmissions. Pharmacists has distinct abilities to enhance care transitions in various environments as members of the multidisciplinary healthcare team.

REFERENCES

1. National Transitions of Care Coalition. Available fromwww.ntocc.org/. Accessed June, 2012; 19.
2. SOUSA P, UVA AS, SERRANHEIRA F, NUNES C and LEITE ES.: Estimating the incidence of adverse events in Portuguese hospitals: a contribution to improving quality and patient safety. BMC health services research. Dec, 2014; 14: 1-6.
3. The Joint Commission. 2011 national patient safety goals. Available from www.jointcommission.org/hap_2011_npsgs/. Accessed June, 2012; 19.
4. MANIAN FA.: Whither continuity of care? N Engl J Med, 1999; 340: 1362–3.
5. VIDYARTHI AR, ARORA V, SCHNIPPER JL, WALL SD and WACHTER RM.: Managing discontinuity in academic medical centers: strategies for a safe and effective resident sign-out. J Hosp Med, 2006; 1: 257–66.
6. DAVIS J, RIESENBERG LA, MARDIS M, DONNELLY J, BENNINGFIELD B, YOUNGSTROM M and VETTER Evaluating outcomes of electronic tools supporting physician shift-to-shift handoffs: a systematic review. Journal of graduate medical education, 2015; 1, 7(2): 174-80.
7. CORNISH PL, KNOWLES SR, MARCHESANO R, et al.: Unintended medication discrepancies at the time of hospital admission. Arch Intern Med, 2005; 165: 424–9.
8. LAPOINTE NMA and JOLLIS JG.: Medication errors in hospitalized cardiovascular patients. Arch Intern Med, 2003; 163:1461–6.
9. SCHMEIDA M and SAVRIN R.: Surgical rehospitalization of the Medicare fee-for-service patient: a state-level analysis exploring 30-day readmission factors. Profession-al case management, 2015; 1, 20(3): 130-7.
10. KRIPALANI S, LEFEVRE F, PHILLIPS CO, WILLIAMS MV, BASAVIAH P and BAKER DW.: Deficits in communication and information transfer between hospital-based and primary care physicians: implications for patient safetyand continuity of care. JAMA, 2007; 297: 831–41.
11. ARORA VM, PROCHASKA ML, FARNAN JM, et al.: Problems after discharge and understanding of communication with their primary care physicians among hospitalized seniors: a mixed methods study. J Hosp Med, 2010; 5: 385–91.
12. MOORE C, MCGINN T and HALM E.: Tying up loose ends: discharging patients with unresolved medical issues. Arch Intern Med, 2007; 167: 1305–11.
13. GANDHI TK and LEE TH.: Patient safety beyond the hospital. Available from

http://healthpolicyandreform.nejm. org/?p=12527. Accessed June, 2012; 19.
14. BOLING PA.: Care transitions and home health care. ClinGeriatr Med, 2009; 25: 135–48.
15. Patient-Centered Primary Care Collaborative. Joint principles of the patient-centered medical home. Available from www.pcpcc.net/content/joint-principles-patient-centered- medical-home. Accessed June, 2012; 19.
16. STARFIELD B and SHI L.: The medical home, access to care, and insurance: a review of the evidence. Pediatrics, 2004; 113(5): 1493–8.
17. SMITH M, BATES DW, BODENHEIMER T and CLEARY PD.: Why pharmacists belong in the medical home. Health Aff, 2010; 29: 906–13.
18. GANDHI TK, WEINGART SN, BORUS J, et al.: Adverse drug events in ambulatory care. N Engl J Med, 2003; 348: 1556–64.
19. KABOLI PJ, HOTH AB, MCCLIMON BJ and SCHNIP- PER JL.: Clinical pharmacists and inpatient medical care: a systematic review. Arch Intern Med, 2006; 166: 955–64.
20. PIPPINS JR, GANDHI TK, HAMANN C, et al.: Classifying and predicting errors of inpatient medication reconciliation. J Gen Intern Med, 2008; 23: 1414–22.
21. American Society of Health Systems Pharmacists Re- search and Education Foundation. Executive summary of the continuity of care in medication use summit. AJHP, 2008; 65: e3–9.
22. FIELD TS, GURWITZ JH, AVORN J, et al.: Risk factors for adverse drug events among nursing home residents. Arch Intern Med, 2001; 161: 1629–34.
23. HAYWARD RA, SHAPIRO MF, FREEMAN HE and COREY CR.: Inequities in health services among insured Americans. Do working-age adults have less access to medical care than the elderly? N Engl J Med, 1988; 318: 1507– 12.
24. HealthCare.gov. Partnership for patients: better care, lower costs. Available from www.healthcare.gov/center/pro- grams/partnership/index.html. Accessed June, 2012; 19.
25. Centers for Medicare & Medicaid Services. Community-based care transitions program. Available from www.cms.gov/DemoProjectsEvalRpts/MD/itemdeta il. asp?itemID=CMS1239313. Accessed June 19, 2012.
26. SNOW V, BECK D, BUDNITZ T, et al.: Transitions of care consensus policy statement: American College of Physicians, Society of General Internal Medicine, Society of Hospital Medicine, American Geriatrics Society, Ameri- can College of Emergency Physicians, and Society for Academic Emergency Medicine. J Hosp Med, 2009; 4: 364–70.
27. Agency for Healthcare Research and Quality. Priority areas for national action: transforming health care quality. Summary of Institute of Medicine Report. January 2003. Rockville, MD: AHRQ. Available from www.ahrq.gov/ qual/iompriorities.htm. Accessed June, 2012; 19.
28. Society of Hospital Medicine. BOOSTing (better outcomes for older adults through safe transitions) care transitions. Available from www.hospitalmedicine.org/ Resource- Room Redesign/ RR_CareTransitions/html_CC/project_ boost_background. cfm. Accessed June, 2012; 20.
29. COLEMAN EA.: Care transitions program. Health care services for improving quality and safety during care hand- offs. Available from www.caretransitions.org/. Accessed June, 2012; 19.
30. COLEMAN EA, PARRY C, CHALMERS S and MIN SJ.: The care transitions intervention: results of a randomized controlled trial. Arch Intern Med, 2006; 166: 1822–8.
31. Transitional Care Model. Home page. Available from www.transitionalcare.info/. Accessed June, 2012; 19.
32. NAYLOR M, BROOTEN D, JONES R, LAVIZZO-MOUREY R, MEZEY M and PAULEY M.: Comprehensive discharge planning for the hospitalized elderly. A randomized clinical trial. Ann Intern Med, 1994; 120: 999–1006.
33. NAYLOR MD, BROOTEN D, CAMPBELL R, et al.: Comprehensive discharge planning and home follow-up of hospitalized elders: a randomized clinical trial. JAMA, 1999; 281: 613–20.
34. NAYLOR MD, BROOTEN DA, CAMPBELL RL, MAIS-LIN G, MCCAULEY KM and SCHWARTZ JS.: Transitional care of older adults hospitalized with heart failure: a randomized, controlled trial. J Am Geriatr Soc, 2004; 52: 675–84.
35. Guided Care. Home page. Available from www.guided- care.org/. Accessed June, 2012; 19.
36. BOULT C, REIDER L, FREY K, et al.: Early effects of "guided care" on the quality of health care for multimorbid older persons: a cluster-randomized controlled trial. J Gerontol A Biol Sci Med Sci, 2008; 63: 321–7.
37. WOLFF JL, RAND-GIOVANNETTTI E, PALMER S, et al.: Caregiving and chronic care: the guided care program for families and friends. J Gerontol A Biol Sci Med Sci, 2009; 64:785–91.
38. LEFF B, REIDER L, FRICK KD, et al.: Guided care and the cost of complex healthcare: a preliminary report. Am JManag Care, 2009; 15: 555–9.
39. BOYD CM, REIDER L, FREY K, et al.: The effects of guided care on the perceived quality of health care for multi-morbid older persons: 18-month outcomes from a cluster –randomized controlled trial. J Gen Intern Med, 2010; 25:235–42.
40. Boston University Medical Center. Project RED (re-engineered discharge). Available from www.bu.edu/fammed/ projectred/index.html. Accessed June, 2012; 19.
41. JACK B, GREENWALD J, FORSYTHE S, et al.: Developing the tools to administer a comprehensive hospital discharge program: the re-engineered discharge (RED) program. Advances in patient

safety: new directions and alternative approaches, Vol. 3. Performance and tools. AHRQ publication no. 08-0034-3. Rockville, MD: Agency for Healthcare Research and Quality, August, 2008.
42. JACK BW, CHETTY VK, ANTHONY D and GREEN-WALD J.: A reengineered hospital discharge program to decrease rehospitalization: a randomized trial. Ann Intern Med, 2009; 150: 178–87.
43. Hospital to Home Project. Available from www.h2hquality.org/. Accessed June, 2012; 19.
44. Institute for Healthcare Improvement. Available from www.ihi.org/ihi. Accessed June, 2012; 19.
45. VENTURA T, BROWN D, ARCHIBALD T, GOROSKI A and BROCK J.: Improving care transitions and reducing hospital readmissions: establishing the evidence for community-based implementation strategies through the care transitions theme. Available from www.cfmc.org/inte-gratingcare/files/Care_ Transition_Article_Remington_Report_Jan_2010.pdf. Accessed June, 2012; 19.
46. BOND CA and RAEHL CL.: Clinical pharmacy services, pharmacy staffing, and adverse drug reactions in United States hospitals. Pharmacotherapy, 2006; 26: 735–47.
47. WHITTINGTON J and COHEN H.: OSFs healthcare's journey in patient safety. Qual Manag Health Care, 2004; 13: 53–9.
48. PRONOVOST P, WEAST B, SCHWARZ M, et al.: Medication reconciliation: a practical tool to reduce the risk of medication errors. J Crit Care, 2003; 18: 201–5.
49. SCHNIPPER JL, KIRWIN JL, CONTUGNO MC, et al.: Role of pharmacist counseling in preventing adverse drug events after hospitalization. Arch Intern Med, 2006; 166: 565–71.
50. SETTER SM, CORBETT CF, NEUMILLER JJ, GATES BJ, SCLAR DA and SONNETT TE.: Effectiveness of a pharmacist-nurse intervention on resolving medication discrepancies for patients transitioning from hospital to homehealth care. Am J Health Syst Pharm, 2009; 66: 2027–31.
51. WALKER PC, BERNSTEIN SJ, TUCKER JONES JN, et al.: Impact of a pharmacist-facilitated discharge program. Arch Intern Med, 2009; 169: 2003–10.
52. MURPHY EM, OXENCIS CJ, KLAUCK JA, MEYER DA and ZIMMERMAN JM.: Medication reconciliation at an academic medical center: implementation of a comprehensive program from admission to discharge. Am J Health Syst Pharm, 2009; 66: 2126–31.
53. PONNIAH A, ANDERSON B, SHAKIB S, DOECKE CJ and ANGLEY M.: Pharmacists' role in the post-discharge management of patients with heart failure: a literature re- view. J Clin Pharm Ther, 2007; 32: 343–52.
54. ELLITT GR, BRIEN JE, ASLANI P and CHEN TF.: Quality patient care and pharmacists' role in its continuity—a systematic review. Ann Pharmacother, 2009; 43: 677–91.
55. GLEASON KM, MCDANIEL MR, FEINGLASS J, et al.:
56. Results of the medications at transitions and clinical hand- offs (MATCH) study: an analysis of medication reconciliation errors and risk factors at hospital admission. J Gen Intern Med, 2010; 25: 441–7.
57. STRUNK LB, MATSON AW and STEINKE D.: Impact of a pharmacist on medication reconciliation on patient ad- mission to a Veterans Affairs medical center. Hosp Pharm, 2008; 43: 643–9.
58. LAMACHIA MA, SCHEUNEMANN LP, VIERA AJ, BUSBY-WHITEHEAD J, HANSON LC.: Interventions to improve transitional care between nursing homes and hos-pitals: a systematic review. J Am Geriatr Soc, 2010; 58: 777–82.
59. American Pharmacists Association/National Association of Chain Drug Stores Foundation. Medication ther- apy management in pharmacy practice: core elements of an MTM service model (version 2.0). March, 2008.Available from www.pharmacist.com/AM/Template. cfm?Section=Home2&Template=/CM/ContentDisplay. cfm&ContentID=16857. Accessed June, 2012; 19.
60. Accreditation Council for Pharmacy Education. Accredita- tion standards and guidelines for the professional program in pharmacy leading to the Doctor of Pharmacy degree. Available from www.acpe-accredit.org/pdf/S2007Guide-lines2.0_ChangesIdentifiedInRed.pdf. Accessed June, 2012; 19.
61. LUBOWSKI TJ, CRONIN LM, PAVELKA RW, BRISCOE-DWYER LA, BRICELAND LL and HAM- ILTON RA.: Effectiveness of a medication reconciliation project conducted by PharmD students. Am J Pharm Educ; 2007; 71: 94.
62. TURNER CJ, ELLIS S, GILES J, et al.: A strategy to develop advanced pharmacy practice experiences. Am J Pharm Educ, 2007; 71: 46.
63. WALKER PC, TUCKER JONES JN and MASON NA.: An advanced pharmacy practice experience in transitional care. Am J Pharm Educ, 2010; 74: 20.
64. PAGE RL, HUME AL, TRUJILLO J, et al.: Inter professional education: principles and application. A framework for clinical pharmacy. Pharmacotherapy, 2009; 29: 879–86.
65. Interprofessional Education Collaborative Expert Panel. Core competencies for interprofessional collaborative practice: report of an expert panel. Washington, DC: Inter- professional Education Collaborative, 2011.
66. American Society of Health-System Pharmacists. Residency accreditation. Residency learning system 2006 and for- ward. Available from www.ashp.org/menu/Accreditation/ Residency Accreditation. aspx# Regulations and Standards. Accessed June, 2012; 19.

67. AIYER M, KUKREJA S, IBRAHIM-ALI W and ALD- AG J.: Discharge planning curricula in internal medicine residency programs: a national survey. South Med J, 2009; 102: 795–9.
68. OUCHIDA K, LOFASO VM, CAPELLO CF, RAMSA- ROOP S and REID MC.: Fast forward rounds: an effective method for teaching medical students to transition patients safely across care settings. J Am Geriatr Soc, 2009; 57: 910–7.
69. Pharmacist Services Technical Advisory Coalition. Home page. Available from www.pstac.org/aboutus/faq.html. Accessed June, 2012; 19.
70. National Transitions of Care Coalition. Improving transitions of care with health information technology. December 2010. Available from www.ntocc.org/Portals/0/HITPa- per.pdf. Accessed June, 2012; 19.