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Improving Patient Awareness and Compliance with Telephone Follow-up Calls Post Visit

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This Manuscript Partially Fulfills the Requirements for the Doctor of Nursing Practice Program and is Approved by:

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Abstract

Practice Problem: In a high-volume clinic without current follow up practices post visit, a telephone follow-up (TFU) intervention was implemented within three days of patient outpatient appointments.

PICOT: The PICOT question that guided this project was: In adult patients in a high-volume clinic (P), does the implementation of telephone follow-up calls by nurses (I) compared to current practices (C) improve patient compliance and post-office follow-up visits (O) over 10-weeks (T)?

Evidence: The literature provided recommendations and evidence that supported the effectiveness of following up with patients within three days of leaving the healthcare clinic. TFU's are a cost-effective intervention that provides opportunities for patient education, improvements in patient compliance and reduction of adverse events.

Intervention: Nurses utilized a TFU checklist where they assessed patient compliance and awareness with individualized care plan, required lab work, medication, diet and exercise regimen prior to their follow up visit.

Outcome: The Fisher's exact test was not significant based at an alpha value of .05, OR = 0.00, p = 1.00. However, clinical significance was found because of the increase in patients attending follow-up clinic visits.

Conclusion: The implementation of TFU within three days of patient outpatient visit resulted in 83% of patient's verbalizing awareness of their individual care plan and 88% of patients attending their follow up visit.

Improving Patient Awareness and Compliance with Telephone Follow-up Calls Post Visit

Patients are at the core of healthcare delivery. Every intervention and service is centered around improving their health outcomes and providing them with the resources and services they need to live. However, their health prognosis depends on the care they receive and, most notably, the lifestyle and health choices they practice once they leave the healthcare facility (Braun et al., 2009). Patient awareness and compliance are crucial to maintaining healthy living and reducing complications, as non-compliant patients demonstrate worse health outcomes over time (Laugesen et al., 2015). Patient noncompliance can happen for many reasons, yet a significant reason is the inability to understand and recall the information or the instructions given. Several studies have shown that most patients only remember a few of the recommendations provided by their providers and tend to recall only half of the information accurately (Laws et al., 2018).

Implementing telephone follow-up calls, post-visit can significantly improve patient outcomes by reinforcing the education and treatment regimen patients receive from their providers during their appointments to ensure they understand the information presented (Braun et al., 2009). This evidence-based practice (EBP) was conducted guided by the Johns Hopkins evidence-based practice framework and the ADKAR Change Management Model that provided practice recommendations to improve patient awareness and compliance with chronic health conditions. This manuscript highlights the implications of the practice problem, evidence search strategy, stakeholders, setting, system change, implementation plan with budget and timeline, evaluation plan, and results dissemination.

Significance of the Practice Problem

Patient noncompliance is a systemic issue that affects organizations and communities at the micro, macro, and mezzo level. It is defined as the failure of the patient to adhere to healthcare interventions provided by the healthcare provider. It can occur due to a patient's thinking, personal beliefs, culture, lack of support, socioeconomic status, or complex disease process (Cleemput & Kesteloot, 2002). When patients are ill, it creates a domino effect of issues, starting from the patient and trickling down to the organizations they receive care from, places where they live and work, insurance companies that pay for their medical bills, and the healthcare policies and regulations created at the state and global level (Laugesen et al., 2015).

The ramifications of noncompliance affect the general public because it creates a practice gap and decreases the universal effectiveness of interventions, which ultimately causes increases in societal costs (Cleemput & Kesteloot, 2002). Patients with chronic diseases require complex care and often need healthcare services that are invasive and expensive, which result in higher insurance premiums and medical fees (Laugesen et al., 2015). The World Health Organization reports that approximately 10-25% of nursing home and hospital admissions occur due to noncompliance (Scarlett & Young, 2016). Noncompliance also makes it harder for patients to be functioning members of society, as their life is tremendously impacted at every level. As a result of their condition and quality of life, most patients cannot work most of the time, which causes income decreases, debt increases, and corporation deficiencies (absences, staff shortages) (Laugesen et al., 2015).

In the United States alone, patient non-adherence and noncompliance to treatment regimens have resulted in over 125,000 deaths and more than 100 billion dollars in healthcare costs (Laugesen et al., 2015). It is also reported that when patients are non-compliant, it results in

the misuse of resources, decreases in healthcare productivity, and financial waste, as the point of these interventions is to prevent morbidity and mortality in individuals (Laugesen et al., 2015). Ensuring patients follow their medical advice is necessary as their treatment outcomes rely on self-management (Braun et al., 2009).

Provider-patient relationships are crucial components of patient compliance. However, with high patient volume, turnover rates, and limited provider accessibility, sustaining a consistent and communicative relationship is complicated. These occurrences often hinder the patient's ability to comprehend the progression of their disease and how to integrate various changes into their therapy and lifestyle after they leave the office (Braun et al., 2009). The patient's need for more understanding of this information and lifestyle adjustments results in healthcare costs of $100-300 billion annually due to non-adherence (Scarlett & Young, 2016).

PICOT Question

The PICOT question was: In adult patients in a high-volume clinic (P), does the implementation of telephone follow-up calls by nurses (I) compared to current practices (C) improve patient compliance and post-office follow-up visits (O) over 10-weeks (T)? The target population is adult patients aged 18- 65, both men and women, presenting with chronic conditions. The intervention was the implementation of telephone follow-up (TFU) calls three days after the patient's initial appointment at the clinic. Often, in this setting, after the patient is discharged from the clinic, communication ends. Prior to this practice change, no practices were in place at this clinic to follow up with patients once they leave.

According to (Braun et al., 2009) calling patients soon after they have left their visit allows the transfer of information, assessment of the instructions they received, to discuss any concerns, and recognize any complications that require immediate medical assistance. When

patients are non-adherent to their individualized clinical regimen, delivering quality, efficient health care is complex, resulting in worsening outcomes, increased costs, and decreased patient satisfaction (Hendrickson et al., 2020). The outcome of this project is in improving patient awareness and compliance post office visits. The time frame of the project was 10-weeks.

Evidence-Based Practice Framework & Change Theory

The Johns Hopkins Evidence-Based Practice Model (JHEBP) is a three-step framework that focuses on the practice question, evidence, and translation (PET) of data to guide the implementation of an EBP proposal or project. It uses an analytical approach to make clinical decisions within a healthcare system or organization, utilizing current research and evidence. The model's emphasis on EBP allows the consideration of external and internal factors in clinical practice. The JHEBP guides the proposed DNP project by encouraging critical thinking and reasoning and building the project's foundation by planning each phase using a correlating appendix. Each appendix identifies key terms to gather and synthesize, to appraise literature, determine stakeholders, create an implementation plan, and evaluate objectives and outcomes. The steps of the JHEBP must be followed to ensure the best quality of evidence and recommendations for practice (Johns Hopkins Nursing, 2023).

The Awareness, Desire, Knowledge, Ability, and Reinforcement (ADKAR) management model is the change theory that will be used to highlight the components needed to create long-lasting organizational change. The model developed by Jeff Hiatt implements change utilizing five steps. 1. Awareness, 2. Desire, 3. Knowledge, 4. Ability, and 5. Reinforcement and characterizes them as the essential foundation for success (Hiatt, 2006, p.43). The five-step model guided nurses and stakeholders in encouraging and implementing change at the individual and organizational levels due to its ability to navigate the widespread complexity of innovation.

The utilization of detailed planning and stakeholder participation made it very beneficial for nurses on the frontline to integrate into daily practice (Wong et al., 2019). Nurses and key stakeholders played a crucial role in encouraging this change because they allowed the identification of challenges that may cause roadblocks in developing the action plan, transitions to change, and comprehension on why these changes were necessary. The model was also selected because it used simple and straightforward concepts and focused on understanding the change process (Wong et al., 2019).

Evidence Search Strategy

The first comprehensive literature search was conducted on the University of St. Augustine for Health Sciences (USAHS) electronic database to generate results for the problem significance and PICOT intervention. Search criteria included applying all related words and equivalent subjects and searching within the full text of articles. Keywords incorporated: *telephone calls, post-visit, patient compliance, and awareness* were used interchangeably during the search using and or. Inclusion criteria included peer-reviewed articles from 2000-2023 in English. Exclusion criteria included articles outside of non- academic journals, non- English, or earlier than 1999. After applying the exclusion criteria, 5,094 articles were left. Articles were excluded if they were centered on inpatient, emergency room, or surgery discharges, as this intervention focuses on outpatient appointments. Another literature search was performed on the Science Direct, Medline, and CINAHL Complete databases with the different combinations of the keywords and several articles were generated.

Evidence Search Results

A total of 10 articles remained from the search strategy, and were published from 2000-2022 in English, and directly addressed telephone follow-ups in patients after leaving a healthcare clinic and followed up with patients within at least three months. The articles were examined based on Dang et al. (2022) JHEBP Hierarchy of evidence framework for their quality, level of evidence, grade, and type of study using the research evidence appraisal tool. These tools helped determine the article's data collection methods, ability to answer the EBP question, and instrument validity and reliability. Appendix A is a summary of primary research evidence, and Appendix B is a summary of systematic reviews. Six articles had level-one evidence and consisted of randomized control trials. Three articles had level two of evidence and consisted of quasi-experimental and cohort studies. One article had level five of evidence as a literature review. There are four *Quality A* articles and six *Quality B* articles. Articles rated *A quality* had high-quality, generalizable, consistent results that provided definite conclusions and recommendations with appropriate sample sizes. *Quality B* articles were rated as good quality, with consistent, reasonable results, suggestions, and an adequate sample size. These articles provide evidence based on extensive literature reviews that provide some scientific references.

Themes with Practice Recommendations

The thorough synthesis and analysis of the literature collected allowed the identification of appropriate themes and clinical recommendations. Themes generated from the evidence included follow up calls post- discharge, home visits and follow up calls and written discharge instructions.

Follow up Calls Post-Discharge

Patient education and follow-up are crucial components in discharge planning as they play a vital role in patient rehabilitation, knowledge reinforcement, and improvement of lifestyle through teaching health-related behaviors and providing significant information (Manzato et al., 2021; Ranjbar et al., 2021; Najafi et al., 2016). Patient education through telephone calls leads to fewer complications, increased healthcare program attendance, and lower treatment costs (Arad et al., 2021). Reaching out to patients shortly after discharge increases the likelihood of patients returning to their follow-up visits (Hendrickson et al., 2020; Woods et al., 2019). Studies have associated telephone calls and patient follow-ups with improved health outcomes, positive behavior changes, and adherence to medical regimens (Patrick, 2000). A study that utilized nurse-led telephone interventions improved adherence to medication in patients suffering from ischemic stroke and improved blood pressure and low-density lipoprotein levels in patients three months after a stroke (Cha et al., 2022). In a study of patients with diabetes, nurse telephone assessment and care education calls increased the frequency of self-monitoring, foot inspection, medication compliance, and improved glucose concentration in diabetic patients (Patrick, 2000).

Home Visits and Follow up Calls

Providing patients with bundled interventions (telephone calls and home visits) may be more beneficial for patients after discharge than just phone calls alone (Soong et al., 2014; Wong et al., 2019). Telephone follow up and home visits are recommended to provide increased opportunities for patient education (Arad et al., 2021). Several studies have shown that home care visits and telephone calls are effective interventions in transitioning care and improving outcomes (Soong et al., 2014; Wong et al., 2019). Intensive interventions such as repeat phone calls and home visits are ideal methods for improvements in post discharge care (Soong et al.,

2014). However, a study (Ranjbar et al., 2021) that used telephone calls and home visits to follow up on discharge training showed that the intervention may not be effective enough to prevent readmissions.

Written Discharge Instructions

The typical discharge process for patients leaving the clinic/hospital consists of patients receiving a copy of an electronic discharge summary with patient specific information (Soong et al., 2014). These summaries often include educational booklets, printouts of PowerPoint slides and the distribution of patient diaries and logs to monitor conditions at home (Manzato et al., 2021; Arad et al., 2021). Providing patients with educational pamphlets, instructions and other educational tools improves the follow up process and enables patients to have information on the progression of their disease, complications, medication, treatment and diet (Manzato et al., 2021; Arad et al., 2021).

Practice Recommendations & Evidence Strength

Each of the 10 articles analyzed for the literature synthesis provided evidence and recommendations that supported the utilization of telephone follow-up calls (TFU) in patients with chronic conditions within three days after they left the healthcare clinic. The evidence generated was a combination of Level I and Level II quality A and B articles that were high-quality and consistent in their findings, limitations, and conclusions. There was a total of six randomized control trials, one experimental, one quasi-experimental, one prospective cohort study, and a literature review.

Despite limitations, all studies supported telephone follow-up calls as the most cost-effective intervention to promoting positive patient outcomes and influencing improvements in patient compliance awareness to prescribed regimens of treatment. It is recommended that

patients be called within 72 hours of leaving the clinic, as research shows that 90% of adverse reactions occur within the first 72 hours of discharge (Baker, 2010). This recommendation and synthesis of evidence helps to answer the PICOT question: In adult patients in a high-volume clinic (P), does the implementation of telephone follow-up calls by nurses (I) compared to current practices (C) improve patient compliance and post-office follow-up visits (O) over 10-weeks (T)? The analysis of evidence provides the literature and research to support the proposed intervention.

Setting, Stakeholders, and Systems Change

The project was conducted at a high-volume cardiac outpatient clinic within an academic medical center in New Jersey that provides advanced care services to various medical specialties. Telephone follow-up calls were conducted by two-unit nurses. These nurses were responsible for providing patient education, medication management/reconciliation and monitoring cardiac and diagnostic tests. The nurses were females and have been working at the clinic for at least 1 year. The outpatient clinic sees multiple patients daily and are the those who need to have improved compliance with care. The patient data included men and women between the ages of eighteen- and sixty-five who had initial and follow-up appointments in the clinic for their chronic condition over a 10-week timeframe. The organization's mission is to provide high-quality, exceptional, care to patients and improve healthcare for the community and future generations.

Organizational needs were assessed in a collaborative meeting with the project manager (PM), clinical nurse manager (CNM) and staff members (nurses, ambulatory care technicians), where they expressed patient compliance issues with prescribed medical regimens and decreased attendance rates for follow-up visits within the clinic. The CNM served as the leader and coordinator of the unit and was responsible for managing and working directly with the

stakeholders for the system change. The PM was the DNP student responsible for introducing the proposed intervention and was under the supervision of the CNM,

Key stakeholders included two healthcare providers, the CNM, two nurses, three ambulatory care technicians (ACT), the patients, one appointment coordinator and the information technology team. Subsequently, the TFU intervention was utilized to improve patient awareness and compliance, as the organization currently does not have a system to communicate with patients after they leave the clinic. Plans for the intervention were overseen by the CNM and PM for appropriate planning and implementation.

SWOT Analysis

A thorough organization SWOT analysis was completed to identify the opportunities, strengths, threats, and weaknesses of the proposed intervention at the clinic. Strengths included a cost-effective intervention, improvement of patience compliance and decreased occurrences of adverse health events. Weaknesses include telephone follow up calls may not be enough to prevent hospital readmissions and improve patient adherence, patients may not have access/ pick up the phone and a limitation of trained staff. Opportunities included assessing patients' level of healthcare knowledge, opportunities for patient teaching, recognizing complications early, and increasing patient follow up visit attendance. Threats to the intervention included staff resistance to change, system shutdowns/malfunctions and ineffective documentation by staff. The intervention was targeted explicitly towards outpatients in the clinic to help them improve their health outcomes and reduce morbidity and mortality rates due to non-adherence to regimens prescribed by their providers.

Systems Change

The intervention was created to reinforce patient education and to assess patients' level of being self-reliant and efficient in their self-management with telephone follow-ups within three days of leaving their clinic appointment. The system change aimed to improve patient awareness and compliance with chronic illnesses. Clinical decision-making that influenced patient outcomes were considered at the micro (patient), meso (organization), and macro (communities and healthcare policy) levels (Sawatzky et al., 2021). The level of system change for this organization was at the micro level.

Implementation Plan with Timeline and Budget

Three objectives guided project implementation. These objectives included: (a) to achieve an 85% increase in patient attendance at follow-up visits and compliance with clinical recommendations (medication and diet compliance) during week 6-10; (b) Approximately 90% of patients will verbalize understanding of clinical recommendations as outlined by week 8- 10; (c) At least 95% of the staff nurses and patient navigators will be educated on the telephone follow-up call protocol and documentation on the patient checklist (call within 72 hours, document encounter) from weeks 4-8. Project implementation addressed the translation component of the JHEBP framework (PET) as the intervention action plan and recommendations for change were based on the research and evidence gathered on the effectiveness of TFUs. Project feasibility, stakeholder support, organizational readiness to change, and intervention risks and benefits were examined to determine if the proposed change was influential in creating long-lasting outcomes. The JHEBP and ADKAR models guided the recommended change because of the extensive focus on integrating widespread organizational change using a structured framework. The PM applied leadership skills such as excellent communication, critical thinking, active listening, and motivation, as project outcomes were contingent on teamwork and

collaboration. The PM was active with stakeholders throughout project implementation from weeks 1-10 to establish the clinical practice problem and review the patient's plan of care to align with the implementation plan, budget, and resources. The timeline is included in Appendix C and the project budget is in Table 2.

Step 1: Awareness

The first step of the ADKAR model was awareness, recognizing that there is a problem and that something needs to be modified/changed. At the project site, the presenting problem was the patient's lack of accessibility to providers and compliance with prescribed medical regimens (nonattendance to follow-up visits, failure to pick up prescriptions, and nonadherence to lifestyle changes). Once recognized, efforts to inform stakeholders and staff members of the intervention were presented during a collaborative meeting with all participants coordinated by the PM and CNM during weeks 2-4.

Step 2: Desire

The next step is desire; once team members understood the need for change through awareness, their willingness to change develops through planning and collaborating (Wong et al., 2019). The PM worked closely with staff members to build relationships and promote communication with members to receive feedback and perspectives on how to integrate the new care delivery model into existing workflow and processes. This interaction allowed staff members the opportunity to be active participants in the planning process and voice their concerns in the decision-making phase enhancing their desire to participate.

Step 3: Knowledge

Knowledge of how to change is the third step, where data and evidence on the proposed change were provided, and team members will verbalize understanding (Balluck et al., 2020). In

this case, the PM provided information on TFU calls and the tools and resources used to measure patient compliance and awareness. This was the pre-training stage, where staff members were assessed on their previous knowledge of TFUs and patient plan of care to determine the beginning of learning. The PM provided the TFU checklists and PowerPoint presentations on proper documentation and follow-up call protocols.

Step 4: Ability

The fourth step was the ability to display behaviors and skills; in this phase of the model, any potential barriers to implementation were identified, and staff members underwent training (Wong et al., 2019). Staff members were trained for three days on TFUs and practice protocols with the PM and CNM (Appendix G). At the end of the training, staff members demonstrated appropriate performance of the TFU calls.

Step 5: Reinforcement

The last stage was reinforcement, which refers to the ability to maintain the change and measure patient safety and quality outcomes (Balluck et al., 2020). At this phase, another collaborative meeting was organized by the PM, where staff members received feedback on their performance in improving patient compliance and awareness. The training provided to nurses was dedicated and reinforced during each quarterly period to ensure that nurses demonstrate awareness/understanding of the implementation of TFU intervention and competency.

Results

Before project implementation, formal consent was be attained from the University of St. Augustine for Health Sciences (USAHS) and the institutional review board (IRB) of the site organization to ensure project and participant safety. All data generated and patient-sensitive information utilized during the 10 weeks of the project were compliant with the organizational

Health Insurance Portability and Accountability Act (HIPAA) and secured in an administrative password-encrypted computer. However, there is always a risk to privacy, a potential loss of confidentiality was prevented by use of a de-identifier. Patients were identified with the first letter of the patient's last name and the last 3 numbers of the Medical Record Number, (for example – B5261).

Patient data used for the intervention was from men and women who had an initial and follow-up appointment within the project timeframe. The PM and CNM obtained patient-informed consent for TFUs. Patient charts were reviewed by nurse participants before project implementation to learn their medical regimen (lab work, diet, medication compliance, smoking status, exercise regimen) to determine pre and post-implementation information to observe progress. The data collected for the EBP change included patient demographic information that pertains specifically to the TFU intervention and their medical diagnosis (Appendix D). The demographic information collected consists of the participant's age, race, gender, ICD-10 diagnosis, and the patient's initial and follow-up appointment date, which will be obtained from Epic. This data was needed because it was an important element of some disease processes, and helped describe the data source. A data collection sheet was created and used during project implementation utilizing the information collected from the EMR and TFU calls within three days of patient visits.

Data were collected from the organization's electronic medical record (EMR), Epic, and TFU and manually entered in a data collection tool (see Appendix E and F) created by the PM. Face validity is defined as the degree in which a measure confirms what is supposed to measure (Connell et al., 2018). Face validity of the tool was established through a panel of organizational experts (nurses who had expertise in the area) who provided their input and comments on the

tool. Inter-rater reliability was used to assess outcomes, and changes were made to the language, consistency, and readability of the style and formatting. Face validity was determined by all of experts who evaluated the demographic tool and deemed it valid. A checklist was used to evaluate patient awareness and compliance based on the data collected from the EMR and TFU calls to monitor and track TFU progress (Appendix F). Data generated from the checklist was entered into Intellectus Statistics software to determine the percentage of improvement in patient compliance and follow-up visit attendance. Descriptive statistics and a chi-square test were used to see if there was an association between follow-up calls and follow-up attendance visits. Descriptive statistics explain data more accurately by highlighting essential characteristics of the study and participants. The chi-square test of independence is a non-parametric test that measures nominal data and tests the relationship between variables, resulting in an unmet distribution assumption (Kim et al., 2020, p. 688).

The clinical outcome of the EBP change project was evaluated as any increases/improvement in patient compliance and attendance after the intervention, with a desired outcome of 85% and 90% of patients verbalizing understanding. Descriptive statistics of the intervention demonstrated that 15 of the 18 patients (83.3%) understood their care plans, with only 27.7 % of patients (5 of 18 patients) needing additional teaching and reinforcement during their TFU call. The majority of the patients picked up calls on the first call (77.7%), with only four patients (22.2%) being called twice with a voicemail left. All patients (100%) had their follow-up appointments scheduled and voiced no concerns or adverse symptoms after their initial outpatient appointment. A total of 88% of patients (16 of 18 patients) attended their follow-up visit and had their medication prescriptions filled. Approximately 72% of patients (13 of 18)

reported adherence to their individualized diet and exercise regimen, with 83% of patients (15 of 18 patients) completing their routine lab work.

The chi-square test of independence was conducted to examine whether telephone follow-up calls with voicemails left and attendance to follow-up visits were independent based on yes/no categories. However, the assumptions of the chi-square test are violated, so the Fisher's exact test was conducted. The results of the Fisher exact test were not significant based at an alpha value of .05, OR = 0.00, p = 1.000, suggesting that these categories could be independent of each other (Intellectus, 2023). This implies that the observed frequencies were not significantly different than the expected frequencies, as noted by the results of the Fisher's exact test (see Appendix F). Overall, these findings provide future implications for the project. The TFU intervention was an interactive collaboration among project stakeholders and improved patient outcomes with understanding discharge instructions and being medication and lab work compliant. Clinical significance was found because of the success of patients attending follow-up clinic visits

Impact

The implementation of the TFU intervention within the organization impacted patient compliance and awareness. It altered practices by integrating a feature that was not present within the cardiac unit by creating an additional line of communication between patients and nurses. Having two nurses call patients within 72 hours of their initial appointment allowed patients to review their individualized discharge instructions and allowed nurses to assess patient understanding and determine if the patient was compliant with their prescribed medical regimen. The ADKAR model was beneficial in introducing the practice change to the nurses as they were open to integrating the intervention into their daily practice. They voiced the challenges and difficulties that often arise when patients were non-compliant and were receptive to the changes.

They were highly involved and frequently communicated ideas and updates to the CNM and PM. By the end of the training, the nurses demonstrated proficiency with TFU calls. The nurses utilized the TFU checklist and patient tracking and monitoring checklist to keep surveillance of their patients and when they completed necessary lab work, medication prescriptions, and attended follow-up visits.

The project will be expanded to other medical subspecialty units within the organization. The effectiveness of patient compliance with the TFU intervention within the cardiac unit has implications for different units in the organization. The CNM will sustain the intervention and will reinforce it quarterly to ensure nurses are compliant with the practice. The CNM will also be responsible for measuring the success and effectiveness of change as the intervention progresses. The intervention will be reviewed and taught during the new employee onboarding process, so new staff will have it included in their employee training when working on the unit. There is no need for additional funding as TFUs are a cost-effective intervention; training resources and paperwork are printed out and saved to an electronic folder and as a shared link to the CNM, nurses, and other staff members through their organizational email.

Barriers and limitations to the project included a small sample size with both patients and the nurses conducting the TFU intervention. Although the goal of the intervention was to have an 85% increase in patient follow up visit attendance and have 90% of patients verbalize understanding, 83% of patients verbalized awareness and 88% of patients attended their follow up visit and were compliant with their medications and lab work. The sample size of participants was only 18, which did not capture the entire population of patients seen weekly at the clinic. TFU calls were also only performed by two nurses, due to a limited population of staff on the unit. The TFU intervention provides future recommendations for positive outcomes in patient

care and safety and can be replicated. A larger population will yield greater results and provide more inferences in practice.

Dissemination

After implementing and evaluating the EBP project, appropriate dissemination of the results and presentation of the data by highlighting the clinical significance of TFUs in improving patient awareness and compliance within the organization was done. Strategies to disseminate the results within the organization included an oral poster board presentation displayed on the unit and a PowerPoint presentation to stakeholders, including the CNM, healthcare providers, DNP preceptor and staff members. Dissemination of the results within the USAHS included a poster presentation, publication to SOAR, and a manuscript submission to the peer-reviewed Journal of Patient Experience. This journal was selected because it focuses on literature and interventions that impact patient experiences in healthcare. Many clinicians and patients can gain knowledge and benefit from the insight generated from the EBP change and implement the intervention into their clinical practice to promote healthy outcomes through improved patient understanding and adherence to their medical care plans.

Conclusion

The purpose of this project was to implement and utilize a telephone follow-up call intervention within an organization to improve patient awareness and compliance with their individualized medical regimen as prescribed. Patient's noncompliance and lack of understanding of their disease process and recommendations from their healthcare providers often result in unfavorable health outcomes. A comprehensive review of literature, along with the identification of the best evidence-based practices and the guidance of the JHEBP Hierarchy of evidence framework, allowed the implementation of a system practice change using the ADKAR model.

Clinical research and evidence demonstrated that contacting patients within three days of their discharge from the hospital/outpatient visits resulted in fewer complications, knowledge reinforcement, and better rapport with clinical staff. The intervention resulted in 83.3% of patients understanding/awareness of their care plan, with 88% of patients attending their follow-up visit after their initial appointment, which demonstrated improvements in patient compliance.

References

Arad, M., Goli, R., Parizad, N., Vahabzadeh, D., & Baghaei, R. (2021). Do the patient education program and nurse-led telephone follow-up improve treatment adherence in hemodialysis patients? A randomized controlled trial. *BMC Nephrology, 22*(1). https://doi.org/10.1186/s12882-021-02319-9

Bahr, S. J., Solverson, S., Schlidt, A., Hack, D., Smith, J. L., & Ryan, P. (2013). Integrated literature review of post discharge telephone calls. *Western Journal of Nursing Research*, *36*(1), 84-104. https://doi.org/10.1177/0193945913491016

Baker, S. J. (2010). Post-visit phone calls save lives, improve clinical outcomes, and reduce readmissions. *Journal of Emergency Nursing*, *36*(3), 256-259. https://doi.org/10.1016/j.jen.2010.01.011

Balluck, J., Asturi, E., & Brockman, V. (2020). Use of the ADKAR® and CLARC ® change models to navigate staffing model changes during the COVID-19 pandemic. *Nurse Leader*, *18*(6), 539-546. https://doi.org/10.1016/j.mnl.2020.08.006

Braun, E., Baidusi, A., Alroy, G., & Azzam, Z. S. (2009). Telephone follow-up improves patients satisfaction following hospital discharge. European Journal of Internal Medicine, 20(2), 221-225. https://doi.org/10.1016/j.ejim.2008.07.021

Cha, S., Chang, W. K., Cho, H., Jung, Y., Kang, M., Paik, N., & Kim, W. (2022). The effect of a telephone-based intervention on physical activity after stroke. *PLOS ONE*, *17*(10), e0276316. https://doi.org/10.1371/journal.pone.0276316

Cleemput I, & Kesteloot K. (2002). Economic implications of non-compliance in health care. *Lancet,* 359(9324), 2129–2130. https://doi.org/10.1016/s0140-6736(02)09114-6

Connell, J., Carlton, J., Grundy, A., Taylor Buck, E., Keetharuth, A. D., Ricketts, T., Barkham, M., Robotham, D., Rose, D., & Brazier, J. (2018). The importance of content and face validity in instrument development: Lessons learnt from service users when developing the recovering quality of life measure (ReQoL). *Quality of Life Research*, *27*(7), 1893-1902. https://doi.org/10.1007/s11136-018-1847-y

Dang, D., Dearholt, S., Bissett, K., Ascenzi, J., & Whalen, M. (2022). *Johns Hopkins evidence-based practice for nurses and healthcare professionals: Model and guidelines* (4th ed). Sigma Theta Tau International.

Hiatt, J. (2006). *ADKAR: A model for change in business, government, and our community*. Prosci

Hendrickson, S. B., Simske, N. M., DaSilva, K. A., & Vallier, H. A. (2020). Improvement in outpatient follow-up with a post discharge phone call intervention. *Journal of the American Academy of Orthopaedic Surgeons*, *28*(18), e815-e822. https://doi.org/10.5435/jaaos-d-19-00132

Intellectus Statistics (2023). *Intellectus Statistic* [Online Computer Software]. Retrieved from: http://Analyze.Intellectusstatistic.com

Johns Hopkins Nursing. (2023). *Johns Hopkins nursing evidence-based practice model*. https://www.hopkinsmedicine.org/evidence-based-practice/model-tools

Kim, M., Mallory, C. & Valerio, T. (2020). *Statistics for evidence-based practice in nursing* (3rd ed.). Jones & Barlett Learning

Laugesen, J., Hassanein, K., & Yuan, Y. (2015). The impact of internet health information on patient compliance: A research model and an empirical study. *Journal of Medical Internet Research*, *17*(6), e143. https://doi.org/10.2196/jmir.4333

Laws, M. B., Lee, Y., Taubin, T., Rogers, W. H., & Wilson, I. B. (2018). Factors associated with patient recall of key information in ambulatory specialty care visits: Results of an innovative methodology. *PLOS ONE*, *13*(2), e0191940. https://doi.org/10.1371/journal.pone.0191940

Manzato, R. D., Ciol, M. A., Bolela, F., Dessotte, C. A., Rossi, L. A., & Dantas, R. A. (2021). The effect of reinforcing an educational programme using telephone follow-up on health-related quality of life of individuals using warfarin: A randomised controlled trial. *Journal of Clinical Nursing*, 30(19-20), 3011-3022. https://doi.org/10.1111/jocn.15811

Najafi , S. S., Shaabani, M., Momennassab, M., & Aghasadeghi,K. (2016). The nurse-led telephone follow-up on medication and dietary adherence among patients after myocardial infarction: A randomized controlled clinical trial. *International Journal of Community Based Nursing & Midwifery*, 4(3), 199–208.

Patrick, L. (2000). Automated telephone assessment and education with nurse follow up improved self care and glycaemic control in patients with diabetes. *Evidence-Based Nursing*, 3(4), 117-117. https://doi.org/10.1136/ebn.3.4.117

Ranjbar, S., Khodaveisi, M., Amini, R., & Tapak, L. (2023). The effect of discharge planning on adherence to treatment in patients with ischemic heart disease. *Journal of Evidence-Based Care*, 13(2), 55–64. https://doi.org/10.22038/EBCJ.2023.68708.2804

Sawatzky, R., Kwon, J., Barclay, R., Chauhan, C., Frank, L., Van den Hout, W. B., Nielsen, L. K., Nolte, S., & Sprangers, M. A. (2021). Implications of response shift for micro-, meso-, and macro-level healthcare decision-making using results of patient-reported outcome measures. *Quality of Life Research*, *30*(12), 3343-3357. https://doi.org/10.1007/s11136-021-02766-9

Scarlett, W., & Young, S. (2016). Medical noncompliance: The most ignored national epidemic. *Journal of Osteopathic Medicine*, *116*(8), 554-555. https://doi.org/10.7556/jaoa.2016.111

Soong, C., Kurabi, B., Wells, D., Caines, L., Morgan, M. W., Ramsden, R., & Bell, C. M. (2014). Do post discharge phone calls improve care transitions? A cluster-randomized trial. *PLoS ONE*, 9(11), e112230. https://doi.org/10.1371/journal.p one.0112230

White, K. M. (2019). Evidence-based practice and its implementation in healthcare. *Translation of Evidence Into Nursing and Healthcare*. https://doi.org/10.1891/9780826147370.0001

Wong, Q., Lacombe, M., Keller, R., Joyce, T., & O'Malley, K. (2019). Leading change with ADKAR. *Nursing Management*, *50*(4), 28-35. https://doi.org/10.1097/01.numa.0000554341.70508.75

Woods, C. E., Jones, R., O'Shea, E., Grist, E., Wiggers, J., & Usher, K. (2019). Nurse-led postdischarge telephone follow- up calls: A mixed study systematic review. *Journal of Clinical Nursing*, 28(19-20), 3386- 3399. https://doi.org/10. 1111/jocn.14951

Table 1

SWOT Analysis

Strength	**Weaknesses**
Cost effective intervention Improves patience compliance Decreases the occurrence of adverse health events	TFU may not be enough to prevent hospital readmissions and improve patient adherence Patients may not pick up the phone/access Limited trained staff
Opportunities	**Threats**
Patients' level of healthcare knowledge Opportunities for patient teaching Recognize complications early Increase follow up visit attendance	Staff resistance to change System shutdowns/malfunctions Ineffective documentation

Table 2

EBP Project Budget for TFU Implementation

Expenses		Revenue	
Indirect- Included in regular operating costs	est. $	Organizational funding	$150
Salary and benefits x 4 hour for training, ABT, nursing staff.	$25/hr x 4		
Overhead	$0		
Supplies – checklists, presentations	$50		
Estimate Total Expenses	$150	Estimate Total Revenue	$150
Net Balance			

Appendix A

Summary of Primary Research Evidence

Citation	Design, Level Quality Grade	Sample Sample size	Intervention Comparison (Definitions should include any specific research tools used along with reliability & validity)	Theoretical Foundation	Outcome Definition	Usefulness Results Key Findings
Arad, M., et al 2021.	Level I Single blinded randomized control trial (RCT) Quality B	66 participants on hemodialysis	Intervention group receives patient education programs on medication use and fluid restrictions and receive telephone follow up calls for 3 months (twice a week)	N/A	Determine the importance of nurse-led follow up intervention	The mean scores demonstrated a significant difference in hemodialysis attendance, fluid restrictions, diet recommendations, and medication use at one month and 3 months after the intervention ($p<.001$)
Bahr, S. J. et al. 2013.	Level V Literature review Quality A	19 research articles fulfilled inclusion criteria	Telephone follow up calls post discharge	N/A	Medication compliance Attendance follow up visits	Evidence from several studies demonstrated higher rates of follow up visits A study demonstrated increased rates of medication compliance
Cha, S. et al 2022.	Level I Experimental study	139 participants with a history of subacute stroke hospitalized in 2019/2020	Intervention group received physical activity program and nurse led telephone calls	N/A	The effect of telephone-based interventions	Nurse led telephone follow up provided once a month improved blood pressure and low-density lipoprotein

	Quality A		one a month for up to 3 months		on physical activity	C levels 36 months after discharge
Hendrickson, S. B.et al 2020.	Level II Prospective cohort study Quality B	159 patients in a level 1 trauma center	Participants received telephone reminder calls/ conversations to attend first post discharge clinic visit Control group did not receive contact	N/A	Attendance to scheduled appointments	54 % of participants (86) attended their scheduled appointments Adherence to appointments was more significant in participants (70%) who received phone conversations than those who had no contact (34%)
Manzato, R. D. et al 2021	Level I Randomized control trial (RCT) Quality B	70 participants on warfarin therapy divided into 2 groups	Intervention group receives educational protocol and five follow up calls within six months	Bandura's social cognitive theory (SCT)	Self-reported management of warfarin therapy	Telephone calls had a greater impact than the educational protocol alone, scores at six-month follow-up were higher than three month follow ups Intervention group reported a more positive psychological impact than the control group
Najafi , S. S. et al 2016	Level I Randomized control trial (RCT) Quality A	100 participants who had a history of Myocardial Infarction June-December 2014	Intervention group received telephone follow up calls and consultations for 12 weeks	N/A	Adherence to medication/diet regimen	The intervention group (62%) reported higher rates of dietary adherence than the control group The intervention group (68%) reported higher medication adherence rates
Patrick, L. 2000	Level I	280 participants older than 75 with diabetes for	Intervention group received bi-	N/A	Self-reported outcomes of glycemic	Patients who received the intervention had better perceived glycemic control

	Randomized control trial non blinded (RCT) Quality A	longer than 6 months using hypoglycemic medication	weekly telephone follow calls		control with 5-point scale Lab measurement of HbA1c & serum glucose concentrations	than those who received routine care (mean was 3.1, p =0.005), more frequent glucose monitoring (mean 4.1, p=0.03), foot inspection (mean 4.7, p=0.02) and fewer issues with medication adherence (p=0.003)
Ranjbar, S., et al. 2023	Level II Quasi-Experimental study Quality B	70 participants with ischemic heart disease	Experimental group received 8 cases of telephone follow up calls after discharge	N/A	Adherence to prescribed treatment plan and discharge planning	After the intervention, the experimental group adherence to treatment significantly increased (P <0.001) Telephone follow up calls significantly increased patients' adherence to treatment plan
Soong, C. et al 2014	Level II Cluster randomized trial Quality B	328 participants who were discharged after hospitalization From September 2012- March 2013	Participants received electronic discharge summary and a follow up call within 3 days	N/A	Examine the effect of discharge phone calls with 72 hours on patients transition to care Care transition measure (CTM-3) Self-reported adherence to medication and follow up plans	Minimal improvement in CTM-3 scores between intervention and control group Results demonstrated minimal improvement with a single discharge call Intervention highlighted that multiple phone calls may be more effective

Wong, F. K.et al 2013.	Level I Randomized control trial (RCT) Quality B	Three groups with sample size of 182 From August 2010- June 2012 Participants had chronic diseases (respiratory, cardiac, renal and diabetic)	Intervention group received telephone calls and home visits. Another group received phone calls only Control group received placebo calls	N/A	A 5% level of significance Improved outcomes post discharge	Improvement in self-efficacy in groups over time ($p=0.002$) Intervention groups had higher satisfaction rates than the control group ($p<0.001$)

Legend: TFU- telephone follow up, RCT- randomized control trial, CTM-3- care transition measure, SCT-social cognitive theory,

Appendix B

Summary of Systematic Reviews (SR)

Citation	Quality Grade	Question	Search Strategy	Inclusion/ Exclusion Criteria	Data Extraction and Analysis	Key Findings	Usefulness/Recommendation/ Implications
Woods, C. E. et al., 2019	Quality A Level 1	What effect do nurse led telephone follow up calls (TFU) have on patient outcomes? What are patient perceptions and experiences of nurse led TFU calls?	Mixed study systematic review	Inclusion: Quantitative/qualitative studies in peer reviewed journals, admitted adult patients who stayed in hospital overnight, nurse telephone follow up call (TFU) 7 days post discharge, studies where TFU is the only intervention Exclusion: TFU calls made after 7 days, patient with same day procedures, patients admitted to the ED	Numerical evidence to determine outcomes of nurse led TFUs. Textual data was taken to examine the impact of patient outcomes with nurse led TFUs Information extracted included data on methods used, populations, interventions and outcomes related to review question and objectives significance	Ten articles met inclusion criteria on nurse led TFU calls within 7 days of discharge Two high quality quantitative studies found positive outcomes in evaluating post discharge problems. One study examined follow up attendance and reported positive outcomes by having a higher attendance rate than patients who did not receive TFUs	Results indicated that nurse led TFUs may be an effective intervention in reducing post discharge problems, increase patient satisfaction, increase follow up appointment attendance and improve communication

Legend: **:** TFU- telephone follow up, ED- emergency department,

Appendix C
Project Schedule

Activity	NUR 7801					NUR 7802					NUR 7803				
	Week 2	Week 4	Week 6	Week 8	Week 10	Week 2	Week 4	Week 6	Week 8	Week 10	Week 2	Week 4	Week 6	Week 8	Week 10
Project budget, timeline for EBP practice change				X	X										
Connect with IT team for TFU set up/documentation					X	X	X								
Data analysis (pre-implementation)					X	X									
TFU staff training And follow up plan						X	X	X	X	X					
Weekly patient plan of care tracking						X	X	X	X	X					

Activity	NUR 7801					NUR 7802					NUR 7803				
	Week 2	Week 4	Week 6	Week 8	Week 10	Week 2	Week 4	Week 6	Week 8	Week 10	Week 2	Week 4	Week 6	Week 8	Week 10
Submission of project proposal				X	X										
Obtain approval/consent from USAHS and IRB of organization						X	X								
Implementation of EBP and TFU calls						X	X	X	X	X					
Data analysis (post-implementation)													X	X	X
Evaluation of implemented EBP practice change														X	X

Activity	NUR 7801					NUR 7802					NUR 7803				
	Week 2	Week 4	Week 6	Week 8	Week 10	Week 2	Week 4	Week 6	Week 8	Week 10	Week 2	Week 4	Week 6	Week 8	Week 10
Meet with stakeholder to discuss change acceptance & maintenance									X	X		X		X	X
Results of Dissemination													X		X

Appendix D
Demographics and Descriptive Information

Variable	Description	Data Source	Range of Values	Level of Measurement	Time Frame for Collection
Patient Identifier	First letter of the patient's last name & last 3 numbers of the Medical Record Number	EMR (Epic)	N/A	Nominal	Beginning of project implementation
Age	Age at the time of intervention	EMR (Epic)	0-100	Continuous	Throughout project implementation
Gender	Sexual identity of patient	EMR (Epic)	Male Female	Nominal	Throughout project implementation
Race	Patient ethnicity	EMR (Epic)	African-American Caucasian Hispanic Asian Other	Nominal	Throughout project implementation
ICD- 10 Diagnosis	Classification of patient condition	EMR (Epic)	I00- I99	Nominal	Before & throughout project implementation
Initial appointment	Date scheduled to see physician at the clinic	EMR (Epic)	01/01/2024 & up	Continuous	Throughout project implementation
Follow up appointment	Date scheduled to return to the clinic	EMR (Epic)	01/01/2024 & up	Continuous	Throughout project implementation

Appendix E
TFU Checklist

Patient ID: X.XXX Follow up call date: X/XX/XX	YES	NO	N/A
Patient was called within three days of appointment?			
Did the patient pick up the phone?			
Was a voicemail left?			
Does the patient verbalize awareness and understanding of their plan of care & discharge instructions?			
Did additional patient education need to be provided?			
Has the patient filled prescriptions?			
Is the patient adhering to diet/ exercise recommendations?			
Has the patient completed lab work?			
Does the patient have a follow up appointment scheduled?			
Does the patient voice any concerns or have any symptoms of chest pain, difficulty breathing or adverse reactions?			
Patient attended follow up visit?			

Appendix F
TFU Patient Tracking & Monitoring

Patient ID	Patient initial appointment date	ICD- 10 diagnosis	TFU call date	Number of call attempts	Patient follow up appointment date	Patient reported understanding of care plan	Staff Initials
F3891	4/8/24	R00.2 I10	4/10/24	1	4/18/24	YES	Y.M
B5512	4/9/24	149.5 Z95.0	4/11/24	1	4/19/24	YES	Y.M
C6414	4/15/24	148.91 I50.20	4/17/24	1	5/9/24	YES	Y.M
S1113	4/15/24	I47.10	4/17/24	1	5/11/24	YES	Y.M
P9746	4/16/24	G45.9	4/19/24	1	5/11/24	YES	Y.M
P9508	4/22/24	I45.10	4/25/24	1	5/9/24	YES	Y.M
Q3380	4/23/24	I49.5	4/25/24	1	5/10/24	YES	Y.M
A7052	4/25/24	Z45.90	4/26/24	2	5/10/24	YES	Y.M
C8732	5/28/24	I35.0	5/31/24	2	6/17/24	YES	C.C
Q9967	5/28/24	I35.0	5/31/24	2	6/17/24	YES	C.C

X5561	5/28/24	I05.9	5/31/24	1	6/24/24	YES	C.C
01453	05/31/24	I35.0	6/3/24	2	6/24/24	YES	C.C
V1489	05/31/24	I35.0	6/3/24	2	6/25/24	YES	C.C
Z4812	05/31/24	I05.9	6/03/24	1	6/25/24	YES	C.C
D6494	06/07/24	I35.0	6/10/24	1	6/26/24	YES	C.C
P0533	06/07/24	Q21.10	6/10/24	1	6/27/24	YES	C.C
L1431	6/07/24	I34.0	6/10/24	1	6/28/24	YES	C.C
U4836	6/07/24	Z95.3	6/10/24	1	6/28/24	YES	C.C

Appendix G

TFU Staff Training

Schedule	Day 1	Day 2	Day 3
9 am-10 am	• Introductions • Knowledge check of TFU intervention pre-test	• TFU Education packet • Communication strategies	• Knowledge check of TFU intervention • Checklist post-test
10 am-11:30 am	• Discussion of intervention objectives/goals • Discussion of the importance of patient follow ups/compliance	• TFU PowerPoint presentation • Review patient charts & identifiers	• Demonstration of TFU calls with checklist (must receive a score of 90% to be cleared)
11:30 am-12 Noon	Break	Break	Break
12 Noon- 1 pm	• Review organizational protocols/policies	• Review of TFU patient tracking & monitoring • TFU checklist	• Ending remarks, questions & concerns

Appendix F

Fisher Exact Test

Observed and Expected Frequencies

	Voicemail_left			
Follow_up_Visit_attendance	No	Yes	OR	*p*
Yes	12[12.44]	4[3.56]	0.00	1.000
No	2[1.56]	0[0.44]		

Note. Values formatted as Observed[Expected].