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# The Use of Telehealth to Improve Communication and Reduce Rehospitalizations in Nursing Homes: A Quality Improvement Project

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# The Use of Telehealth to Improve Communication and Reduce Rehospitalizations in Nursing Homes: A Quality Improvement Project

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## Abstract

**Background:** Readmissions in healthcare are tied to higher mortality rates and are prevalent, reflecting the need for comprehensive strategies that focus on preventative measures and seamless post-discharge support to break the cycle of readmission and ultimately improve overall patient well-being. To prevent skilled nursing facility (SNF) resident rehospitalizations, improved communication and awareness of deteriorating conditions in SNF residents are crucial. The purpose of this project was to assess impact of an evidence-based educational program for SNF nursing staff focused on using telehealth to reduce resident rehospitalizations.

**Methods:** The QI project utilized a pre-post design to evaluate a SNF's educational program. Telehealth usage data was provided by the director of the telehealth program 1 month before the educational program and 1 month after the program. A survey was developed and administered following the education program to assess nurses' knowledge, attitudes, confidence, and barriers to using telehealth.

**Result:** Eighteen out of 30 eligible nurses (60%) participated in the DNP project. Most participants were registered nurses (*n* = 10, 55.6%), and 44.4% (*n* = 8) were licensed practical nurses. The majority (*n* = 16, 88.9%) were women between the ages of 18 and 60.

*Survey:* After the educational program all (*n* = 18, 100%) participants reported they knew where to locate telehealth equipment, and all reported an increased likelihood of using the telehealth program in caring for residents. The majority (*n* = 17, 94.4%) expressed confidence in using telehealth technology effectively to assess residents' conditions. The participants identified barriers to using the Telehealth Program, which included time constraints, lack of technical expertise, concerns about its usefulness, and equipment malfunctions.

*Use of Telehealth***:** There was no use of telehealth 1 month prior to the educational program compared to two telehealth calls in the month following the program.

**Conclusions:** Nurse participants see telehealth positively, yet barriers to adoption exist. Following the educational program there was an increase in telehealth, although, the usage remains minimal. Future QI initiatives should consider the role local champions can play in sustaining quality improvement initiatives in the SNF.

*Keywords:* Telehealth, rehospitalization from SNFs, facilitators and barriers in SNFs, post-acute care

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## Introduction

Older hospitalized adults are frequently transitioned into post-acute care (PAC) facilities for skilled nursing care and rehabilitation. The process of discharging patients from the hospital setting requires careful discharge planning, medication reconciliation, patient education, and timely follow-up scheduling (Coffey et al., 2022). The high readmission rates are an issue presently being researched by the United States. Though this Skilled Nursing Facility (SNF) has a telehealth program established to avert preventable hospitalizations, readmissions frequently occur during night shifts, holidays, and weekends. Readmissions can be detrimental to the physical and emotional health of the elderly, impacting their quality of life. When caring for post-acute patients, SNFs need a well-explored framework coupled with a strong discharge team that is informed and educated about the technology and capable of integrating it into the facility's standard of care.

### Problem Statement

One in five SNF residents (20%) are readmitted to a hospital within 30 days of hospital discharge. These readmissions are often prompted by various factors, including abnormal vital signs, altered mental status, uncontrollable pain, symptoms related to behavioral health, and respiratory issues such as shortness of breath (Ouslander et al., 2016). During the 30-day post-discharge period of SNF residents, Riester et al. (2022) observed a high frequency of hospital readmissions among residents, particularly for infectious, circulatory, respiratory, or genitourinary reasons.

Notably, the highest risk of readmission occurred within 2 weeks of hospital discharge to an SNF. This underscores the need for standardized procedures to monitor changes in clinical conditions and the importance of tailoring treatment approaches based on individual

comorbidities (Riester et al., 2022). Mileski et al. (2017) also emphasized the necessity of developing and educating healthcare personnel on treatment protocols customized for specific comorbidities such as congestive heart failure, post-myocardial infarction, and pneumonia.

Ouslander et al. (2016) found that many hospital transfers from SNFs can be prevented through collaborative efforts. The problem of unnecessary hospitalizations post-hospital discharge is closely associated with a lack of continuity in patient care. Insufficient communication among the healthcare team members often leads to suboptimal clinical outcomes, hindering patients' recovery and incurring financial consequences. This challenge is particularly pronounced among elderly patients with multiple comorbidities, numerous medications, and involvement with multiple specialty providers during their transition to the next stage of care (Yeaman et al., 2015). Inconsistent and incomplete information during the care transition has been identified as a significant contributor to unsafe patient transfer (Britton et al., 2017).

**Background**

The older American population is on the rise. According to the Administration for Community Living's 2021 annual overview, seniors have increased by 38% since 2009. In the United States, 55.7 million people ages 65 and above make up the whole population as of 2020. Projected is for the elderly population to increase to 80.8 million in 2040 and continue to rise to 94.7 million in 2060 (ACL, 2021). As the number of elderly Americans grows so will the demand for SNFs. A trend analysis observed a 5.3% increase in hospital discharge to post-acute care facilities. At the same time, transitional care from hospital to home declined to 5.4% from 2000 to 2015 (Werner & Konetzka, 2018). SNF care is covered on a short-time basis by Medicare Part A if the following criteria are satisfied: The patient is a Medicare Part A

beneficiary and has days available in their benefit period to use. Secondly, the patient has a qualifying 3-day inpatient hospital stay (CMS, 2022b).

Compared to the general adult population, older people recover from illness more slowly and have a decreased physiological reserve, making them more susceptible to infections and impairment. According to a study by Zisberg et al. (2015), elderly hospitalized for non-disabling diseases experience functional deterioration posthospitalization. Risk factors during the hospital stay, such as limited mobility, poor continence care, and inadequate nutrition intake, have been determined to contribute to the decrease in activities of daily living in older adults posthospitalization (Zisberg et al., 2015). As such, post-acute facilities have been established to satisfy the older population's needs on their road to recovery. Receiving care under the direct supervision of professionals can speed up the recovery of the elderly and allow them to regain function so they can resume regular activities and transition back home, living a normal life once again in the community (Wang et al., 2019).

**Scope of the Problem**

The scope of the problem is widespread, impacting the lives of patients and caregivers, hospitals, the health care system, and payers. Readmissions of older people in an acute setting present a significant problem in the United States. A retrospective analysis conducted by Burke, Whitfield et al. (2016) studying the risk factors, timing, and outcomes of hospital readmission from post-acute facilities identified that patients readmitted are more likely to be individuals of racial and ethnic minorities. Li et al. (2015) highlight how sociodemographic factors can have undesirable outcomes during post-acute care. The study's findings revealed that Black SNF residents, compared to White residents, have a 30% higher risk of rehospitalization. Through this

research and others, data is emerging that ethnicity is a predictor of clinical outcomes post-acute care.

Patients requiring rehospitalizations after post-acute care are much less likely able to return to the community. Instead, they switch living arrangements more frequently than patients with post-acute care without hospital readmission (Burke, Whitfield, et al., 2016). Post-acute facilities and hospitals need to be knowledgeable about the risk factors and demographic factors concerning hospital readmissions to identify high-risk individuals better and develop a tool that supports care delivery.

**Consequences of the Problem**

Readmissions are closely linked to increased mortality rates and lower patients' likelihood of ever returning back to the community (Burke, Whitfield, et al., 2016). Improved communication throughout the continuum of care and awareness is needed because specific diagnoses such as pneumonia and sepsis can lead to rehospitalizations. Patient populations with principal diagnoses at index admission transitioned to an SNF are vulnerable to various readmission reasons across the 30-day follow-up and require close monitoring (Riester et al., 2022).

With an average readmission cost of $15,500 in 2018, there were nearly 2.3 million hospital readmissions for Medicare beneficiaries within 30 days. Medicare patients experience the greatest readmission rates (16.9%) across all payers (Medicare, Medicaid, Private, and Self-Pay) (Agency for Healthcare Research and Quality [AHRQ], 2021). In addition, one in five of these admissions were due to the top four primary illnesses at index hospitalization, including chronic obstructive pulmonary disease, heart failure, septicemia, and diabetes (AHRQ, 2021).

Post-acute services significantly influence the cost of care in the older population. However, post-acute facilities represent varied levels of quality of care. As a result, payment and delivery reforms are increasingly focused on post-acute care facilities (Cross & Adler-Milstein, 2022). According to Sharma et al. (2021), when compared to SNF facilities in the greatest margin percentile, SNFs in the lowest profit margin percentile had a 17% greater probability of being fined under the SNF VBP. The average penalties under the SNF VBP program for SNFs in the lowest profit margin percentile have been reported as $22,312. SNFs with low-profit margins have been reported to have higher infection control citations. Penalty losses may negatively impact the SNFs' ability to invest in resources that might reduce rehospitalizations, worsen their quality issues, and prohibit them from improving (Sharma et al., 2021).

**Knowledge Gaps**

In a qualitative study where hospital and SNF providers were interviewed on patient transfers and readmissions, one of the barriers that emerged through the analysis was a need for more understanding of how post-acute care facilities function among clinicians (Britton et al., 2017). In a separate qualitative study paired with semi-structured interviews, clinicians also disclosed a need for more knowledge in SNF care delivery, quality, or patient outcomes when selecting patients for SNFs (Burke, Lawrence, et al., 2017). This lack of knowledge in post-acute care facilities services causes difficulty transitioning patients. With the proper understanding of SNF operations and available services, providers can better identify a safe and appropriate facility for patients and confirm that the facility can meet the patient's needs before the transition begins (Britton et al., 2017).

Digitalization has been changing healthcare for years. Even more so amid the COVID pandemic, communication systems began to be adopted throughout the health system to digitally

provide patient care while keeping patients safe and reducing exposure to COVID-19 (Cross & Adler-Milstein, 2022). However, SNFs have yet to benefit from the significant public and private sector investment in information technology due to their low internal resources to invest in digital solutions to better care for the older population. Digital transformation has been described by Cross and Adler-Milstein (2022) to be the most straightforward part of the process. Factors proposed to result in the effective use of technology are a more significant organizational change involving staff, procedures, and policies that are effectively coordinated (Cross & Adler-Milstein, 2022). A scoping review by Valk-Draad and Bohnet-Joschko (2022) highlighted the need for proper education and training before adopting telemedicine into nursing facilities to facilitate its success.

## Literature Review

The Cumulative Index of Nursing and Allied Health Literature (CINAHL), Cochrane Library, and PubMed were among the databases used in the search. The search strategies centered upon using keywords: telehealth in preventing readmission from SNFs, avoidable rehospitalizations, interventions to reduce acute care transfers, post-acute care, facilitators, and barriers in SNFs. The search was limited using the Boolean operators AND and OR. Using the keyword "telehealth" as an example, OR was used to look for synonyms or similar terms like "telemedicine," "telemonitoring," "telepractice," "telenursing," and "telecare." Similarly, AND was used to retrieve research articles only containing both words, such as "skilled nursing facilities" and "readmissions." Limiters placed on searches were full-text articles with abstracts, written in English, issued in peer-reviewed journals, and published within the last 5 to 7 years. The initial database search yielded 1113 articles using the search terms listed above. Boolean searchers further reduced the total number of articles to 105 articles. Through RefWorks, the

articles were screened for duplications utilizing the "find duplication tool." Forty-one duplicates were discovered throughout the search, and the remaining 64 were thoroughly searched. The literature matrix examining the seven articles is included in Appendix A. The remaining articles were screened for relevance based on their title and abstract. Articles were included in the literature review focusing on virtual clinical interventions or using quality checklist tools to reduce rehospitalizations. The articles had to take place in a PAC setting. Articles were excluded because they needed to be peer-reviewed, had been published more than 7 years prior, lacked an abstract, or were unavailable in full text. Through the screening process and inclusion/exclusion criteria, 52 articles were excluded. The seven publications chosen are summarized and synthesized in this paper.

**Literature Appraisal and Literature Matrix**

The selected articles were published between 2017 to 2022. The articles ' research evidence level was assessed using the Johns Hopkins Nursing Evidence-Based Practice (JHNEBP) evidence rating hierarchy (Dang & Dearholt, 2017). The JHNEBP model is a rating system that appraises the level and quality of the evidence based on the research study design (Dang & Dearholt, 2017). The level of evidence ranges from I to V and uses three quality ratings ranging from A (high quality) to C (low quality). The highest degree of evidence is represented by the highest quality grade (Grade A) and level of evidence (Level I). Of the seven articles, two were of level II evidence, which includes a systemic review and a prospective cohort study, and the remaining five level III articles were classified as one secondary analysis of a randomized-controlled trial (RCT) and four retrospective studies.

**Literature Summary**

This literature review aimed to synthesize existing research findings on the use of telehealth interventions for enhancing communication and preventing rehospitalizations. A substantial body of literature highlights the potential of telehealth to enhance communication among healthcare providers, patients, and caregivers. Several studies reviewed concluded that rehospitalizations from SNFs are preventable.

A prospective cohort study found that 35% of readmissions within 30 days in 23 SNFs from January 2013 to January 2015 were avoidable (Vasilevskis et al., 2017). These study findings indicated that diagnostic errors and the need for better management of condition changes were the most common reasons for preventable readmissions, underscoring the necessity for shared responsibility between hospitals and SNFs to reduce future readmissions.

Literature regarding the use of telehealth to improve communication between stakeholders and reduce rehospitalizations in SNFs highlights the effectiveness of telehealth in lowering readmissions within 30 days after hospital release (Friedman et al., 2021; Joseph et al., 2020). In a retrospective intervention study (Friedman et al., 2021), the efficacy of virtual cardiovascular care, including telehealth cardiology consultations within 30 days of SNF admission, was found effective in reducing 30-day readmission rates for cardiac-related and all-cause conditions among SNF patients. Additionally, the study findings highlighted the cost-saving benefits of telehealth, with approximately $860 in savings due to reduced readmissions.

In a study investigating the effectiveness of a virtual telehealth service provided by emergency physicians (EP) as an alternative to in-person emergency care delivery for SNF residents, residents who received telehealth care were less likely to require hospital admission compared to those who sought ED-based care (Joseph et al., 2020). The study included 4,606

SNF patients: 2,311 were part of the telemedicine group and 2,295 in the control group. The telehealth approach reduced hospital admissions, particularly for SNF residents experiencing exacerbations of chronic diseases like COPD and CHF.

Riester et al. (2022) conducted a nationwide retrospective cohort study of SNF residents found the most significant readmission risk occurs within 2 weeks of the initial hospitalization's discharge. The risk continues throughout the 30-day follow-up (Riester et al., 2022). In a similar inquiry, Gupta et al. (2019) highlighted poor communication and care coordination among providers as one of the common readmission rates among SNFs. The study authors recommended strategies to lower readmissions among SNF patients, including advocating for combining telemedicine with enhanced transitional care and utilizing SNF clinicians and tools such as those offered by the INTERACT Program to reduce unnecessary readmissions (Gupta et al., 2019). INTERACT is a product of Pathway Health Inc. and is publicly available on www.pathway-interact.com (Pathway Health, 2023). Examples of tools available through the INTERACT program include the Stop and Watch-Early Warning Tool, the SBAR Communication Form, or the Nursing Home to Hospital Transfer Form (Pathway Health, 2023). The goal of the INTERACT program, a multifaceted transitional care intervention program, is to enhance the flow of care from the hospital to the SNF. It necessitates skilled transition health care providers such as nurse practitioners (NPs), RNs, or LPNs to evaluate the SNF residents, help plan their care, and assist in medication reconciliation (Vasilevskis et al., 2017). In addition, the program has easily accessible clinical and educational tools to improve communication with hospitals and better identify, evaluate, manage, and document acute changes in the condition of SNF residents (Vasilevskis et al., 2017). In a secondary analysis of an RCT, Huckfeldt et al.

(2018) pointed out that one facility that used NPs to assist the introduction of INTERACT saw a 30% decrease in hospitalizations for all causes.

Mileski et al. (2017) conducted a study that examined the facilitators and barriers of QI initiatives and their effectiveness in lowering avoidable 30-day SNF-to-hospital readmissions. The study highlighted two key facilitators for the success of QI initiatives in reducing hospitalizations in SNFs. The first facilitator involved the engagement of specialized staff, including hospital pharmacists and post-discharge advocate nurses. These individuals played a pivotal role in supporting QI efforts. The second facilitator was the use of quality checklist tools such as Intervention to Reduce Acute Care Transfers (INTERACT), Shewart Cycle of Plan-Do-Study-Act (STAAR), and Situation Background Assessment Recommendation (SBAR). Most QI initiatives applied these tools either individually or in combination, leading to positive outcomes in the reduction of readmissions (Mileski et al., 2017).

These tools were found to improve the organization of care transfers for patients from SNFs to the hospital. Conversely, the study identified common barriers to reducing 30-day SNF-to-hospital readmissions. These barriers included tracking issues, such as staff lacking the necessary technical skills to use readmission tracking software effectively, the absence of clear criteria for determining when rehospitalization was appropriate, the need for continuous monitoring over an extended period to assess the effectiveness of QI initiatives, and the importance of considering seasonal variations in readmission rates. Another commonly noted barrier was implementation. Inadequate staff and physician engagement, limited use of accessible QI tools, and a lack of on-site medical professionals to adequately execute the key tasks were all challenges in implementing QI initiatives (Mileski et al., 2017).

## Synthesis of the Literature

Various themes emerged from the literature review, including telemedicine, utilizing tools from the INTERACT program, facilitators and barriers to reducing 30-day readmission rates, readmission in chronic conditions, and poor communication within the SNF and between the hospital and PAC.

### *Telemedicine*

Technology, such as telemedicine, can be effective in allowing for quick assessments to reduce ED transfers and facilitate faster treatment of acute infections and exacerbations of chronic diseases (Joseph et al., 2020). Utilizing televisits could lower hospitalization expenses and dangers such as cognitive and functional impairment, hospital-acquired infections, and patient falls. In a retrospective analysis by Friedman et al. (2021), $860 cost savings per patient was associated with a virtual cardiovascular care program for preventing readmissions of HF from SNFs. The anticipated cost of an in-person visit is five times more than that of a virtual visit, as is well known, with in-person visits bringing substantial charges to PAC institutions, including direct and indirect costs (Friedman et al., 2021).

### *Facilitators and Barriers to Reducing 30-day Readmissions*

QI initiatives have mainly shown success in lowering avoidable 30-day readmissions from SNFs. Determining what SNFs perceive as facilitators and barriers can be difficult, which is why researchers are conducting systemic reviews focused on exploring the factors associated with the failure or success of QI initiatives in SNF-to-hospital readmissions within 30 days. Mileski et al. (2017) reported challenges with QI initiative implementation as a common barrier. Specific examples included a need for more engagement of healthcare personnel, limited access to QI experts, and partial implementation of QI tools. Factors related to tracking were another

barrier to QI initiatives. This emphasizes the need to educate staff to improve their technical skills to use facilities' tracking tools and establish standardized criteria for staff to identify when rehospitalization is appropriate (Mileksi et al., 2017).

### *Poor Communication*

Poor communication within and between the hospital and PAC facilities has been a known barrier and is often considered an attributing factor to readmissions (Gupta et al., 2019; Vasilevski et al., 2017). To facilitate communication and information flow from the hospital to SNFs, Gupta et al. (2019) suggested utilizing a shared EHR platform. Implementing communication tools from the INTERACT program, like the SBAR or Stop and Watch-Early Warning tool, can eliminate the communication barrier and eliminate preventable rehospitalizations. In the prospective cohort study by Vasilevskis et al. (2017), a strategy set in place was a transition advocate called the SNF nurse within 24 hours of the patient's admission to the SNF as part of a plan to increase communication between the hospital and SNF.

## Description of the Current ePAC Program

The SNF has access to a telehealth center in a large tertiary hospital. Telehealth consultations are available for residents discharged within 30 days with signs, symptoms, or indications of a possible clinical deterioration or change in condition and offer SNF nurses additional support to care. The SNF is equipped with iPads on stands that can be taken to the residents' room and offer a 2-way live audio-video consultation to connect to an off-site provider. If a change in condition is noted that could prompt rehospitalization, the nurses can call the telehealth center. The off-site provider responds to the call, gathers report and if a consultation is needed, and utilizes the telehealth cart to do a real-time patient assessment. Post-consultation, the

progress note is documented electronically, and orders are signed and sent to the SNF facility by fax. The telehealth practitioner will also document the call in the ePAC tracking log.

Virtual roundings are conducted daily at 2:00 pm on residents with high-risk diagnoses commonly leading to readmission, including heart failure (HF), COPD, sepsis, and pneumonia. Patients that meet the criteria are rounded for a maximum of 7 consecutive days.

Virtual consultations are another important clinical resource available 24 hours, 7 days a week that can provide SNF staff additional support, such as real-time assessment and expedited treatment, to reduce avoidable rehospitalizations. Though the virtual roundings are conducted daily, SNFs should also seek timely virtual consultations for residents who show signs of change in condition to prevent preventable readmissions to the hospital. This project aimed to build upon the ePAC program by reinforcing current standards and implementing a comprehensive and evidence-based educational program on identifying a change in condition, utilizing the telehealth cart, and connecting to the ePAC. Telehealth services can prevent SNF residents' readmission to acute care hospitals.

## Purpose

The purpose of this project was to assess impact of an evidence-based educational program for SNF nursing staff focused on using telehealth to reduce resident rehospitalizations. The project explored SNF nurses' knowledge of, attitudes on, confidence in, and barriers to using telehealth following the educational program. Additionally, usage of telehealth by SNF nurses before and after the educational program was evaluated.

## Definition of Terms

### Skilled Nursing Facilities

The Centers for Medicare and Medicaid Services (CMS, 2022b) defines SNFs as a type of residential care facility that provides 24-hour medical care and supervision to individuals who require skilled nursing services, such as those recovering from surgery, managing chronic illnesses, or coping with disabilities. Skilled nursing homes are staffed by licensed nurses and other healthcare professionals trained to provide specialized care and support to residents. These facilities are also regulated and licensed by state and federal agencies to ensure they meet specific standards of care and safety for their residents (CMS, 2022b).

### Telehealth

Telehealth is delivering healthcare services, information, and education using telecommunication technologies such as audio or video technology. Numerous services, including consultations, remote monitoring of conditions, and the transmission of medical data, can be provided through telehealth (Gajarawala & Pelkowski, 2021).

## Conceptual Underpinning and Theoretical Framework

The theoretical framework guiding the DNP project is the Promotion Action on Research Implementation in Health Services (PARIHS) framework. Implementation is seen by the PARIHS framework as a complicated, multilayered process with three interacting steps: *facilitation, context,* and *evidence*. According to the framework, there must be clarity regarding the type of *evidence* being used for the implementation of evidence-based practice to be successful. The *context* refers to the environment in which the suggested change is to be executed and the presence of appropriate *facilitators* to steer a successful change process (Rycroft-Malone, 2004).

The PARIHS framework is grounded in the idea that achieving successful implementation relies on these three core elements. The framework is a valuable guide for practitioners and researchers for informing, framing, and guiding an intervention. *Evidence*, according to PARIHS, is obtained from a range of resources, including research, local data/information, clinical experience, and patient experience (Rycroft-Malone, 2004). During the planning of an intervention, the *evidence* strength and quality of the evidence is assessed. Integrating and translating evidence into practical application necessitates open dialogue and the establishment of a common understanding of the benefits, drawbacks, risks, and advantages of the research findings (Rycroft-Malone, 2004). This is a dynamic process that calls for a collaborative undertaking among stakeholders to determine the clinical evidence and applicability of the evidence to the local context (Kitson et al., 2008).

For successful implementation, the *contextual factors (i.e., culture, leadership)* play a crucial role in how well the evidence is put into place (Rycroft-Malone, 2004). Effective *facilitation* is essential to support the implementation process. Facilitators are responsible for steering the project and simplifying the process of translating evidence into practice. To fulfill their role effectively, facilitators must possess the appropriate roles, skills, and knowledge to assist the staff or organization in actualizing the evidence (Rycroft-Malone, 2004). By providing facilitators with the skills, knowledge, and resources, the implementation process can be guided to a successful outcome (Kitson et al., 2008).

## Methodology

The current project built on the work done by previous FIU DNP students at the same facility (Bringas, 2022; Quintana, 2021). The QI project utilized a pre-post design to evaluate a facility educational program. Telehealth usage data was provided by the Director of the

Telehealth Program for 1 month before the educational program and 1 month after the program. Nursing survey data was only collected after the educational program as previous QI initiatives at the facility provided baseline information. The protocol received approval from the Florida International University Institutional Review Board (IRB) (Appendix B).

In collaboration with the stakeholders, a previously developed educational video was revised. A 15-minute educational video was created and narrated by the DNP student and integrated into standard training at the SNF facility by the director of nursing. The educational program is described below. Two weeks following the mandatory educational program, the nurses were given the opportunity to complete a voluntary survey (see Appendix F). Additionally, telehealth service usage data was analyzed 1 month before and 1 month after the completed educational program. These deidentified data provided by the director of the telehealth program included the reason for using telehealth.

**Setting and Participants**

The quality improvement project occurred at a for-profit SNF facility in South Florida. The facility's capacity is 223, with 45 nurses currently working at this SNF. The city served by the facility is racially and ethnically diverse. The population is primarily of Hispanic decent, 57.1%. According to 2021 data, the population living in the community include: 72.1% White (38% Hispanic and 34.1% non-Hispanic), 17.3% multiracial of Hispanic decent, 3.38% Black or African American (non-Hispanic), 3.08% Asian (non-Hispanic), 1.8% Multiracial (non-Hispanic), 0.5% other (non-Hispanic) (Data USA, 2023).

The SNF has a partnership with a large non-profit hospital in South Florida that introduced its on-demand telehealth services in 2016 and provides a variety of services such as Telehealth-Intensive Care Unit (ICU), Telehealth-Progressive Care Unit (PCU), Telehealth

Pharmacy, Telehealth-Neonatal Intensive Care Unit (NICU), Telehealth Pediatrics, in-home patient monitoring, various specialty tele consults, and transfer coordination among various specialties. Specifically, it is the Telehealth-ICU/PCU that provides telehealth clinical services for Post-Acute Care and SNF facilities.

**Educational Program**

The facility adopted the 15-minute educational video as standard training for the SNF nurses. The video covered seven topics focused on integrating telehealth into the care of SNF patients to prevent rehospitalizations, consequences of preventable rehospitalizations, why and how to use the ePAC, the basics of using the iPad device, and a presentation of a case scenario showcasing a change in a patient's condition and the use of telehealth to consult and connect with the ePAC team.

**Participant Recruitment**

The recruitment of participants was carried out at the SNF facility through an email invitation sent by the director of nursing at Riviera Health Resort. Nurses working on two floors of the facility experienced in providing skilled nursing care to residents were eligible. The DON sent an email to all nurses on these floors, regardless of their work status (full-time, part-time, PRN, per-diem, or float), inviting them to participate in the survey study by providing a flyer about the study.

**Measures**

The measures used to assess the impact of the educational intervention were the posttest survey and telehealth usage data. The post-survey included demographic information (e.g., gender, age, race, level of education) and nine statements to assess the nurses' knowledge, confidence, and attitude toward using the ePAC program for virtual rounding. The survey

responses included a mix of response formats, including Likert scale responses, yes/no queries, and select-all-that-apply questions for these nine items. The Likert scale employed a four-point rating system, ranging from *strongly agree* and *agree* to *disagree* and *strongly disagree*.

Additionally, the impact of the educational program was assessed by calculating the number of calls to the Telehealth Center (1 month before program versus 1 month after the program). These data were provided by the director of the telehealth program. The data was deidentified and only included the number of calls to the Telehealth Center and the primary reason for the telehealth calls was provided.

**Data Management and Analysis**

The survey data were entered into the FIU Qualtrics online system and stored as a digital file on a password-protected digital cloud. Hard documents were scanned and then promptly destroyed. All data was password-secured to ensure privacy. Descriptive statistics were used for this QI project to analyze all survey data. Survey item categories were reported in the Results section (see below). In Table 2 and Table 3, categories were combined: *agree/strongly agree* and *disagree/strongly disagree*. Telehealth usage rates 1 month before the educational program was compared to the time 1 month following the educational program.

## Results

Of 30 eligible nurses, ($n$ = 18, 60%) participated in the QI project. The demographics of these nurses are shown in Table 1. Among the survey participants, $n$ = 8 (44.4%) were licensed practical nurses (LPNs), and n = 10 (55.6%) were registered nurses (RNs). Most were between 18 and 60+ years old, and (n = 16, 88.9%) were women. Ten (55.6%) had an associate degree in nursing (ADN) or associate of science degree in nursing (ASN). Most participants were White and of Hispanic descent ($n$ = 17, 94.4%).

## Survey Results

Tables 2 and 3 displays the results of the survey, organized by questions (Q). As displayed in Table 2, Question 1, all (*n* = 18. 100%) of the participants reported that they were more likely to use the Telehealth Program in caring for residents. Regarding Question 2, (*n* = 17, 94.4 %) agreed to strongly agreed that they felt more confident that telehealth would make their daily work easier. All (*n* = 18, 100%) agreed they felt more confident in their ability to use telehealth technology and were familiar with using the ePAC Consult Workflow sheet to evaluate a resident's condition and detect changes (Question 3 & 5, Table 2).

Additionally, all the participants reported that they knew where to find the telehealth equipment (Questions 4, Table 3). When asked if they learned new information from the educational video (*n* = 10, 55.6%) answered "no." The participants identified barriers to using the telehealth program as lack of time, lack of technical expertise, concerns about the usefulness of the telehealth program, and equipment malfunctions (Question 8). In general, participants found the educational video to be helpful (*n* = 12, 66.7%) and somewhat helpful (*n* = 6, 33.3%) according to responses to Question 9.

## Telehealth Usage

One month, preceding the intervention (August 20 to September 20, 2023) the telehealth center received zero calls from the SNF. In the month following the intervention (from September 23 to October 23, 2023), two calls were received from the SNF. Of these two calls, one led to a 911 call due to an ePAC consult evaluation. The reasons for these telehealth calls included changes in the patient's condition and inquiries about medication information.

**Table 1**

*Demographics Characteristics of Survey Respondents*

| **Variables** | ***N* = 18 (60%)** |
|---|---|
| Age | |
| 18-24 | 2 (11.1%) |
| 25-59 | 15 (83.3%) |
| 60+ | 1 (5.6%) |
| Prefer not to answer | 0 |
| Gender | |
| Male | 2 (11.1%) |
| Female | 16 (88.9%) |
| Prefer not to answer | 0 |
| Race | |
| American Indian/Alaska Native | 0 |
| Asian | 0 |
| White or Caucasian | 17 (94.4%) |
| Black or African American | 1 (5.6%) |
| Native Hawaiian or Pacific Island | 0 |
| Other | 0 |
| Prefer not to answer | 0 |
| More than one race | 0 |
| Hispanic or Latina/o | |
| Yes | 17 (94.4%) |
| No | 1 (5.6%) |
| Nursing license | |
| Licensed Practical Nurse (LPN) | 8 (44.4%) |
| Registered Nurse (RN) | 10 (55.6%) |
| Advanced Practical Registered Nurse (APRN) | 0 |
| Highest level of education | |
| LPN certificate | 8 (44.4%) |
| Associate Degree in Nursing (AND)/Associate of Science Degree in Nursing (ASN) | 10 (55.6%) |

| | |
|---|---|
| Years worked in Skilled Nursing Facility (SNF) | |
| Less than 1 year | 7 (38.9%) |
| 1-4 years | 8 (44.4%) |
| 5-10 years | 1 (5.6%) |
| 10 years or more | 2 (11.1%) |
| Shift | |
| Day | 8 (44.4%) |
| Evening | 0 |
| Night | 10 (55.6%) |
| PRN | 0 |

**Table 2**

*Survey Responses*

| **Question** | **Disagree to Strongly Disagree *n* (%)** | **Agree to Strongly Agree *n* (%)** |
|---|---|---|
| Q1. I am now more likely to use the Telehealth Program in caring for residents. | 0 | 18 (100%) |
| Q2. I now feel more confident that telehealth will make my daily work easier. | 1 (5.6%) | 17 (94.4%) |
| Q3. I now feel more confident in my ability to use the telehealth technology. | 0 | 18 (100%) |
| Q5. I am familiar with the process of utilizing the ePAC Consult Workflow sheet to evaluate a resident's condition and detect any changes. | 0 | 18 (100%) |

**Table 3**

*Yes or No Survey Responses*

| | **No *n* (%)** | **Yes *n* (%)** |
|---|---|---|
| Q4. I know where to find the equipment used for the Telehealth Program | 0 | 18 (100%) |
| Q6. Was there new information that you were unaware of? | 10 (55.6%) | 8 (44.4%) |
| Q7. Are there any barriers with using the telehealth technology not addressed in the video? | 8 (44.4%) | 10 (55.6%) |

## Discussion

The project findings indicate nurses generally have a positive perception of telehealth. The nurse participants expressed confidence in telehealth's ability to streamline their daily tasks. However, the nurse participants identified several barriers to using the telehealth program, including a shortage of time, lack of technical expertise, concerns with the ease of use, doubts regarding the program's usefulness, and equipment malfunctions. These barriers align with findings from another study (Mileski et al., 2017). Although the nurses' report a favorable opinion about the telehealth program, the program appears still to be underutilized. This suggests a need to explore how to provide staff with support to address perceived barriers.

Although there was an increase in telehealth usage data in the month following the educational program, the increase was from no use to being used twice after the program. Although this progress is promising, the usage remains minimal. Ongoing assessment is crucial for addressing barriers and making informed adjustments to ensure that telehealth is integrated, contributing to sustained positive outcomes. In line with the PARIHS framework, an educational program was developed based on *Evidence*. In the process of reviewing the literature, a focus was placed on utilizing robust and reliable evidence aligned with professional consensus and

applicable to the patient's needs (Rycroft-Malone, 2004). This was accomplished through assessment involving the relevant stakeholders (Bringas, 2022; Quintana, 2021). This DNP project builds on past quality improvement projects conducted at the facility; nurses at the facility previously reported a positive perspective toward the use of telehealth (Bringas, 2022; Quintana, 2021).

The DNP project evaluated the effectiveness of an evidence-based educational video. The survey gathered feedback from the participants regarding their thoughts on the video and the usefulness of telehealth in caring for SNF residents.

Following the PARIHS framework, the *context* refers to the specific place where the planned change will happen, which in this case was the SNF. Before putting the change into action, the DNP student gained insight into the SNF's values and beliefs by actively engaging with the SNF staff and its leaders during the preparation phase (Rycroft-Malone, 2004). The DNP student assumed the role of an external "*facilitator"* for the QI project, offering guidance, knowledge, and support to the internal facilitators (stakeholders and nurses) consistent with the PARIHS framework. The strategies employed during the implementation phase included educating internal facilitators on rehospitalizations in SNFs and providing them with a hands-on learning experience to help with the adoption of telehealth in preventing SNF resident rehospitalizations (Kitson et al., 2008).

To facilitate positive change in preventing rehospitalizations at PAC facilities, it is helpful to have someone lead the effort often called a "champion." According to Huckfeldt et al. (2018), having support from champions is an effective strategy for providing training and ensuring the successful implementation of QI initiatives. This support helps to keep QI projects on track. Other researchers highlighted the significance of champions with expertise above and

beyond that of their peers in long-term care facilities to boost staff adherence to evidence-based recommendations (Hall et al., 2021). These findings underscore the pivotal role of champions in promoting and sustaining quality improvement efforts in SNFs.

### Limitations

In evaluating these findings, it is important to consider several limitations. First, slightly more than half of the eligible nurses chose to participate in the study. It is unknown if the nonparticipants would have the same perspective. Second, the data collected from the participants consisted solely of post-intervention survey responses. Consequently, recent information regarding their viewpoints prior to the intervention is lacking. Nevertheless, prior research done by previous DNP students work has provided insights into the feelings and perspectives of the SNF nurses before educational interventions took place. Finally, it is unknown if these findings are generalizable to other SNFs.

## Implications for Advanced Practice Nursing

Advanced practice registered nurses (APRN) are highly skilled and educated healthcare professionals who have completed a master's or doctoral degree in nursing. APRNs advanced clinical knowledge, expertise, and ability to think critically and make evidence-based decisions are key skills in their ability to be leaders (American Association of Colleges of Nursing [AACN], 2011). Because on their expertise and training, they are ideally positioned to provide guidance and support in developing and implementing QI projects. APRNs can provide valuable support for QI initiative by sharing their expert knowledge, mentoring, and coaching, collaborating with interdisciplinary teams, and advocating for patients. By working together, APRNs and RNs can improve the quality of care provided to patients in healthcare settings.

## Conclusion

Despite programs like the SNF Value-Based Purchasing Program created by the Centers for Medicare and Medicaid Services, the number of patients readmitted to hospitals after being discharged to SNFs remains high, which adversely affects the quality of life of patients and has preventable financial implications. Improved communication between healthcare settings is one of the practical measures needed to promote the improvement of underperforming facilities and reduce readmissions of nursing home residents. In post-acute care facilities, telehealth has been linked to decreased readmissions and emergency department visits. SNF institutions should consider giving periodic, hands-on educational training for nurses about the telehealth program to help them enhance their technical abilities.

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# Appendix A: Literature Matrix

| First Author/Year | Study Design | Sample | Measures | Results | Implications for Project |
|---|---|---|---|---|---|
| Friedman et al. (2021) | Retrospective analysis | Data sources from August 2020-February 2021. Among 11 SNF facilities in New York, 185 patients received virtual cardiovascular care, of which 40 met the study's inclusion criteria and were further analyzed. | Hospital readmission, cardiac etiology, all-cause etiologies | Virtual cardiovascular care may be helpful and efficient in reducing 30-day readmission rates for cardiac-related and all-cause conditions for SNF patients. Decreased readmissions reduce healthcare expenses by $860 per patient, leading to cost savings. | Telemedicine appears beneficial to the SNF setting regarding patient care and cost efficiency. |
| Gupta et al. (2019) | Quantitative retrospective data analysis | Data sources from 2007-2012 American Hospital Association Annual Survey, Area Health Resources Files, CMS Medicare cost reports, and CMS Hospital Compare | Hospital readmission within 30 days of discharge for AMI, CHF, and pneumonia | Based on GEE models, HBSNFs were linked to decreased incidence of AMI and pneumonia readmission. | Utilizing education and tools to improve communication and coordination of care between hospitals and SNFs could have the potential to reduce readmissions. |
| Huckfeldt et al. (2018) | Secondary analysis of an RCT | 264 SNFs from across the United States | All-cause hospitalizations, PAHs, emergency department visits without admission, and 30-day hospital readmissions | All-cause rehospitalizations were considerably reduced when more fundamental INTERACT tools were reported to have been used. In both the intervention and control SNFs, motivation and incentives were more crucial for lowering hospitalizations and PAHs than assistance and training. | Identify ways in which incentives can be incorporated to implement and maintain the QI program in SNFs. |
| Joseph et al. (2020) | Retrospective, observational study | A total of 2,606 patients from six urban SNFs in the United States comprising both the intervention and comparison group | All-cause hospitalization, reasons for telemedicine activation, admission rate across most common chronic diseases (CHF, COPD, DM). | SNF residents who received televisits from emergency physicians were less likely to be admitted to the hospital compared to patients transferred to the ED. | Telemedicine services decrease adverse effects related to hospitalizations. |
| Mileski et al. (2017) | Systemic review of quasi-experimental studies | 10 articles were used using inclusion and exclusion criteria | Each article's facilitators and obstacles to the QI activities were described in themes agreed upon by all authors. | Most common facilitator for QI initiatives in decreasing preventable 30-day SNF-to-hospital admissions identified as the incorporation of specialized staff. Poor tracking and implementation were identified as the most common barrier. Proposes the implementation of quality checklist tools, post-discharge follow-up and use of advocate nurses in the transition of care. | Identification of potential facilitators and barriers during QI implementation. Implementation of quality checklist tools and incorporation of specialized staff to provide education to facilities staff to familiarize them with the protocols and tools of the QI initiative. |
| Riester et al. (2022) | National retrospective cohort study | Medicare beneficiaries who were hospitalized due to pneumonia and sepsis during the period of July 2012 to July 2015 | 30 unplanned readmission, diagnoses for patients with an index hospitalization for pneumonia and sepsis | Hospital readmissions for infectious, circulatory, respiratory, and genitourinary reasons were frequently among older persons who were transferred to SNFs after being hospitalized for pneumonia or sepsis. | Close monitoring needed in patients with index hospitalization for pneumonia and sepsis. Improved communication between hospital and SNF staff is encouraged during transitional care. |
| Vasilevskis et al. (2017) | Prospective cohort study | Hospital physician and SNFs staff perspective on 1808 Medicare readmissions discharged to one of 23 SNFs within 30 days of hospital discharge. | Structured root-cause analyses (RCA) were conducted on the rehospitalizations from participating SNFs to the same hospital. Data from RCAs reported readmissions' avoidance and contributory causes. | 35% of the readmissions to the index hospital were reported as avoidable by the hospital, SNF staff, or both. Reasons for readmission of patients varied among facilities. Most common rehospitalization factors leading to hospital readmission were diagnostic errors and better management of condition changes. | A combination of telemedicine and the INTERACT program could effectively reduce rehospitalizations among SNF residents post-hospital discharge. |

# Appendix B: IRB Exemption Approval Letter

FIU | FLORIDA INTERNATIONAL UNIVERSITY

**Office of Research Integrity**
**Research Compliance, MARC 430**

## MEMORANDUM

| | |
|---|---|
| **To:** | Dr. Ellen Brown |
| **CC:** | Mahsa Malekiha |
| **From:** | Kourtney Wilson, MS, IRB Coordinator KMW |
| **Date:** | July 31, 2023 |
| **Protocol Title:** | **"**The Use of Telehealth to Improve Communication and Reduce Rehospitalizations in Nursing Homes: A Quality Improvement Project" |

The Florida International University Office of Research Integrity has reviewed your research study for the use of human subjects and deemed it Exempt via the **Exempt Review** process.

| | | | |
|---|---|---|---|
| **IRB Protocol Exemption #:** | IRB-23-0412 | **IRB Exemption Date:** | 07/31/23 |
| **TOPAZ Reference #:** | 113418 | | |

As a requirement of IRB Exemption you are required to:

1) Submit an IRB Exempt Amendment Form for all proposed additions or changes in the procedures involving human subjects. All additions and changes must be reviewed and approved prior to implementation.
2) Promptly submit an IRB Exempt Event Report Form for every serious or unusual or unanticipated adverse event, problems with the rights or welfare of the human subjects, and/or deviations from the approved protocol.
3) Submit an IRB Exempt Project Completion Report Form when the study is finished or discontinued.

***Special Conditions:*** N/A

For further information, you may visit the IRB website at http://research.fiu.edu/irb.

KMW

# Appendix C: Approval Letter

RIVIERA
HEALTH RESORT
"Healthcare Redefined"

July 17th, 2023

Ellen L. Brown EdD, MS, RN, FAAN
Associate Professor
Nicole Wertheim College of Nursing & Health Sciences
Florida International University

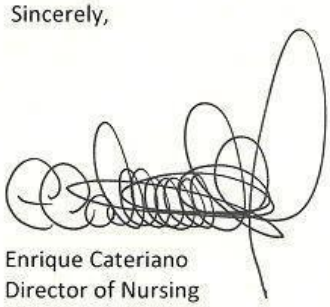
Dear Dr. Brown,

Thank you for the opportunity to support Mahsa Malekiha's student project entitled "*The Use of Telehealth to Improve Communication and Reduce Rehospitalizations in Nursing Homes: A Quality Improvement Project*" at Riviera Health Resort.

We understand the project will be implemented at our facility this summer at a convenient time to be decided. At our facility I will be having all nursing staff view an educational video "Preventing Rehospitalization: The Role of Telehealth" created by Mahsa Malekiha and a previous DNP Student. After most of our staff has seen the video, Mahsa Malekiha is invited to come to Riviera Health Resort to administer a post-intervention questionnaire.

We are aware nurse participation in the project is entirely voluntary. All data collected by Mahsa Malekiha will be de-identified. Before conducting this project, the Florida International University Institutional Review Board (IRB) will evaluate and approve the study protocol. Once approved, the project will be carried out over two months. I support our nurses' participation in this project and look forward to working with you.

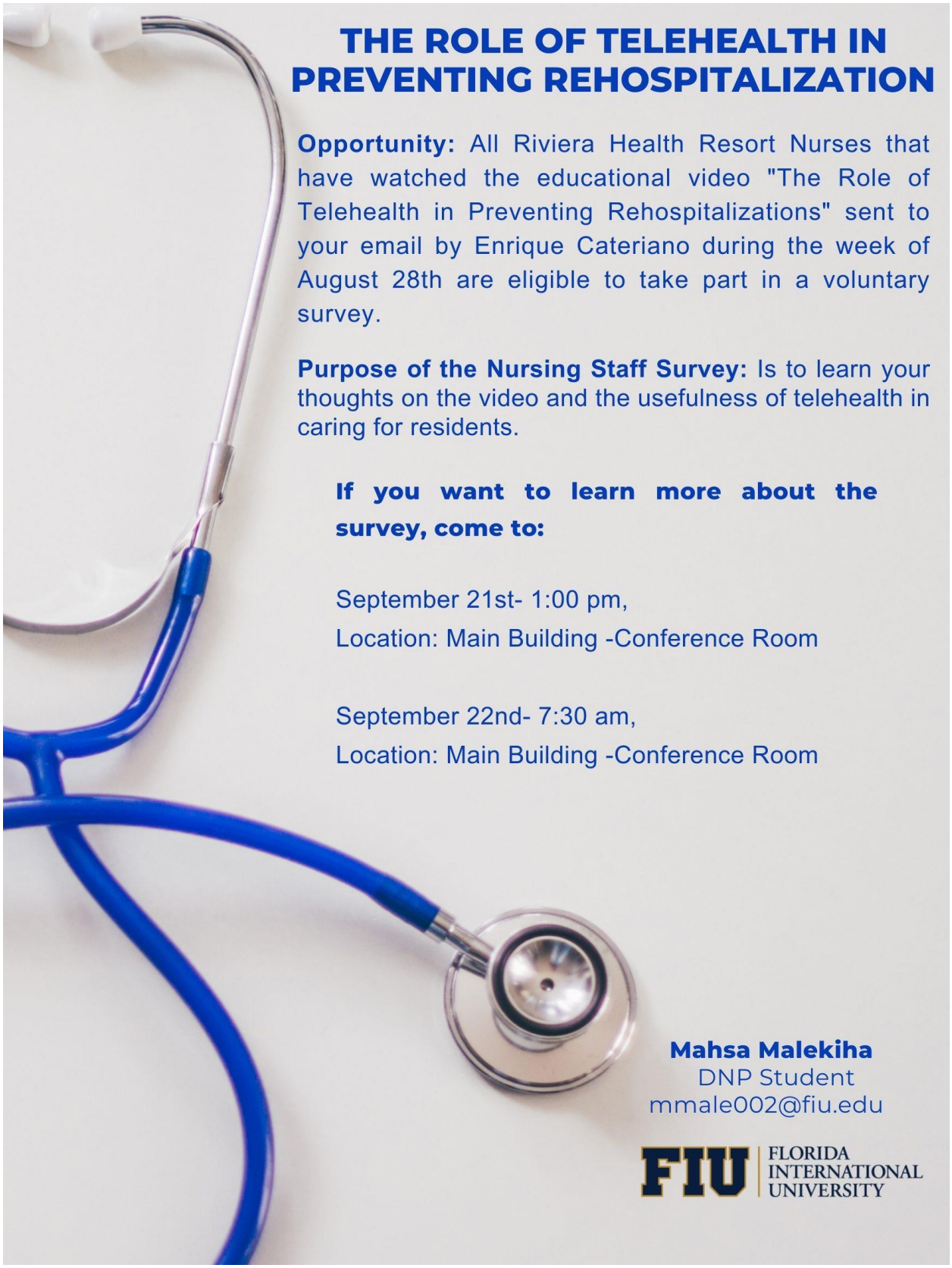
Sincerely,



Enrique Cateriano
Director of Nursing
Riviera Health Resort

6901 Yumuri Street • Coral Gables, Florida 33146 • Phone 786-517-6999
www.rivierahealthresort.com

**Appendix D: Informational Flyer**



## Appendix E: Informational Letter

FLORIDA INTERNATIONAL UNIVERSITY

**INFORMATIONAL LETTER**

# The Use of Telehealth to Improve Communication and Reduce Rehospitalizations in Nursing Homes: A Quality Improvement Project

Hello, my name is Mahsa Malekiha. You have been chosen to be in a research study to assess your thoughts on the video "The Role of Telehealth in Preventing Rehospitalization." The purpose of the nursing staff survey is to learn your thoughts on the video and the usefulness of telehealth in caring for SNF residents.

Participation in this survey will take 10 minutes of your time. If you agree to complete the survey, I will ask you to do the following things:

1. Complete the Demographic and Post-Intervention Survey if you have watched the video" The Role of Telehealth in Preventing Rehospitalization" sent to your email three weeks ago by your Director of Nursing, Enrique Cateriano.

There are no foreseeable risks or benefits to you for participating in this study. It is expected that this survey will benefit us in learning about your thoughts on the usefulness of telehealth in caring for residents.

There is no cost or payment to you. If you have questions while taking part, please stop me and ask.

You *will* remain anonymous. Any data collected by Mahsa Malekiha will be de-identified as soon as it is gathered to maintain participant confidentiality. The physical copies will be digitized and stored as digital files on a password-protected digital cloud. Hard documents will be scanned and then promptly destroyed on-site.

If you have questions for one of the researchers conducting this study, you may contact Mahsa Malekiha at (754) 610-9754.

Principal Investigator of this study is FIU Professor Dr. Ellen Brown ebrown@fiu.edu.

If you would like to talk with someone about your rights to be a subject in this research study or about ethical issues with this research study, you may contact the FIU Office of Research Integrity by phone at 305-348-2494 or by email at ori@fiu.edu.

Your participation in this research is voluntary, and you will not be penalized or lose benefits if you refuse to participate or decide to stop. You may keep a copy of this form for your records.

## Appendix F: Nursing Survey

**Did you see the video "Preventing Rehospitalization: The Role of Telehealth"?**

☐ Yes
☐ No

If you answered "No": Thank you for your response. If you have not watched the video, stop here and please watch the video. Your participation is greatly appreciated.

Please for each item select the single best response.

**1. What is your age?**

☐ 18-24
☐ 25-59
☐ 60+
☐ Prefer not to answer

**2. What gender do you identify with?**

☐ Male
☐ Female
☐ Prefer not to answer

**3. Which Race do you identify with?**

☐ American Indian/Alaska Native
☐ Asian
☐ White or Caucasian
☐ Black or African American
☐ Native Hawaiian or Pacific Islander
☐ Other (please specify):
☐ Prefer not to answer
☐ More than one Race

**4. Are you Hispanic or Latina/o?**

☐ Yes

☐ No

**5. What is the highest nursing license you have obtained?**

☐ Licensed Practical Nurse (LPN)

☐ Registered Nurse (RN)

☐ Advanced Practice Registered Nurse (APRN)

**6. What is the highest level of education you received? Please only indicate your highest nursing degree.**

☐ LPN Certificate

☐ Associate's Degree in Nursing (ADN)/Associate of Science Degree in Nursing (ASN)

☐ Master of Science in Nursing (MSN)

☐ Doctor of Nursing Practice (DNP)

**7. How many years have you worked in this Skilled Nursing Facility?**

☐ Less than 1 year

☐ 1-4 years

☐ 5-10 years

☐ 10 years or more

**8. What shift do you predominantly work?**

☐ Day shift

☐ Evening shift

☐ Night shift

☐ PRN

**Please read each of the following statement carefully and please select one response for each item.**

*After viewing the educational video:*

**1. I am now more likely to use the Telehealth Program in caring for residents.**

☐ Strongly Disagree

☐ Disagree

☐ Agree

☐ Strongly Agree

**2. I now feel more confident that telehealth will make my daily work easier.**

☐ Strongly Disagree

☐ Disagree

☐ Agree

☐ Strongly Agree

**3. I now feel more confident in my ability to use the telehealth technology.**

☐ Strongly Disagree

☐ Disagree

☐ Agree

☐ Strongly Agree

**4. I know where to find the equipment used for the Telehealth Program.**

☐ Yes

☐ No

**5. I am familiar with the process of utilizing the ePAC Consult Workflow sheet to evaluate a resident's condition and detect any changes.**

☐ Strongly Disagree

☐ Disagree

☐ Agree

☐ Strongly Agree

*In thinking about the educational video:*

**6. Was there new information that you were unaware of?**

☐ Yes

☐ No

☐ If yes (please specify):

**7. Are there any barriers with using the telehealth technology not addressed in the video?**

☐ Yes

☐ No

**8. If yes, what barriers do you anticipate in using the Telehealth Program?**

**(for this item indicate all that apply)**

☐ Lack of time

☐ Lack of technical expertise

☐ Ease of use of the Telehealth Program

☐ The usefulness of the Telehealth Program

☐ Equipment malfunction

☐ Other (please specify):

**9. Overall, how helpful was the educational video?**

☐ Very helpful

☐ Somewhat helpful

☐ Not helpful

Thank you

## Appendix G: Telehealth Usage Tracking Form

| **Data Collection Sheet** | |
|---|---|
| **# of Calls to the Telehealth Center Overall** | |
| **# of Riviera initiated 911 calls reported to ePAC** | |
| **# of ePAC initiated 911 calls based on evaluation** | |
| **Reason for Telehealth calls** | |