Effectiveness of Influenza Vaccination Screening: A Quality Improvement Project to Increase Inpatient Vaccination Rates among Veterans

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Seasonal influenza is a viral health condition affecting individuals worldwide each and every year. To promote positive health outcomes for all and to prevent the development and spread of the influenza virus throughout influenza season, the Centers for Disease Control and Prevention (CDC) recommends that all individuals six months of age or older receive a yearly influenza vaccine (CDC, 2019b). In addition, the Healthy People 2030 initiative has included increasing the overall number of Americans who receive an annual influenza vaccine as one of its objectives, with a goal percentage of 70% (Office of Disease Prevention and Health Promotion, 2022). Throughout the 2018-2019 flu season, 62.6% of American children ages six months to 17 years and 45.3% of adults 18 years and older received the influenza vaccine (CDC, 2019a). Although yearly influenza vaccination rates have been trending upward, the overall percentage of Americans who receive the influenza vaccine each year remains low, especially among hospitalized individuals (Joint Commission, 2018). This paper addresses a quality improvement project focused on influenza vaccination among hospitalized adults, along with related eligibility screening and nursing documentation.

Problem Statement and Background

Globally, there are approximately 1 billion diagnosed cases of influenza occurring yearly, with between 290,000 and 650,000 of these cases resulting in death (World Health Organization, 2019). Within the state of Minnesota, 2,522 influenza-related hospitalizations and 126 influenza-related deaths were reported throughout the 2018-2019 flu season (Minnesota Department of Health, 2019). When one individual is diagnosed with influenza, the contagious nature of the virus puts other individuals at risk for also contracting the influenza virus (U.S. Department of

Health and Human Services, 2017). As exposure continues and individuals continue to spread the influenza virus to one another, a community outbreak of the virus may occur. The further the virus travels, this outbreak has the potential to become an epidemic or even a pandemic, posing a significant economic burden for both individual households and the national or global healthcare systems (U.S. Department of Health and Human Services, 2017). To further prevent the widespread effects of the seasonal influenza virus, a greater understanding of herd immunity is essential among community members. This concept encourages individuals to receive the influenza vaccine annually to protect themselves and other members of the population (U.S. Department of Health and Human Services, 2017). Increased vaccination rates make the spread of the virus more difficult, which is especially important for individuals in which the influenza vaccine is contraindicated. Individuals with contraindications must rely on other members of their community to protect the status of their health (U.S. Department of Health and Human Services, 2017).

With continued developments affecting the seasonal influenza vaccination process, the importance of receiving the influenza vaccine each year is becoming increasingly evident. To demonstrate this importance, influenza vaccination rates throughout flu season have now been included as one of the values evaluated by the Joint Commission to determine the quality of patient care provided (Mayo Clinic, 2019). However, adult individuals continue to miss administration of this preventive measure for a number of reasons, especially in the inpatient hospital setting (CDC, 2019a). Several potential reasons for non-administration of the influenza vaccination have been identified, and lack of education is one prominent reason observed among hospitalized patients and inpatient staff (CDC, 2019b). Common misconceptions attributed to influenza vaccine non-administration include staff and patient fear that the vaccine should not be

administered while patients are hospitalized and ill, patient beliefs that they are almost always healthy and do not need the vaccine each year, patient fear that the vaccine will cause unwanted side effects or influenza-like symptoms, and staff or patient beliefs that the influenza vaccine is not effective in preventing the seasonal influenza virus (Hammond & Holcomb, 2015). Staff and patient education to correct these misconceptions is helpful in preventing the spread of influenza throughout the hospital and adherence to receiving the influenza vaccine in future years. This education could also promote greater awareness among APRNs and other healthcare providers who place the orders for vaccine administration.

Literature Review

To further develop a clinical project with the goal of improving the current inpatient influenza vaccination process and related nursing documentation, a detailed literature review investigating several project aspects was completed. Aspects investigated included the general problem, significance, and consequences, corresponding conceptual frameworks, clinical project implementation, clinical project interventions, and measures and potential outcomes of the clinical project. Overall, this literature review yielded a variety of research studies from scholarly sources, all of which explored some of component influenza vaccination throughout inpatient hospital admissions, patient eligibility screening, or related nursing documentation.

Search Terms

Search terms utilized throughout the completion of this literature review included *inpatient, influenza, vaccine, vaccination, protocol, policy, administration, non-administration, nursing, documentation, intervention,* and *improvement.* Boolean search modifiers, including AND and OR were also utilized to combine these search terms and yield more specific results.

Databases

Scholarly article databases utilized throughout the completion of this integrated literature review included CINAHL, Cochrane Library, Medline Plus, PubMed, and Google Scholar. These databases were chosen due to their extensive array of current, influenza vaccine-related literature.

Inclusion and Exclusion Criteria

Articles included in the initial literature search were written in the English language, were published within the last 10 years, had full text available, discussed both adult and pediatric inpatient populations, pertained specifically to nursing, and were published by scholarly and reputable sources. Articles excluded from the initial search were those written in languages other than English, were published more than 10 years ago, did not have full text available, pertained to areas other than the inpatient setting, followed a systematic review design, or were not published by scholarly or reputable sources.

Literature Related to Problem

The analysis of literature related to the identified problem, significance, and potential consequences was an essential aspect of clinical project development and was completed as part of this integrative literature review.

Problem

Although hospital admissions serve as an opportunity to vaccinate many patients conveniently, inpatient vaccination rates are low among patients of all ages (Rao et al., 2017). To develop a greater understanding of why this problem is occurring, perceptions of the influenza vaccine among patients and healthcare providers must also be understood (Rao et al., 2017). The top perceptions against influenza vaccination included adverse effects related to the vaccine,

minimal efficacy, and that the vaccine is not safe for administration (Ciftci et al., 2018). These influenza vaccine-related perceptions among both healthcare personnel and their patients may affect inpatient vaccination status, and investigators have found that vaccination status among individuals correlated significantly with annual compliance, educational level, and years of experience in the medical field (Ciftci et al., 2018).

Inadequate nursing documentation related to assessment or administration of the influenza vaccine was identified as an additional problem within the inpatient setting of healthcare systems or agencies (Cunningham et al., 2017). Many nursing staff believe that the patient medication administration record for administration of the influenza vaccine serves as sufficient documentation, or that if the patient has already received the vaccine during a previous encounter, no additional documentation is necessary. Receiving the influenza vaccine previously at another facility during the current flu season is a legitimate contraindication for receiving the influenza vaccine (Cunningham et al., 2017). However, this vaccination status still needs to be documented within the patient's medical record to demonstrate that nursing staff properly screened the patient and updated their vaccination status (Cunningham et al., 2017). Clinical project interventions aimed to improve the inpatient influenza vaccination process and related nursing documentation are necessary to ensure the highest quality of care is being provided to all admitted patients.

Significance

The choice of whether to receive the seasonal influenza vaccination has the potential to either promote cost-effectiveness or to pose a significant economic impact on healthcare spending (Dabestani et al., 2019; Putri et al., 2018). In 2015, the cost-effectiveness of receiving the influenza vaccine among adults between the ages of 18 and 64 years was estimated to range

from $8,000 to $39,000 per quality-adjusted life year (QALY) (Dabestani et al., 2019). For older adults 65 years of age and older, the average cost-effectiveness of influenza vaccination was $15,300 per QALY (Dabestani et al., 2019). Among the United States population in 2015, the economic impact of seasonal influenza was predicted with consideration of clinic visits, emergency department visits, hospitalizations, deaths, and lost days of productivity (Putri et al., 2018). Overall, the predicted mean economic impact of seasonal influenza was $11.2 billion. The predicted mean direct medical expense was $3.2 billion, with the mean indirect medical expense predicted at $8.0 billion (Putri et al., 2018). These findings supported that influenza vaccination status can have a significant positive or negative effect on annual medical expenses among both individual households and the United States healthcare system.

One of the most important nursing roles in the care of patients, documentation typically requires approximately 50% of a nurse's time each shift they work (Okaisu et al., 2014). Documentation serves as a mode of communication among the interdisciplinary team, promoting patient safety and positive patient health outcomes. Aspects of documentation can also be beneficial for research, quality improvement, and educational purposes (Okaisu et al., 2014). Specific to influenza vaccination, critical aspects of nursing documentation include patient assessment determining vaccination eligibility, the administration, holding, or refusal of the influenza vaccine, observed vaccination reactions, and updated immunization records (Cunningham et al., 2017). Nurses must take their documentation seriously, as their assessments are relied on heavily to evaluate patient health status and to guide continued patient care in both inpatient and outpatient settings.

Consequences

There are many potential consequences that could occur among individuals who choose not to receive the influenza vaccine. Between 140,000 and 710,000 influenza-related hospitalizations occur each year in the United States, with between 12,000 and 56,000 influenza cases resulting in patient death (Dabestani et al., 2019). Several outpatient clinic visits, respiratory illnesses, and missed days of work are also attributed to seasonal influenza (Dabestani et al., 2019). Additional literature investigating these potential consequences demonstrated the importance of an inpatient influenza vaccination process encouraging all admitted patients to receive the vaccine throughout flu season (Cetinoglu et al., 2017; Tartof et al., 2016). Among admitted patients suffering from community-acquired pneumonia, investigators found that a significant portion of unvaccinated patients reported being more fatigued, musculoskeletal pain, and GI upset more frequently than vaccinated patients, suggesting worsening patient health outcomes in comparison to vaccinated patients (Cetinoglu et al., 2017). Admitted surgical patients who agreed to receive the influenza vaccine prior to undergoing their scheduled procedure were not significantly affected by post-surgical outcomes related to hospital readmissions, fever, infection, or emergency department visits, indicating that receiving the influenza vaccine may have promoted a positive healing process (Tartof et al., 2016).

Although general documentation is completed by every nurse in some form, audits of several nursing documentation forms have revealed that much of this documentation is inadequate according to Joint Commission quality standards and established patient safety goals (Okaisu et al., 2014). If nursing staff are not adequately documenting their assessments, cares, or medications administered to patients, critical errors could be made (Okaisu et al., 2014). Failure

to document vaccine administration or the reason for non-administration could result in worsening performance towards the quality measures related to influenza vaccination (Cunningham et al., 2017). Due to the high importance of nursing documentation in providing high quality patient care, improvements to the inpatient influenza vaccination process and related nursing documentation were deemed essential, requiring significant clinical intervention.

Literature Related to Interventions

To determine the most appropriate clinical project intervention for promoting an improved inpatient influenza vaccination process and appropriate nursing documentation, literature discussing previously successful interventions was also analyzed.

EHR Screening Tools

The implementation of screening tools within EHRs was one successful clinical intervention that has been investigated throughout previous research studies. Specifically, these screening tools were implemented for nursing staff to determine patient eligibility for receiving the influenza vaccine while admitted to the hospital in the inpatient setting (Duval, 2019; Pollack et al., 2014). Investigators studying influenza vaccination rates among inpatient pediatric hematology/oncology patients found that vaccination rates increased significantly from 5.88% to 43.9% after screening tool implementation (Duvall, 2019). Investigators have also found implementing an inpatient influenza vaccination screening tool that was linked with the patient EHR and providing inpatient nursing staff with privileges to order the influenza vaccine for admitted patients without involvement of their healthcare provider to be successful interventions (Pollack et al., 2014). Pollack et al. (2014) noted significant increases in utilization of the screening tool throughout their set study period, with the average inpatient influenza rate increasing by a total of 6% after the screening tool was implemented (Pollack et al., 2014).

Screening tools or reminders built into the inpatient EHR system may be an effective intervention for improving inpatient influenza vaccination rates and related nursing documentation. In addition, providing inpatient nursing staff with resources for administration of the influenza vaccine without healthcare provider involvement may help to increase inpatient vaccination rates, along with nursing responsibility for proper documentation.

Interdisciplinary Collaboration with Pharmacy

Interdisciplinary collaboration with pharmacy has also promoted improved influenza vaccination rates in the inpatient setting. This collaboration may consist of interviews occurring between pharmacists and patients, along with nursing education provided by inpatient pharmacists (Tong et al., 2018; Cotugno et al., 2017). Pharmacist interviews were beneficial for assessing patient eligibility for receiving the influenza vaccine upon admission to the hospital, with 59.6% of interviewed and eligible patients receiving the influenza vaccine throughout their admission (Tong et al., 2018). Administration of the influenza vaccine during inpatient admissions was also documented within patient discharge summaries to promote increased communication between inpatient staff and outpatient healthcare providers (Tong et al., 2018). Successful education of nurses presented by inpatient pharmacists focused on proper influenza vaccine assessments (Cotugno et al., 2017). Investigators noted that compliance rates with influenza vaccine-related nursing assessments increased to 99% after presentation of the nursing education program, with 45% of admitted adult psychiatric patients found to be eligible for receiving the influenza vaccine during their hospital admission (Cotugno et al., 2017). Additional involvement by pharmacy in determining patient eligibility for receiving the influenza vaccine during hospital admissions may help to increase inpatient influenza vaccination rates, along with documentation of vaccine administration or known contraindications. Nursing collaboration with

pharmacy may also promote more detailed nursing assessments and documentation related to the influenza vaccination within the inpatient setting.

Documentation Education

Lastly, previous interventions aimed to educate nursing staff on appropriate documentation in several healthcare settings have demonstrated success in improving overall documentation practices (Enright et al., 2015; Malane et al., 2019; Margonari et al., 2017). The insight provided through the review of this pertinent literature could be applied within the context of nursing documentation related to administration of the influenza vaccine. Enright et al. (2015) implemented a nursing flow sheet, electronic prescribing and order entry for healthcare providers, and a review system of entered orders for oral chemotherapy, along with an education program for nursing staff for teaching on documentation within these interventions (Enright et al., 2015). As a result, the average percentage of adequately documented nursing care plans increased from 67% to 92% (Enright et al., 2015). The Technology Informatics Guiding Education Reform (TIGER) initiative was also successfully implemented, with an aim to modify general nursing documentation practices (Malane et al., 2019). Nursing staff who participated in the initiative reported increased confidence in their ability to document within designated EHR systems (Malane et al., 2019). The implementation of nurse education sessions providing teaching on documentation of nursing pain assessments, pain-related nursing interventions, and pain scale utilization also yielded significant positive improvements in related nursing documentation practices (Margonari et al., 2019). Applying these findings to a clinical project investigating influenza vaccination within the inpatient setting, introducing influenza vaccine administration into patient care plans may improve administration rates and related nursing documentation. Similarly, a designated documentation education initiative or education sessions

geared towards influenza vaccine administration may also be beneficial in improving related nursing documentation.

Literature Related to Outcome Measures

The effectiveness of a clinical project intervention is determined through the establishment of specific measures and outcomes. To investigate how improvements in the inpatient influenza vaccination process and related nursing documentation could be measured, literature related to outcome measures was explored.

Vaccine Administration

Vaccine administration rates have served as valuable outcome measures when investigating the potential benefits of influenza vaccination programs implemented within healthcare settings (Giles et al., 2018; Hinshaw & Chandran, 2011). The percentage of patients who received the influenza vaccine prior to program implementation can be compared with the percentage of those who receive the vaccine after program implementation to analyze the effectiveness of each specific intervention. For example, the feasibility of mobile influenza vaccination programs was explored through the comparison of vaccination rates prior to program implementation and one year later (Giles et al., 2018). Investigators found that 39% of eligible patients had received the influenza vaccine prior to implementation of the mobile program. One year later, this percentage increased to 61%, demonstrating that the mobile influenza program could be an effective strategy in improving influenza vaccination rates among populations in need (Giles et al., 2018). Additionally, the number of patients who received the influenza vaccine throughout their inpatient admission increased by 50% after an influenza vaccination screening tool for nursing staff was implemented within eight wards of a Canadian hospital (Hinshaw & Chandran, 2011). The analysis of these findings and outcome measures supports that the creation

of a standardized influenza vaccination program may help to improve inpatient influenza vaccine administration rates. In addition, the percentage of admitted patients who received the influenza vaccination throughout the clinical project period could serve as an appropriate outcome measure in determining the effectiveness of the chosen clinical project intervention. This percentage could be obtained within the hospital's medication administration system and could be compared to administration percentages prior to the clinical project period for noted improvements.

Documentation

Outcome measures related to influenza vaccination and related nursing documentation utilized in past research have also included the percentage of appropriately documented instances of inpatient influenza vaccination, along with the percentage of updated electronic immunization records (Hinshaw & Chandran, 2011; Stevens & Golwalkar, 2018). Throughout the implementation of the influenza vaccination screening tool for nursing staff, a newly developed nursing documentation protocol was also implemented (Hinshaw & Chandran, 2011). The percentage of appropriately documented influenza vaccination screenings before and after implementation of the protocol were compared as a measure of effectiveness, with significant improvements noted (Hinshaw & Chandran, 2011). The percentage of updated electronic immunization records also served as an outcome throughout a study to evaluate current documentation practices for immunization and efforts for disease surveillance in university healthcare systems (Stevens & Golwalkar, 2018). Investigators found that only 70% of participating healthcare systems had entered student immunization records into an electronic health record system, with 69% requiring physician verification for currency. With this designated outcome measure, healthcare systems who did not successfully document student immunization records were able to be held accountable (Stevens & Golwalkar, 2018). These

research findings supported that the percentage of documented influenza vaccination screenings, instances of vaccine administration, and updated electronic immunization records could serve as appropriate outcome measures for influenza vaccine-related interventions implemented throughout the clinical project period. This comprehensive review of literature exploring established problems, interventions, and outcome measures related to inpatient influenza vaccination assisted the DNP project leader in identifying a current gap in practice, completing a needs assessment, and ultimately developing a health program addressing these needs within a chosen healthcare agency.

Identified Practice Gap

Specific to one healthcare agency, gaps in practice were identified within the healthcare system's current inpatient influenza vaccination process and related nursing documentation. The current inpatient influenza vaccination process enables nursing staff to bypass patient vaccination screening opportunities and to either administer or hold the influenza vaccine without any documentation. According to the quality team nurse assigned to the primary care and medicine inpatient service line of this healthcare system, administration of the seasonal influenza vaccine is included as part of the provider standing order set for inpatient admissions from October 1 through March 31 (P. Gillis, personal communication, January 22, 2020). After the vaccine is ordered upon admission to an inpatient ward, a pharmacist is responsible for verifying that the admitting veteran is a candidate to receive the influenza vaccine during their medication reconciliation interview, ultimately either processing or discontinuing the order (P. Gillis, personal communication, January 22, 2020).

Once the order for the influenza vaccine goes active, the inpatient nurse has 24 hours to administer the vaccine or document why it was not administered in both the medication

administration record and patient EHR before the order expires (P. Gillis, personal communication, January 22, 2020). Inpatient nurse managers also receive a daily report of admitted veterans who have yet to receive the influenza vaccine each morning, encouraging these managers to follow up with their nursing staff and meet the 24-hour deadline (P. Gillis, personal communication, January 22, 2020). This process is enforced universally on all inpatient wards. However, many veterans continue to go their entire admission without receiving the influenza vaccine, even though it was ordered by their admitting provider and verified by the pharmacist (P. Gillis, personal communication, January 22, 2020). Per the influenza vaccine-related data collected monthly by the quality team nurse, nursing staff are failing to administer this ordered medication in a timely manner. In addition, many inpatient staff nurses are not properly documenting whether or not the influenza vaccine was administered within the 24-hour timeframe, along with a legitimate reason as to why the vaccine may not have been administered (P. Gillis, personal communication, January 22, 2020). This 24-hour deadline for nursing staff to administer the influenza vaccine and document properly as outlined in the hospital policy may not be realistic for improving inpatient influenza vaccination rates or related nursing documentation.

Medication non-administration and inadequate nursing documentation have also been identified as problems in previous research studies. In their 2016 cohort study, Leite et al. investigated how frequently ordered medications were mistakenly not administered in the inpatient hospital setting, along with potential reasons for why these errors in medication administration occurred (Leite et al., 2016). Throughout the duration of the study, 21% of the medications ordered were not administered. Through the analysis of nursing feedback regarding their missed doses, the top reasons identified for medications being returned to pharmacy rather

than being administered included the absence of a pharmacist on each ward at all times for consultation, an inadequate process for dispensing medications, or that the nurse-patient ratio was not conducive for the successful administration of all medications (Leite et al., 2016). Potential consequences identified upon conclusion of this study included delays in patient care, possible ineffective healing, or the occurrence of additional medication errors due to disturbances in administration times (Leite et al., 2016).

The systematic review of the inpatient influenza vaccination processes of various healthcare organizations revealed that the highest rates of vaccination were achieved with the inclusion of nursing staff in process development (Pal et al., 2015). Successful influenza vaccination processes were conducive to the daily workflow of nursing staff and outlined detailed criteria for nursing assessments. Lastly, the use of extended timeframes in which orders for the influenza vaccine remained active until patients became appropriate candidates for vaccination was effective in promoting positive patient health outcomes through reduction in medication errors and overall improvements in nursing and patient satisfaction (Pal et al., 2015).

Needs Assessment

To develop a greater understanding of the influenza vaccination process in the inpatient hospital setting, it was necessary to conduct a needs assessment to identify influenza-related gaps in the current practices of a healthcare agency. This needs assessment was specific to the selected healthcare system and the policy outlining nursing administration of the influenza vaccine throughout inpatient admissions.

Completion of a needs assessment specific to the inpatient influenza vaccination process began with personal communication with a quality department staff nurse assigned to the inpatient primary care and medicine service line. This communication consisted of a series of

emails, telephone conversations, and one face-to-face meeting to discuss influenza vaccine-related data metrics and identify a gap in current practice (P. Gillis, personal communication, January 22, 2020). According to the quality team nurse, the selected healthcare system included administration of the seasonal influenza vaccine as part of the provider standing order set for inpatient admissions from October 1 through March 31 (P. Gillis, personal communication, January 22, 2020). After the vaccine was ordered upon admission to an inpatient ward, a pharmacist was responsible for verifying that the admitting veteran was a candidate to receive the influenza vaccine during their medication reconciliation interview, ultimately either processing or discontinuing the order. Once the order for the influenza vaccine went active, the inpatient nurse had 24 hours to administer the vaccine or document why it was not administered in both the medication administration record and patient chart before the order expired (P. Gillis, personal communication, January 22, 2020). Inpatient nurse managers also received a daily report of admitted veterans who had yet to receive the influenza vaccine each morning, encouraging these managers to follow up with their nursing staff and meet the 24-hour deadline (P. Gillis, personal communication, January 22, 2020).

This process was enforced universally on all inpatient wards. However, many veterans continued to go their entire admission without receiving the influenza vaccine, even though it was ordered by their admitting provider and verified by the pharmacist (P. Gillis, personal communication, January 22, 2020). Per the influenza vaccine-related data collected monthly by the quality team nurse, nursing staff were failing to administer this ordered medication in a timely manner. In addition, many inpatient staff nurses were not properly documenting whether the influenza vaccine was administered within the 24-hour timeframe, along with a legitimate reason as to why the vaccine may not have been administered (P. Gillis, personal

communication, January 22, 2020). The non-administration of ordered seasonal influenza vaccines throughout inpatient admissions without any documented reasoning by nursing staff was an identified gap in current practice within the selected healthcare system. Based on this identified practice gap, the investigation of the top reason for nursing vaccine non-administration and inadequate documentation, along with the development and implementation of an intervention combatting this top reason, was needed to improve the inpatient influenza vaccination process and related nursing documentation throughout flu season.

Gap Analysis

Gaps in practice were identified within this healthcare agency's current inpatient influenza vaccination process and related nursing documentation. The current inpatient influenza vaccination process enabled nursing staff to bypass patient vaccination screening opportunities and to either administer or hold the influenza vaccine without any documentation of their reasoning. The analysis of pertinent literature discussing inpatient influenza vaccination demonstrated that clarity and simplified nursing processes led to more successful patient and clinical outcomes. Clinical project interventions aimed to improve the inpatient influenza vaccination process and related nursing documentation must provide nurses with clear and simple opportunities to document their assessment and reasoning for administering or holding the vaccine at the time of patient admission. Concurrently, this information would be updated within patient electronic health records (EHRs) and immunization records. Detailed exploration of the inpatient influenza vaccination template utilized on one specific inpatient ward could be helpful in identifying an area where these interventions could be implemented, with the goal of improvements in inpatient influenza vaccination eligibility screening, rates of administration, and nursing documentation compliance during each patient admission.

Theoretical Framework and Change Theory

In addition, the exploration of literature related to theoretical frameworks was completed and was beneficial in determining a framework to guide the direction of this influenza vaccine-related clinical project. Each of these frameworks were applied throughout the implementation of this health program aimed to modify and improve the inpatient influenza vaccination process and related nursing documentation.

Lewin's Theory of Change

Lewin's Theory of Change is a theoretical framework that has been utilized throughout several previous research studies. Although literature investigating this framework in relation to influenza vaccination was limited, the findings from past research were applied in the development and implementation of this clinical project. Lewin's Theory of Change suggested that the change is driven by both restraining and driving forces (Wojciechowski et al., 2016). Restraining forces oppose change, whereas driving forces support change. For change to occur, the driving forces must be stronger than the restraining forces throughout the three steps of unfreezing and identifying the problem, exploring and implementing change, and refreezing when the change is successful (Wojciechowski et al., 2016).

In the context of change within a healthcare agency or system, those affected by proposed changes have been found to be more receptive when a guided process for change was utilized (Manchester et al., 2014). Successful guided processes for change have included educational programs presented to both patients and healthcare providers, where those being educated were encouraged to identify a problem within a current aspect of care, participate in an educational program on the change being implemented, and remain informed as the change in practice was implemented (Manchester et al., 2014). For example, Lewin's Change Theory was applied

throughout the process of altering opioid prescribing practices and treatment for opioid use disorders in the primary care setting (Sokol et al., 2020). Unfreezing began with a grand round presentation identifying opioid use disorders as a significant problem patients and healthcare providers were facing. Educational programs were developed to promote change, and primary care staff were required to participate (Sokol et al., 2020). To refreeze and maintain the changes, an opioid use disorder workgroup was created for continuous improvement. The implementation of Lewin's Change Theory was successful in modifying prescribing practices, healthcare provider skills, and culture within the family medicine clinic (Sokol et al., 2020). The findings discussed in these previously conducted research studies supported that the implementation of structured models of change could be useful in making lasting modifications to healthcare practices or the culture within a specific healthcare agency, all of which could be applied towards an influenza vaccine-related clinical project.

Health Belief Model

The Health Belief Model has been utilized throughout a variety of past research studies, specifically within the context of the influenza vaccination (Corace et al., 2013; Fall et al., 2018; Ofstead et al., 2017). The Health Belief Model proposed that an individual's intention to receive a specific medical treatment depended on how severe they believed their health conditions were, how susceptible they were to the health condition, and benefits or barriers to receiving the medical treatment (Ofstead et al., 2017). Health Belief Model constructs applied to influenza vaccination have included perceptions related to susceptibility to contracting the influenza virus, how severe the influenza virus is, the benefit of receiving the influenza vaccine, barriers to receiving the influenza vaccine, and motivating factors related to acceptance of the influenza vaccine (Corace et al., 2014).

Successful influenza vaccination-related interventions with utilization of the Health Belief Model have included goal-setting worksheets, educational presentations, rewards or incentives for desired beliefs, and the formulation of new policies (Ofstead et al., 2017). The use of surveys to evaluate differences in influenza vaccine-related health beliefs demonstrated positive improvements among hospital healthcare workers, university students, and nursing staff working in long-term care (Corace et al., 2013; Fall et al., 2018; Ofstead et al., 2017). Predictors of the intention to receive the influenza vaccine included independent decision-making capacity and increased motivation levels (Fall et al., 2018). Health beliefs that were successfully modified included knowledge of vaccine safety, the importance of being vaccinated, peer encouragement, and awareness of the protective factors receiving the influenza vaccine could bring for the individual, friends, and family (Corace et al., 2013). These findings supported successful application of the Health Belief Model for improving influenza vaccination perceptions and practices, all of which were considered throughout the development and implementation of this clinical project.

Health Program

The health program implemented for this clinical project was a nursing staff education program focusing on inpatient influenza vaccination screening, vaccine administration, and related nursing documentation. Specific to the administration of influenza vaccines in the inpatient setting, Pal et al. cited that clarity was the key factor aligned with successful patient assessment, administration of the influenza vaccine, and proper documentation indicating the administration status of the vaccine (Pal et al., 2015).

Setting

The setting chosen for this project was one specific healthcare system within the Veterans Health Administration. This organization consists of a hospital and several community-based outpatient clinics (CBOCs) and provides care to the adult veteran population (U.S. Department of Veterans Affairs, 2020a). The hospital contains 309 inpatient beds and a variety of established primary and specialty care clinics. In addition, 13 CBOCs have been established across the state (U.S. Department of Veterans Affairs, 2020a). Within the hospital, the primary care and medicine inpatient service line consists of four inpatient wards, all of which could have benefitted from an influenza vaccine-related clinical project. However, one specific medical step-down unit with a 21-patient capacity was the setting of focus for initial project development, implementation, and evaluation.

Population

The participants involved in the implementation of the nursing staff education program and the related outcome measures included nursing staff who cared for patients on the selected medical step-down ward and veterans admitted to this ward throughout the project time period. These particular participants were chosen due the DNP project leader's strong knowledge of this ward's daily nursing workflow, along with a trusted relationship between the ward's nursing staff and nurse management. Nursing staff who participated in the education program included only those employed on this medical step-down ward, and their participation in the implementation of this clinical project was mandatory. These nursing staff members included approximately 35 registered nurses who worked only on this ward and did not float to other wards. Nursing staff employed by the Medical-Surgical and Critical Care Float Pools within the healthcare system were excluded upon initial health program implementation, as these nursing

staff members cared for patients admitted to multiple wards throughout the hospital and may not have been aware of this specific ward's policies and procedures.

The patient population admitted to the selected ward included veterans of all sexes age 18 years and older. Veterans admitted to the ward throughout the project period who consented to being screened for eligibility to receive the seasonal influenza vaccine were included as participants in initial health program implementation. These veterans fit the inclusion criteria and were alert and oriented to person, place, time, and situation, and had obvious decision-making capacity. Admitted veterans who did not consent to being screened for seasonal influenza vaccine eligibility, veterans who were comatose or obtunded, or vulnerable adults who did not have decision-making capacity were not included in the implementation of this intervention to respect patient rights.

Interprofessional Team

This clinical project involved several interprofessional team members. These team members included the primary care and medicine quality team nurse, ward nursing staff, ward nurse management, physicians, pharmacists, and the DNP project leader. The quality team nurse was involved in tracking the vaccine administration rates. The ward management team was responsible for holding the nursing staff accountable for screening participants, administering the influenza vaccine, and documenting appropriately. Physicians were responsible for ordering the influenza vaccine, and pharmacists were responsible for processing the order for the vaccine. Lastly, the DNP project leader was responsible for coordinating the development and implementation of this health program among all interprofessional team members, along with providing education to the nursing staff participants.

Stakeholders

Many stakeholders may also have benefitted from this clinical project to improve the inpatient influenza vaccination process and related nursing documentation. These stakeholders included the medical step-down ward inpatient staff, veteran patients, families, community members, leadership within the primary care and medicine service line, and overall hospital leadership within the selected healthcare system. Increased inpatient influenza vaccination rates may have provided the ward staff, veteran patients, families, and community members with a greater sense of herd immunity throughout flu season, while also preventing the spread of the influenza virus. Lastly, leadership within the primary care and medicine service line and overall hospital leadership also may have benefitted from this clinical project, as an increase in inpatient influenza vaccination rates could have brought the service line and healthcare system closer to reaching the established Joint Commission and Healthy People 2030 influenza vaccination goals.

Mission Statement

The mission of the United States Department of Veteran's Affairs is "to fulfill President Lincoln's promise 'to care for him who shall have borne the battle, and for his widow, and his orphan' by serving and honoring the men and women who are America's veterans" (U.S. Department of Veterans Affairs, 2018, para. 1). To contribute to this mission, the selected healthcare system has developed its own mission and strives to "honor America's veterans by providing exceptional health care that improves their health and well-being," with a vision "to be a patient centered, integrated health care organization for veterans providing excellent health care, research and education; an organization where people choose to work; an active community partner and a backup for national emergencies" (U.S. Department of Veterans Affairs, 2020b, paras. 1-2). In alignment with the mission of this healthcare organization, the mission of this

health program was to assist in providing all veterans with access to preventive care services, promoting health promotion, disease prevention, and cost-effective healthcare. This health program ensured that healthcare staff were adequately educated and successful in their roles as care providers to the veteran population.

Health Program Goals

To satisfy the mission of this health program, related goals and objectives were established to guide health program implementation, the identification of outcome measures, and health program evaluation.

Goal 1

The first goal of this health program was to improve inpatient influenza vaccination eligibility screening, administration, and documentation opportunities. The following objectives were also identified to ensure this goal was considered throughout the clinical project period.

Objective 1

Prior to health program implementation, the DNP project leader would develop a nurse education program with content related to the inpatient influenza vaccination process.

Implementation. The DNP project leader developed an education program to inform participating nursing staff of the inpatient influenza vaccination eligibility screening, administration, and documentation processes. Literature was reviewed to determine the content of the nurse education program, with only evidence-based, non-biased information considered. The DNP project leader then created a PowerPoint presentation covering the selected educational content. The PowerPoint slides discussed specific instructions on how to properly screen admitted veterans for eligibility to receive the seasonal influenza vaccine, how to properly administer the vaccine, and how to ensure

that these actions were documented appropriately within the electronic health record (EHR) and medication administration systems. This nurse education program was developed prior to health program implementation and was ready for use on the first day of the clinical project period.

Outcome Measure and Evaluation. Once developed, the nurse education program PowerPoint presentation was accessible within the shared workgroup (W) drive of the hospital-wide computer system for printing and future reference. The DNP project leader printed copies of this presentation for all participating ward nursing staff to read during the nurse education program in-service sessions. The completion of this objective was self-reported by the DNP project leader.

Objective 2

Within 14 days of health program implementation, 80% of participating ward nursing staff were educated on the inpatient influenza vaccination eligibility screening, administration, and documentation processes.

Implementation. The DNP project leader was responsible for delivering the nurse education program to all participating ward nursing staff. Copies of the PowerPoint slides were printed and provided for nursing staff to reference during initial presentation and in the future. The DNP project leader presented the nurse education program on several occasions as a required in-service opportunity taking place during change-of-shift team huddles. These huddles had continued to take place throughout the COVID-19 pandemic, with staff members practicing social distancing while receiving ward updates and required educational information. The in-service sessions took place over a 14-day period to ensure that all participants were properly educated on the updated inpatient influenza

vaccination process, and an attendance roster was provided for participating nursing staff members to sign. If necessary, the DNP project leader educated participating nursing staff members who were absent throughout the initial 14-day period due to COVID-19 illness, maternity leave, or other extenuating circumstances. Lastly, support for this nurse education program was obtained from the ward management team, as the management staff typically facilitated each team huddle.

Outcome Measure and Evaluation. The attendance roster utilized during the nurse education in-service sessions served as a method to monitor the percentage of ward nursing staff who were educated on the updated inpatient influenza vaccination process. This attendance roster can be referenced within Appendix A of this proposal. When not being utilized, this attendance roster was stored with the ward management team in a locked office with limited access to ensure participant privacy. The DNP project leader kept track of which nurses had and had not participated in the education program and focused on reaching all participating nursing staff throughout the 14-day period. The total number of ward nursing staff who participated in the nurse education program served as a statistic to measure the success of this health program intervention.

Objective 3

Upon completion of the nurse education program, 100% of participating nursing staff demonstrated an increased level of knowledge related to the inpatient influenza vaccination process.

Implementation. The DNP project leader developed pre- and post-tests related to the nurse education program that were completed by all participating nursing staff members. These pre- and post-tests consisted of a series of questions pertaining to nurse education

program content and assessed participating nursing staff knowledge of the inpatient influenza vaccination process. Pre-tests were administered to participating nursing staff members at the beginning of each in-service session, and post-tests were administered after completion of each in-service session, with all education program components completed consecutively throughout a single occasion to ensure thorough and consistent data collection. Prior to health program implementation, these pre- and post-tests were developed and ready for use on the first day of the clinical project period.

Outcome Measure and Evaluation. To measure the significance of the content presented throughout the nurse education program, the DNP project leader utilized a data collection tool created through Excel. Pre- and post-test scores were collected and stored within this data collection tool and analyzed through the conduction of paired t-tests. This data collection tool can be referenced in Appendix B of this proposal. The results of the paired *t*-tests served as a statistical outcome measure for this aspect of health program implementation and evaluation. This outcome measure was useful in determining whether the nurse education program was an effective method of presenting the current processes for inpatient influenza vaccination eligibility screening, administration, and related nursing documentation.

Goal 2

The second goal of this health program was to increase seasonal influenza vaccination rates among veterans in the inpatient setting. Additional objectives were identified to promote the achievement of this goal throughout the clinical project period.

Objective 4

In the 90-day period of health program implementation, 100% of participating veterans admitted to the selected medical step-down ward were screened for eligibility to receive the seasonal influenza vaccine during their inpatient admission.

Implementation. The influenza vaccination screening tool utilized by nursing staff to determine eligibility among veterans admitted to the selected medical step-down ward was embedded within the EHR template to document administration, previous administration, or veteran refusal of the seasonal influenza vaccine. The primary nurse asked the veteran a series of questions pertaining to their health history and checked a series of boxes to determine the veteran's eligibility to receive the vaccine at the time of admission. The influenza vaccination screening tool was implemented as a required field, serving as a hard stop within the template and helping to ensure that all veterans were screened for eligibility to receive the seasonal influenza vaccine.

Outcome Measure and Evaluation. The DNP project leader completed chart audits within the EHR system prior to and during the health program implementation period. Chart audits prior to health program implementation were completed with the assistance of the quality team nurse monitoring influenza vaccination, with analysis of nursing documentation throughout previous flu seasons. Chart audits within the health program implementation period were completed daily for the first week of health program implementation, and then weekly for the remainder of the clinical project period to assess the need for any modification. The chart of each veteran admitted to the selected medical step-down ward in the 90-day period was analyzed to ensure that the influenza vaccination template had been completed, which was according to the hospital admission

policy. The number of completed templates and screenings were compared to the number of veterans admitted to the ward to measure the effectiveness of the nursing staff education program. An additional data collection tool was created within Excel for chart audit data collection and secure storage. This data collection tool can be referenced in Appendix C.

Objective 5

In the 90-day period of health program implementation, 70% of veterans admitted to the selected medical step-down ward received the seasonal influenza vaccine after being screened for eligibility by ward nursing staff.

Implementation. The influenza vaccination screening tool embedded within the EHR documentation template allowed participating nursing staff to determine whether veterans being admitted to the selected medical step-down ward were eligible to receive the vaccine during their admission, or whether the vaccine was contraindicated. When the screening tool identified that an admitted veteran was eligible to receive the seasonal influenza vaccine, the primary nurse could then locate the standing order for the vaccine that was activated upon admission to the inpatient ward. This standing order was included within the inpatient admission order set throughout flu season, so the admitting provider and pharmacist were able to sign off and activate the vaccine order in a timely manner. Once the order for the seasonal influenza vaccine was activated, the admitting nurse utilized the electronic medication administration system to verify the veteran's identity, scan the vaccine, and administer the vaccine safely before the order expired seven days later. Ultimately, the administration of the seasonal influenza vaccine was documented

within the medication administration system and the immunization record within the EHR system.

Outcome Measure and Evaluation. The percentage of veterans admitted to the selected medical step-down ward during health program implementation who were screened and received the seasonal influenza vaccine during their admission served as a statistical measure of whether this objective was met. This percentage were compared with seasonal influenza vaccination rates from previous flu seasons prior to health program implementation, which helped to determine the success of the nursing staff education program. The DNP project leader communicated with the quality team nurse who collected medication administration data for this particular ward. This interprofessional team member generated weekly reports detailing inpatient influenza vaccination rates and was able to provide data from previous flu seasons, along with data from the current flu season for comparison.

Intervention Plans

Prior to health program implementation, the DNP project leader obtained Institutional Review Board (IRB) approval and made any recommended modifications. Once IRB approval was obtained, the first 14 days of the clinical project period were utilized for the development of the staff nursing education program and related pre- and post-tests. The DNP project leader completed a detailed literature review of scholarly journal databases to determine the staff nursing education program, pre- and post-test content and developed these health program aspects according to the literature review findings. Following the development of the staff nursing education program, pre- and post-tests, 14 additional days were utilized for presentation of the nurse education program to participating nursing staff. The education program was

presented on several occasions as required in-service sessions during change-of-shift staff huddles, with completion of the pre- and post-tests before and after presentation. Throughout this 14-day period, the DNP project leader utilized the attendance roster created to monitor how many participating ward nursing staff had received the required education, along with the data collection tool to monitor pre- and post-test scores. Once all participating nursing staff had been educated on the modified inpatient influenza vaccination process, the data collection period of health program implementation began.

The data collection period began during the second month of health program implementation following presentation of the nurse education program and completion of the pre- and post-tests. Health program data was collected for a total of 90 days following presentation of the staff nursing education program. Throughout the data collection period, participating nursing staff screened all eligible veterans for receiving the seasonal influenza vaccine upon admission to the ward. The DNP project leader completed daily chart audits throughout the first week of data collection, with weekly chart audits completed for the remainder of the 90-day period to ensure that participating nursing staff members were complying with the current inpatient influenza vaccination process.

After data had been collected for 90 days, the DNP project leader utilized the following 14 days for data analysis. This data analysis included the completion of paired *t*-tests with pre- and post-test scores to evaluate the significance of the nurse education program, along with the comparison of inpatient influenza vaccination rates prior to and after health program implementation. Additionally, data collected during completion of the daily and weekly chart audits was compared to chart audit data collected prior to health program implementation to evaluate nursing staff compliance with the hospital policy for completion of inpatient influenza

vaccination template within the EHR. The DNP project leader compiled and securely stored these data analysis findings for the completion of health program evaluation and final clinical project course requirements. Overall, the DNP project leader utilized a total of approximately four and a half months for health program development, implementation, and evaluation, and a Gantt Chart illustrating this health program timeline has been included as an appendix.

Ethical Considerations

Throughout the development, implementation, and evaluation of this health program, several ethical aspects were considered regarding the program itself, health program participants, and stakeholders. This health program was developed in collaboration with the selected healthcare agency's quality improvement team. All components of this health program were also be submitted to the IRB within the College of St. Scholastica prior to development and implementation to ensure the rights of participating nursing staff members and veterans admitted to the selected medical step-down ward during the clinical project period were protected. Throughout the data collection period and utilization of the data collection tool within Excel, the DNP project leader de-identified pre- and post-test scores for nursing staff members who participated in the required nurse education program. In addition, the attendance roster utilized to monitor nursing staff participation was stored in a locked office with limited access to maintain participant confidentiality. Data collected throughout the completion of chart audits and entered into an additional data collection tool did not include any patient identifiers in consideration of the Health Insurance Portability and Accountability Act (HIPAA) and protection of patient privacy.

Additionally, this health program aligned with multiple provisions of the American Nurses Association (ANA) *Code of Ethics for Nurses* (ANA, 2015). Provision three stated that

"the nurse promotes, advocates for, and protects the rights, health, and safety of the patient" (ANA, 2015). The utilization of a staff nursing education program focusing on inpatient influenza vaccination eligibility screening, administration, and documentation promoted administration of the seasonal influenza vaccine, a preventive care service that focuses on patient health. The exclusion of vulnerable adults and veterans without decision-making capacity from this health program ensured that all participating veterans had consented to do so and considered the rights of each patient. Similarly, the DNP project leader respected the healthcare decisions made by veterans admitted to the ward during the clinical project period and their right to refuse medical treatments or interventions. Veterans with decision-making capacity had the right to refuse both the completion of the influenza vaccination eligibility screening tool and administration of the seasonal influenza vaccine, and their participation was strictly voluntary.

Provision four stated that "the nurse has authority, accountability and responsibility for nursing practice; makes decisions; and takes action consistent with the obligation to provide optimal patient care" (ANA, 2015). Nursing staff were accountable for documenting the screenings and assessments completed on each of their patients, all of which was within the nursing scope of practice. Screening admitted veterans for their eligibility to receive the seasonal influenza vaccine and properly documenting whether the vaccine was held or administered promoted patient safety and was included within daily nursing staff responsibilities. Additionally, providing veterans with increased access to preventive care services, such as the seasonal influenza vaccine, was an aspect of providing the highest standard of patient care.

Lastly, provision eight stated that "the nurse collaborates with other health professionals and the public to protect human rights, promote health diplomacy, and reduce health disparities" (ANA, 2015). The collaboration of nursing staff with physicians and pharmacists through the

development and implementation of this health program had the potential to increase the number of admitted veterans who received the seasonal influenza vaccine. If an increased number of veterans were vaccinated annually, a greater sense of herd immunity could develop, and the spread of seasonal influenza could be prevented within local communities.

Policy Implications

This health program had the potential to improve influenza vaccination screening opportunities and to increase influenza vaccination rates among veterans in the inpatient setting. Initially, the staff nursing education program was implemented solely on one selected medical step-down ward as a pilot project. If the implementation of this health program was successful on this particular ward, the staff nursing education program could be implemented and utilized by nursing staff working on other inpatient wards throughout future flu seasons, ensuring that each veteran is screened properly and receives this preventive care service if eligible and agreeable.

Implementation

The DNP project leader began health program development September 06, 2021 and spent the following 14 days creating a participant attendance roster, a PowerPoint presentation to be utilized during the nursing staff education program in-service sessions, pre- and post-tests to assess nursing staff knowledge of the education program content, and data collection tools to monitor test scores and chart auditing data related to inpatient influenza vaccination. The primary influencing factor determining the timing of health program development and implementation was the goal of educating most nursing staff members prior to the beginning of the 2021 flu season on October 1st. Official health program implementation began September 20, 2021, with daily in-service presentations of the nursing staff education program occurring over an additional 14 days. Following the conclusion of the in-service presentations, the DNP project leader began

a 90-day period of chart auditing on October 04, 2021 to monitor influenza vaccination opportunities and related nursing documentation for each admitted patient who fit the inclusion criteria, completing daily chart audits throughout the first seven days and weekly chart audits through the remainder of the project period. The chart auditing period concluded January 01, 2022, and the DNP project leader spent 14 days following the project period analyzing the data collected and determining the results of this health program. Additionally, the DNP project leader met with health program stakeholders to express gratitude for their participation and the receive feedback regarding each of the health program activities.

Health Program Successes

The DNP project leader noted both successes and challenges throughout health program development and implementation. Overall, each of the health program activities were initiated according to their planned start date, with the importance of maximizing inpatient influenza vaccination opportunities emphasized as the 2021 flu season began. Each of the nursing staff participants fitting the health program inclusion criteria signed in on the provided attendance roster and were educated during one of the in-service sessions during the first 14 days of health program implementation. In total, 100% of the educated nursing staff participants also successfully completed both the pre-test and the post-test during the in-service sessions. Additionally, the data collection tools utilized to monitor test scores and chart auditing data were easy to utilize throughout the project period and allowed the DNP project leader to successfully analyze the data collected upon health program completion.

Health Program Challenges

There were several challenges also encountered throughout the clinical project period. Like many other areas of the health care system, the COVID-19 pandemic was a significant

concern throughout clinical project development and implementation, and a greater focus may have been placed on inpatient COVID-19 vaccination than influenza vaccination. Had the pandemic not been ongoing, this clinical project may have been more successful or made a greater impact on the healthcare system's inpatient influenza vaccination process. Additionally, the DNP project leader had initially planned to implement a new inpatient influenza vaccination screening tool within the nursing admission database to streamline the eligibility screening and vaccine ordering process. However, given recent changes to the nursing admission database and other aspects of documentation related to the COVID-19 pandemic, nursing leadership was not willing to implement an additional change for this clinical project. Third, nursing staff shortages that continued to increase throughout the COVID-19 pandemic led to a decrease in the number of 12-hour shifts being scheduled throughout the clinical project period, ultimately creating the need for additional in-service opportunities to ensure all nursing staff participated in the education program. The DNP project leader was left with no alternative but to create additional in-service opportunities on evening and night shifts to educate nursing staff who had not been scheduled appropriately to fit the initial 14-day plan. Lastly, the DNP project leader's monitoring of daily admissions was more difficult than initially anticipated. Had a data collection tool to track the number of daily admissions more formally been created during initial clinical project development, this process may have involved less of a paper trail and a decreased reliance on the ward clerks and charge nurses for adequate tracking of each admitted veteran.

Results from Data Collection

Prior to health program implementation, the DNP project leader created three data collection tools to promote organization, secure storage of data throughout the clinical project period, and ease of data analysis upon project completion. These data collection tools included

an attendance roster to monitor nursing staff participation in the inpatient influenza vaccination education program, a tool to monitor participant pre- and post-test scores related to the education program, and a tool to monitor influenza vaccine administration data obtained during routine chart auditing. Upon clinical project completion, the data collected within these tools was analyzed to determine the effectiveness of the nursing staff education program in improving nursing staff knowledge of the inpatient influenza vaccination process and corresponding influenza vaccination rates.

Attendance Roster

Throughout presentation of the inpatient influenza vaccination education program, a total of 35 nursing staff members, 100% of those meeting inclusion criteria, signed in on the provided attendance roster and participated in the education program within the initial 14 days of health program implementation. This total of nursing staff participants exceeded the initial objective of 80% determined throughout health program development, suggesting that the in-service format of the staff education program was effective in educating a significant number of participants on the inpatient influenza vaccination eligibility screening, administration, and documentation processes.

Pre- and Post-Test Scores

In addition to the attendance roster utilized to monitor nursing staff participation in the inpatient influenza vaccination education program, the DNP project leader created a data collection tool to monitor and analyze pre- and post-test scores for nursing staff participants in the inpatient influenza vaccination education program. To examine whether the mean differences in pre-test and post-test scores were significantly different from zero, a two-tailed paired sample *t*-test was conducted. The result of a paired *t*-test comparing pre- and post-test scores is presented

in ***Table 1*** and was significant based on an alpha value of .05, $t(34) = -6.91$, $p < .001$, indicating that the mean post-test score was significantly higher than the mean pre-test score. To further depict this difference in mean test score, a bar plot is presented in ***Figure 1***. This finding also satisfies the objective of 100% of participating ward nursing staff members demonstrating an increased level of knowledge related to the inpatient influenza vaccination process after implementation of the education program.

Table 1

Two-Tailed Paired Samples t-Test for the Difference Between Pretest and Posttest

Pre-test		Post-test				
M	*SD*	*M*	*SD*	*t*	*p*	*d*
88.57	10.61	97.43	5.05	-6.91	< .001	1.17

Note. N = 35. Degrees of Freedom for the *t*-statistic = 34. *d* represents Cohen's *d.*

Figure 1

The means of Pretest and Posttest with 95.00% CI Error Bars

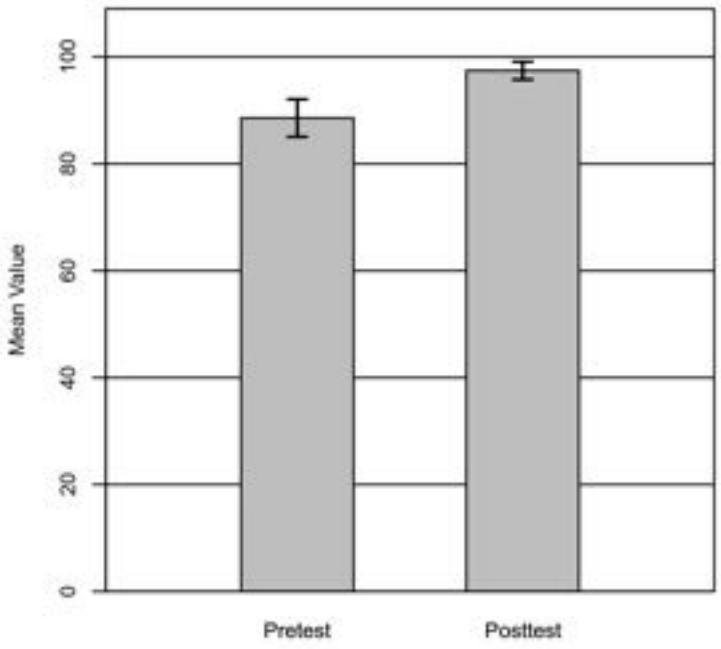

Chart Auditing Data

The third data collection tool was developed to organize and analyze the data compiled during routine chart auditing. This chart auditing was completed daily for the first week of health program implementation, then weekly for the duration of the 90-day clinical project period, investigating inpatient influenza vaccination eligibility screening opportunities, vaccine administration rates, and additional nursing documentation as indicated. Additionally, inpatient influenza vaccination rate data collected during the clinical project period was compared to the vaccination rate data collected throughout the 2020 flu season to determine if the nursing staff education program was an effective intervention for improving influenza vaccination rates among admitted veterans. Overall, 52.5% of veterans admitted during the clinical project period received the influenza vaccine during their admission, a notable increase from the 17.6% of admitted veterans who received the vaccine during the 2020 flu season. However, this percentage of vaccinated veterans still fell below the objective goal percentage of 70%. An additional 15.8% of veterans admitted during the clinical project period also declined the influenza vaccine, which was a notable increase from the 4.5% of admitted veterans who declined the vaccine during the 2020 flu season. The influenza vaccine was not ordered at all for only 1.5% of veterans admitted during the clinical project period, which was a notable decrease from the 11.5% of admitted veterans during the 2020 flu season who did not have an order placed to receive the vaccine. Lastly, 93.2% of inpatient influenza vaccination eligibility screenings and related documentation were completed properly during the clinical project period. Although this percentage was increased from the 71.9% of eligibility screenings and properly documented encounters during the 2020 flu season, this percentage also fell below the objective goal percentage of 100%.

Outcomes Interpretation

Although there were several successful aspects of this health program, only three of the five identified objectives were achieved upon completion of the clinical project period. The DNP project leader was able to successfully develop the nursing staff education program prior to health program implementation, 100% of eligible staff members participated in the in-service session with completion of pre- and post-tests, and 100% participant post-test scores improved from their pre-test scores. The achievement of these objectives supports that inpatient nursing staff are knowledgeable regarding the healthcare system's inpatient influenza vaccination policy. However, failure to achieve the objectives related to vaccine eligibility screening, inpatient administration of the seasonal influenza vaccine, and related nursing documentation supports that the problem identified prior to health program implementation continues to exist. One potential reason for why these objectives were not achieved could include that a greater emphasis was being placed on inpatient administration of COVID-19 vaccines throughout the clinical period, ultimately decreasing the number of admitted veterans willing to also be vaccinated against seasonal influenza within the same admission. Additionally, the hospital ward where this health program was implemented was also experiencing a critical staffing shortage throughout the clinical project period, which led to the transition of care from a primary nursing model to a team-based nursing model. Inpatient influenza vaccination eligibility screening opportunities, vaccine administration, and related documentation may have been missed when establishing roles or tasks assigned to each nursing team member during this transition.

Dissemination

Clinical project findings the DNP project leader obtained throughout the data analysis period were shared with participating ward nursing staff during two final change-of-shift

huddles, with specific details on project successes and opportunities for growth throughout the remainder of the current flu season and future flu seasons discussed. During these huddles, participating nursing staff members were encouraged to share their thoughts and opinions related to the current inpatient influenza vaccination policy, with the DNP project leader's intent to report these thoughts back to ward management and hospital leadership. The DNP project leader scheduled a separate meeting with nurse management of the selected medical step-down ward and the chief nurse of the primary care and medicine service line for further discussion and dissemination of the clinical project findings. These nursing leaders expressed gratitude for the successful completion of this clinical project and shared with the DNP project leader that the service line would plan to place a greater emphasis on nursing staff education related to the inpatient influenza vaccination policy at the beginning of the next flu season for further improvement in eligibility screening, vaccine administration, and related nursing documentation opportunities. The clinical project findings were also shared with the quality team RN who oversaw the primary care and medicine service line, with the goal of comparing clinical project data with the influenza vaccination-related data that he had collected throughout the clinical project period. Each of the data components shared by the quality team RN were similar in nature to the findings obtained by the DNP project leader. Lastly, the final details of this clinical project were to be submitted to the Doctoral Project Repository for public access and for future reference by any interested parties.

Conclusion

In conclusion, annual rates of seasonal influenza vaccination among individuals living in the United States have continued to fall below the Healthy People 2030 goal and CDC recommendations. Seasonal influenza vaccination rates have been found to be especially low in

inpatient hospital settings, with several reasons identified for non-administration of the vaccine throughout hospital admissions. This problem is evident nationally, and non-administration of ordered influenza vaccines throughout inpatient hospital admissions had been identified as a current gap in practice specifically within one healthcare system of the Veteran's Health Administration. The need for a clinical project providing clarity and simplicity to the inpatient influenza vaccination process was justified to encourage nursing compliance with documentation and to promote increased influenza vaccination rates among admitted veterans. Following the mission, goals, and objectives created for this health program, the development and implementation of a nursing staff education program focusing on inpatient influenza vaccination eligibility screening, administration, and related documentation helped to address these clinical problems but ultimately did not solve them.

The DNP project leader's method for sampling throughout the clinical project period did not introduce bias or error into the results, as all ward nursing staff meeting inclusion criteria were included as participants in the education program, rather than enrolling only a select few of the nursing staff members. Additionally, the DNP project leader had no influence on which veterans were admitted to the selected medical step-down ward, also eliminating the chance of any bias. The DNP project leader was provided with ample time and resources for the completion of this clinical project, and the data collection tools utilized throughout the clinical project period were in no way a limiting factor for project completion. Successful aspects of this health program included the development of the nursing staff education program prior to health program implementation, and full participation of all eligible nursing staff members, supporting that inpatient nursing staff were knowledgeable of the healthcare system's inpatient influenza vaccination policy. However, additional opportunities for change in future practice related to

vaccine eligibility screening, inpatient administration of the seasonal influenza vaccine, and related nursing documentation were identified. While many components of this clinical project were specific to the veteran population, the overall concept of this clinical project was generalizable and could be applied within additional healthcare settings seeking improvement in their inpatient influenza vaccination process.

Based on the identified outcomes of this clinical project, annual nursing staff education on the healthcare system's inpatient influenza vaccination policy at the beginning of each flu season is recommended to increase eligibility screening opportunities, vaccination rates, and related documentation among admitted veterans. For further improvement in nursing practice, the healthcare system could consider additional streamlining of the eligibility screening and documentation processes by including an influenza vaccination screening tool within the established nursing admission database, rather than requiring nursing staff to complete a separate template for these critical assessments. Additional nursing collaboration with pharmacy to address outstanding vaccine orders could also help to improve the current inpatient influenza vaccination process. If continued on the selected medical step-down ward and eventually implemented throughout all inpatient units of the hospital, these influenza vaccine-related interventions have the potential to elevate levels of herd immunity, prevent influenza-related complications or mortality, and to provide veterans with the highest standard of nursing care.

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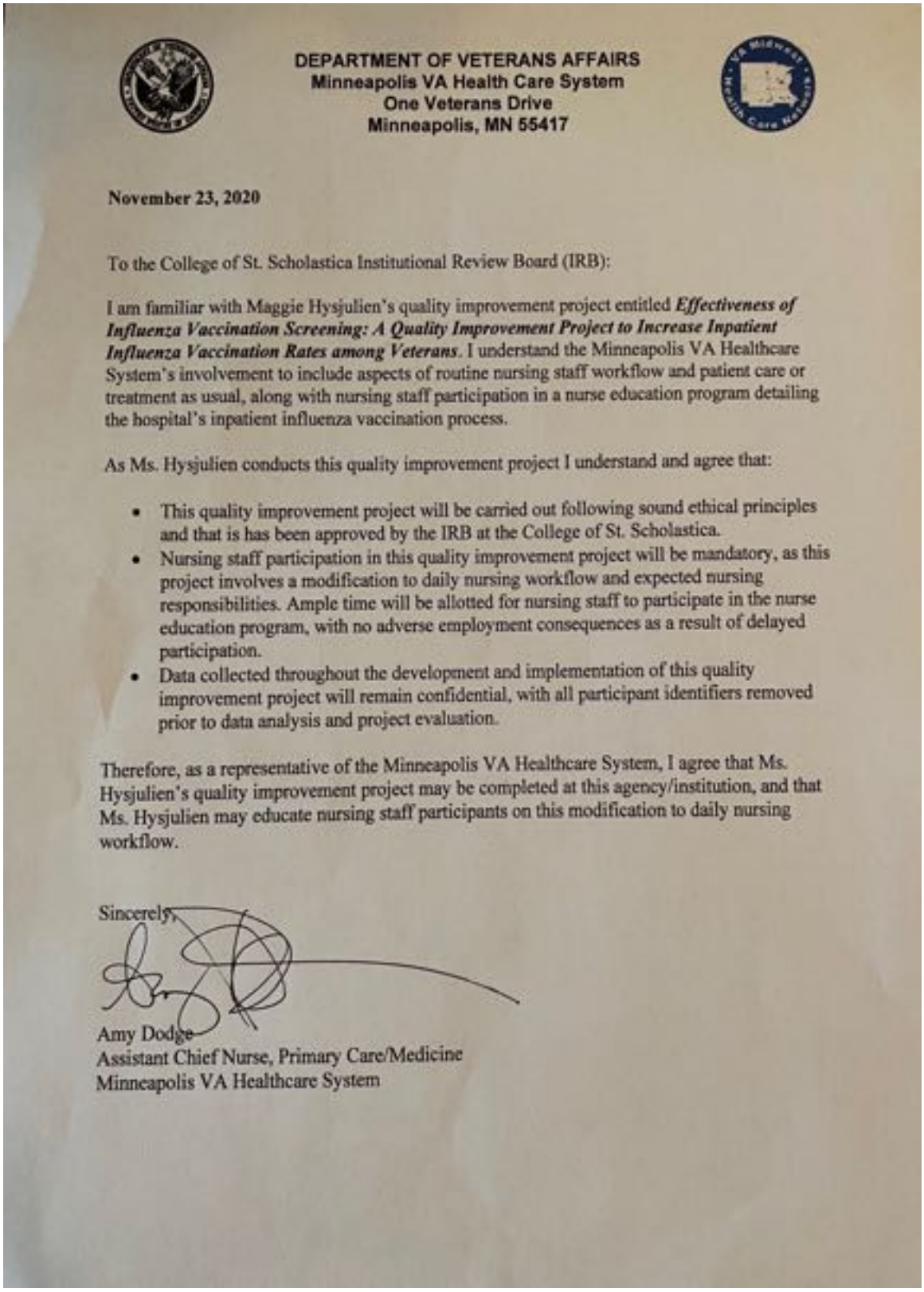
Appendix A

Agency Approval Letter



DEPARTMENT OF VETERANS AFFAIRS
Minneapolis VA Health Care System
One Veterans Drive
Minneapolis, MN 55417

November 23, 2020

To the College of St. Scholastica Institutional Review Board (IRB):

I am familiar with Maggie Hysjulien's quality improvement project entitled ***Effectiveness of Influenza Vaccination Screening: A Quality Improvement Project to Increase Inpatient Influenza Vaccination Rates among Veterans***. I understand the Minneapolis VA Healthcare System's involvement to include aspects of routine nursing staff workflow and patient care or treatment as usual, along with nursing staff participation in a nurse education program detailing the hospital's inpatient influenza vaccination process.

As Ms. Hysjulien conducts this quality improvement project I understand and agree that:

- This quality improvement project will be carried out following sound ethical principles and that is has been approved by the IRB at the College of St. Scholastica.
- Nursing staff participation in this quality improvement project will be mandatory, as this project involves a modification to daily nursing workflow and expected nursing responsibilities. Ample time will be allotted for nursing staff to participate in the nurse education program, with no adverse employment consequences as a result of delayed participation.
- Data collected throughout the development and implementation of this quality improvement project will remain confidential, with all participant identifiers removed prior to data analysis and project evaluation.

Therefore, as a representative of the Minneapolis VA Healthcare System, I agree that Ms. Hysjulien's quality improvement project may be completed at this agency/institution, and that Ms. Hysjulien may educate nursing staff participants on this modification to daily nursing workflow.

Sincerely,

Amy Dodge
Assistant Chief Nurse, Primary Care/Medicine
Minneapolis VA Healthcare System

Appendix B

IRB Approval Letter

The College of St. Scholastica

Institutional Review Board

DATE:	November 30, 2020
TO:	Maggie Hysjulien and [*Dr. Rhea Ferry*]
FROM:	The College of St. Scholastica, Institutional Review Board
RE:	Effectiveness of Influenza Vaccination Screening: A Quality Improvement Project to Increase Inpatient Vaccination Rates among Veterans
SUBMISSION TYPE:	New Project
ACTION:	NOT RESEARCH
REVIEW TYPE:	Expedited Review

Thank you for your submission of materials for your project. The College of St. Scholastica Institutional Review Board has reviewed your application and determined that the proposed activity does not meet the definition of research under the Code of Federal Regulations 45 Part 46.102 provided by the Department of Health and Human Services. As such, your project does not require ongoing review or approval from The College of St. Scholastica Institutional Review Board. We will retain a copy of this correspondence within our records.

Any modification to your project procedures that could change the determination of "not research" must be submitted to the IRB before implementation.

If you have any questions, please contact Nicole Nowak through the project email function in IRBNet or nnowaksaenz@css.edu. Please include your study title and reference number in all correspondence with the IRB office.

Best regards,

Nicole T. Nowak, Ph.D.
Chair, Institutional Review Board
The College of St. Scholastica
Duluth, MN 55811

Appendix C

Abstract

Nature and Scope of the Project: Globally, approximately 1 billion diagnosed cases of influenza occur yearly, with 290,000 to 650,000 of these cases resulting in death (World Health Organization, 2019). Healthy People 2030 included increasing the overall number of Americans who receive an annual influenza vaccine as an objective, with a goal percentage of 70% (Office of Disease Prevention and Health Promotion, 2022). Although yearly vaccination rates have been trending upward, the overall percentage of Americans who receive the influenza vaccine each year remains low, especially among hospitalized individuals (Joint Commission, 2018). The objective of this project was to increase seasonal influenza vaccination rates among admitted veterans through improvements in nursing staff education, vaccination eligibility screening, and related nursing documentation.

Project Implementation: The health program implemented was a nursing staff education program focused on inpatient influenza vaccination screening, vaccine administration, and related nursing documentation. This education program was presented to staff during in-service sessions, with pre- and post-tests completed to assess participant knowledge of the healthcare system's inpatient influenza vaccination policy. Throughout the 90-day project period, routine chart auditing was completed to monitor completed influenza vaccination eligibility screenings, vaccination rates, and related nursing documentation for admitted veterans.

Outcomes: The result of a paired *t*-test comparing pre- and post-test scores was significant based on an alpha value of .05, $t(34) = -6.91$, $p < .001$, indicating that the mean post-test score was significantly higher than the mean pre-test score and that staff knowledge increased after education program implementation. Comparing chart auditing data from the 2020-2021 flu season to data collected during the clinical project period, the percentages of admitted veterans

screened for eligibility to receive the seasonal influenza vaccine, influenza vaccines ordered and administered, and properly documented vaccination encounters all increased notably, indicating improved staff adherence to the healthcare system's inpatient influenza vaccination policy.

Recommendations: Annual nursing staff education on the healthcare system's inpatient influenza vaccination policy at the beginning of each flu season is recommended to increase eligibility screening opportunities, vaccination rates, and related documentation among admitted veterans.

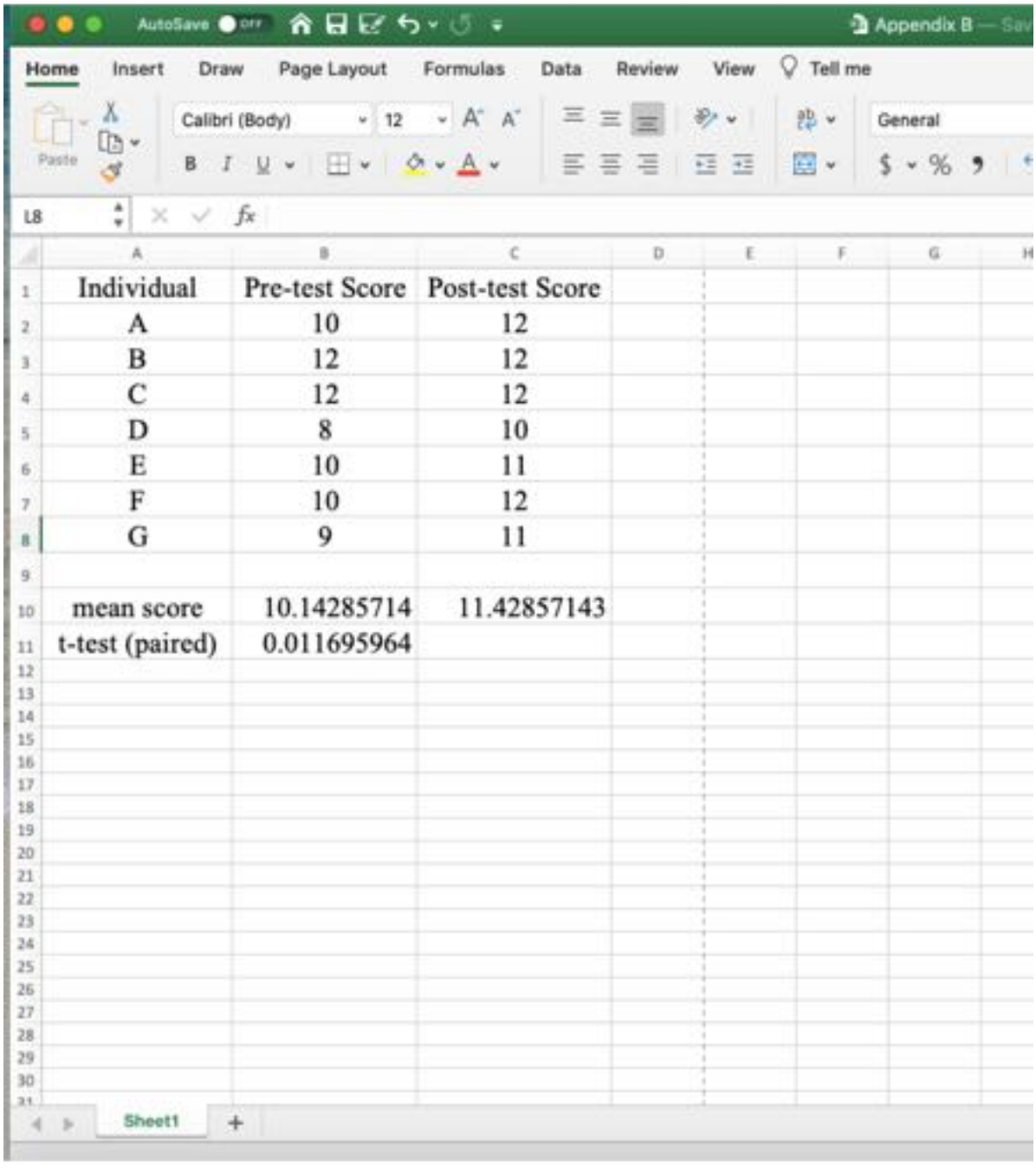
Appendix D

Sample Attendance Roster

Date	Name	Title	Service Line/Ward
	John Doe	RN	Ward 3K

Appendix E

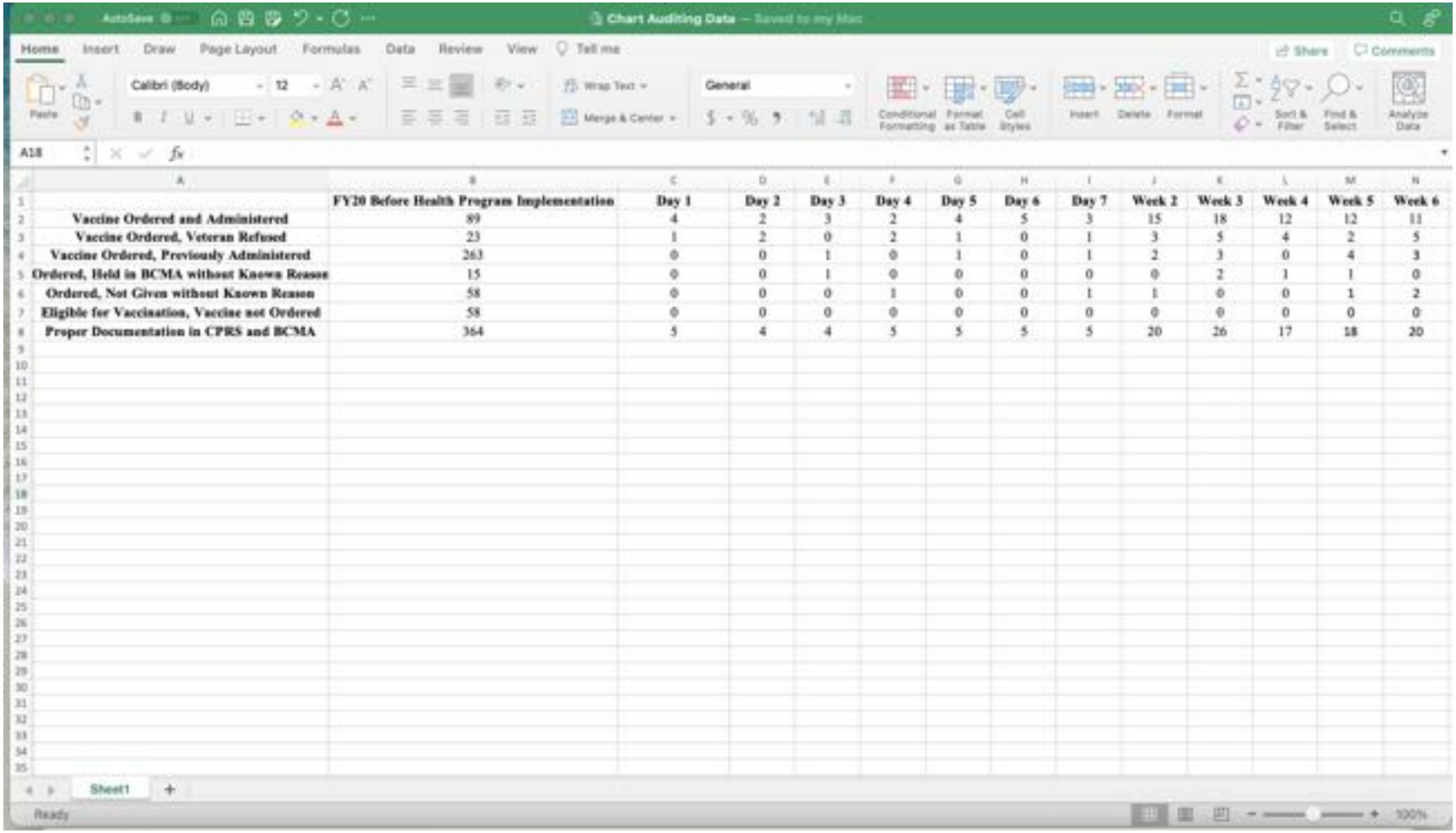
Sample Pre- and Post-Test Data Collection Tool



Individual	Pre-test Score	Post-test Score
A	10	12
B	12	12
C	12	12
D	8	10
E	10	11
F	10	12
G	9	11
mean score	10.14285714	11.42857143
t-test (paired)	0.011695964	

Appendix F

Sample Chart Audit Data Collection Tool



	FY20 Before Health Program Implementation	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Week 2	Week 3	Week 4	Week 5	Week 6
Vaccine Ordered and Administered	89	4	2	3	2	4	5	3	15	18	12	12	11
Vaccine Ordered, Veteran Refused	23	1	2	0	2	1	0	1	3	5	4	2	5
Vaccine Ordered, Previously Administered	263	0	0	1	0	1	0	1	2	3	0	4	3
Ordered, Held in BCMA without Known Reason	15	0	0	1	0	0	0	0	0	2	1	1	0
Ordered, Not Given without Known Reason	58	0	0	0	1	0	0	1	1	0	0	1	2
Eligible for Vaccination, Vaccine not Ordered	58	0	0	0	0	0	0	0	0	0	0	0	0
Proper Documentation in CPRS and BCMA	364	5	4	4	5	5	5	5	20	26	17	18	20

Appendix G

Gantt Chart