

INCREASING IMMUNIZATION RATES IN ADULTS AGED 65 AND OLDER
IN RURAL PRIMARY CARE

By

Allison Beth Stadler

A professional paper submitted in partial fulfillment
of the requirements for the degree

of

Master of Nursing

In

Clinical Nurse Leadership

MONTANA STATE UNIVERSITY
Bozeman, Montana

May 2025

©COPYRIGHT

by

Allison Beth Stadler

2025

All Rights Reserved

Abstract

Vaccine hesitancy is a prevalent barrier to vaccination and is responsible for suboptimal immunization rates. This quality improvement project sought to decrease vaccine hesitancy and increase immunization rates in adult patients 65 and older in a rural internal medicine clinic in Montana, specifically focusing on pneumococcal, influenza, and COVID-19 vaccines. This project follows the Institute for Healthcare Improvement Model for Improvement framework. A microsystem assessment revealed a gap in patient education regarding these vaccines. A literature review was conducted, and motivational interviewing was found to be an evidence-based tool healthcare staff can use to decrease vaccine hesitancy. An aim was created: Staff will utilize motivational interviewing techniques to decrease vaccine hesitancy and increase immunization rates of pneumococcal, influenza, and COVID-19 by 20%. Interventions were chosen to educate staff about the three specific vaccines and motivational interviewing techniques and to have staff utilize motivational interviewing techniques during each rooming process. The project implementation was broken down into seven steps and addressed the most significant potential barrier: staff resistance to change. This quality improvement project supports nursing education and practice change in primary care. This nursing practice change can increase immunization rates and reduce illness, hospitalizations, and death in older adult patients in rural primary care.

Keywords: vaccine hesitancy, pneumococcal, influenza, COVID-19, motivational interviewing

Increasing Immunization Rates in Adults Aged 65 and Older in Rural Primary Care

Chapter One

According to the National Center for Health Statistics (2021), pneumonia, influenza, and COVID-19 are among the top 15 causes of death in the United States. Pneumococcal, influenza, and COVID-19 vaccines are available for adults 65 and older in Montana, yet immunization rates remain suboptimal (Centers for Disease Control [CDC], 2021; CDC, 2024b; Montana.gov, 2023). Vaccine hesitancy, when a patient declines vaccination even though the vaccine is available, is a prevalent barrier to vaccination and disease prevention. Vaccine hesitancy is complex and often multifactorial. Mistrust of pharmaceutical companies, vaccine safety concerns, fear of side effects, religious reasons, and inaccurate information from family and friends contribute to vaccine hesitancy (Breckenridge et al., 2021). According to de Gomensoro et al. (2018), many patients are unaware of the effectiveness or benefits of vaccines due to inconsistent education and advice from healthcare workers. To decrease vaccine-preventable illness and death, healthcare providers must utilize evidence-based practices to reduce vaccine hesitancy and increase vaccination rates.

Background

The microsystem assessment was completed in a rural health clinic. The internal medicine clinic is part of a more extensive primary care system that includes family practice, women's services, and pediatrics, divided into separate hallways. The rural health clinic is attached to a critical access hospital. The microsystem assessment was explicitly completed in the internal medicine portion of the clinic, which is part of a rural health system in Park County, Montana.

Purpose

The purpose of the internal medicine clinic is to provide high-quality primary care for adult patients in rural Montana.

Population

This microsystem includes adult patients, with at least 90% of the population aged 65 and older, and most of the patients of Caucasian ethnicity. Many patients have co-morbidities such as hypertension, diabetes, hyperlipidemia, cardiovascular disease, and pulmonary disease, which puts them at greater risk of complications from pneumococcal, influenza, and COVID-19. Most have Medicare insurance coverage, are retired from various professions, and live in rural areas. Some patients travel as far as an hour to receive care.

Professionals

The clinic has a director who manages all the departments, including the internal medicine clinic. The internal medicine clinic comprises three medical doctors, one nurse practitioner, five nurses, and three medical assistants who work varying schedules. On average, the internal medicine clinic sees 170 patients weekly for wellness and problem-focused visits.

Processes

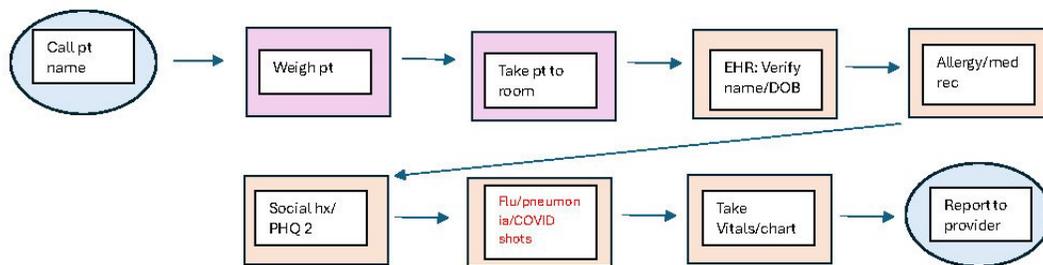
When nurses and medical assistants “room” adult patients in the internal medicine clinic, the electronic health record (EHR) prompts them to ask if the patient is current on pneumococcal, influenza, and COVID-19 vaccines. These questions are asked regardless of whether the visit is a wellness visit or a problem-focused visit. During non-peak influenza seasons, when the influenza vaccine is unavailable, the patient is asked if they received it during the last influenza season. The patient’s immunization record also populates. There is an option to pull information from imMTrax, Montana’s statewide immunization record, in case a patient has

received an immunization at a pharmacy or another practice. Based on the patient responses and the immunization record, the EHR recommends the necessity of pneumococcal, influenza, and COVID-19 vaccines at the visit. Currently, the nurses and medical assistants do nothing with these recommendations, such as advising the patient, providing education or recommendations, or prompting the provider that immunizations are due. The rooming process is displayed below in Figure 1.

Figure 1

Process Map

Process Map: Rooming IM patient



Patterns

It was observed that staff do not provide education or recommendations if vaccines are indicated, as prompted by the EHR. Clinic staff reported that they do not know what to say when patients ask questions or show vaccine hesitancy about specific vaccinations due to a lack of training and knowledge about vaccines and vaccine-preventable illnesses. They do not feel comfortable offering recommendations or engaging patients in vaccine discussions. Some feel it is the provider's responsibility. Currently, the clinic does not provide specific training for staff

administering immunizations beyond how to order the vaccine, administer the vaccine, and chart that it was given.

Upon speaking with two adult patients regarding their experience with vaccines in the clinic, they reported that the staff who roomed them asked about pneumococcal, influenza, and COVID-19 immunizations but did not offer education or guidance. During their visit with their provider, the provider provided recommendations for vaccines they should receive. One patient reported that he received a pneumonia vaccine, but the staff did not provide education, and he was not asked if he had any questions. He was given a Vaccine Information Sheet (VIS) printout before the vaccine was given. Based on the patient experiences in this internal medicine clinic, the provider appears to be the vaccine promoter and educator, and the support staff only administers them.

Problem

Dubé et al. (2020) found that equipping staff with training and immunization best practices can increase vaccination rates and build patient trust. In the internal medicine clinic, patients are not receiving education or guidance from healthcare staff to build trust, reduce vaccine hesitancy, and increase immunization rates. It is essential to review the literature, discover what techniques work best to reduce vaccine hesitancy, and equip staff with the training and support to utilize these techniques every time they room a patient.

Significance

The World Health Organization has designated vaccine hesitancy a global health concern (Garrison et al., 2023). Vaccines prevent disease, the spread of disease, undo suffering, and death. Older adults are among the most vulnerable due to age-related weakened immune systems and comorbidities. Although immunizations are available, pneumococcal, influenza, and

COVID-19 continue to be included in the top 15 causes of death in the United States (National Center for Health Statistics, 2021).

Current Immunization Rates

During the 2019-2020 influenza season, influenza alone accounted for approximately 25,000 deaths in the United States. Individuals aged 65 and older made up 64% of these deaths (CDC, 2024a). In 2019, only 66% of adults aged 65 and older were vaccinated for influenza in Montana (CDC, 2021). Immunization rates were similar for the pneumococcal vaccine in 2019, with only half of Medicare-enrolled Montanans aged 65 and older vaccinated (CDC, 2024b). More recently, in 2023, only 32% of Park County residents aged 60 and older were fully vaccinated for COVID-19 (Montana.gov, 2023). These rates are suboptimal for disease prevention and do not meet national health goals. Healthy People 2030 set a national goal of increasing yearly influenza rates to at least 70%, which has not been met (Office of Disease Prevention and Health Promotion, n.d.). Recent data suggests that influenza immunization rates are decreasing instead of increasing. According to the CDC, most of the community must be immunized so that herd immunity can occur, and disease is less likely to spread (CDC, 2024c). Vaccine hesitancy must be addressed.

Costs

Yearly, influenza accounts for almost one million medical visits and nearly 200,000 hospitalizations in the United States for older adults (CDC, 2024a). Considering that many older adults have Medicare as their insurance, it can be challenging for hospitals to be fully reimbursed for the care they provide, and the financial impact can be detrimental. More than half of hospitalizations in Montana are of patients with Medicare or Medicaid insurance coverage (American Hospital Association, 2024). According to the American Hospital Association (2024),

“It is broadly acknowledged that Medicare reimburses hospitals less than the cost of providing care, and their reimbursement rates are non-negotiable” (p. 1). Preventing disease may be the best way to decrease costs to patients and rural health systems.

Purpose/Aim

This project aims to decrease vaccine hesitancy in a rural primary care setting. Staff will utilize motivational interviewing techniques to reduce vaccine hesitancy and increase immunization rates of pneumococcal, influenza, and COVID-19 by 20%.

Chapter Two

This chapter will review the search process, identify a theoretical framework, synthesize the literature regarding vaccine hesitancy, and summarize common themes identified to address the problem. With the help of a research librarian, three search engines were explored, and a search strategy was defined. The Institute for Healthcare Improvement (IHI) Model for Improvement was chosen as the theoretical framework for this project to provide an organized way to achieve the project's aim. Of the 12 articles found in the literature search, eight were reviewed and synthesized. This chapter will conclude with a summary of the current evidence to successfully address vaccine hesitancy and improve immunization rates.

Search Strategy

This literature review utilized CINAHL Ultimate, PubMed, and Web of Science search engines. CINAHL Ultimate was chosen because it contains peer-reviewed nursing and allied health literature. PubMed was selected because it includes peer-reviewed journal articles in health and life sciences. Web of Science was chosen upon the recommendation of the research librarian as it offers an extensive, combined selection of scholarly articles.

The keywords utilized in various combinations during this literature review were primary care, vaccine hesitancy, adult vaccine hesitancy, increasing vaccine rates, techniques to decrease vaccine hesitancy, motivational interviewing, influenza, pneumococcal, and COVID-19. These keywords were chosen to find literature about adult populations, attitudes toward immunizations, and techniques to decrease vaccine hesitancy and increase immunization rates.

The filters utilized during this search included peer-reviewed, full-text, English, and articles published within the last five years. These filters ensured that the literature found was current, from a scholarly source, and fully accessible. After the author performed a preliminary search, the research librarian assisted in excluding articles discussing COVID-19 immunizations as the topic of adult COVID-19 vaccine hesitancy during the COVID-19 pandemic dominated the search results but did not offer information for decreasing vaccine hesitancy.

The initial search produced 12 articles. Eight articles were chosen for inclusion in the literature synthesis after excluding articles that did not pertain to adult vaccine hesitancy. The articles selected are a systemic review, a combination systematic/meta-analysis review, a scoping review, a comparison study, and a professional educational article. The final three articles are randomly selected pre- and post-test studies. The eight selected articles are displayed in an Evidence Table in Appendix A.

This literature synthesis explores increasing adult immunization rates, decreasing adult vaccine hesitancy, and utilizing motivational interviewing to decrease vaccine hesitancy. Although studies were found exploring themes in COVID-19 vaccine hesitancy and suggest theoretical ways to increase immunization rates based on other vaccine studies, no studies were found regarding techniques to explicitly increase immunization rates of the current mRNA COVID-19 vaccines.

The author concludes that there are most likely studies in the works that have not yet been published.

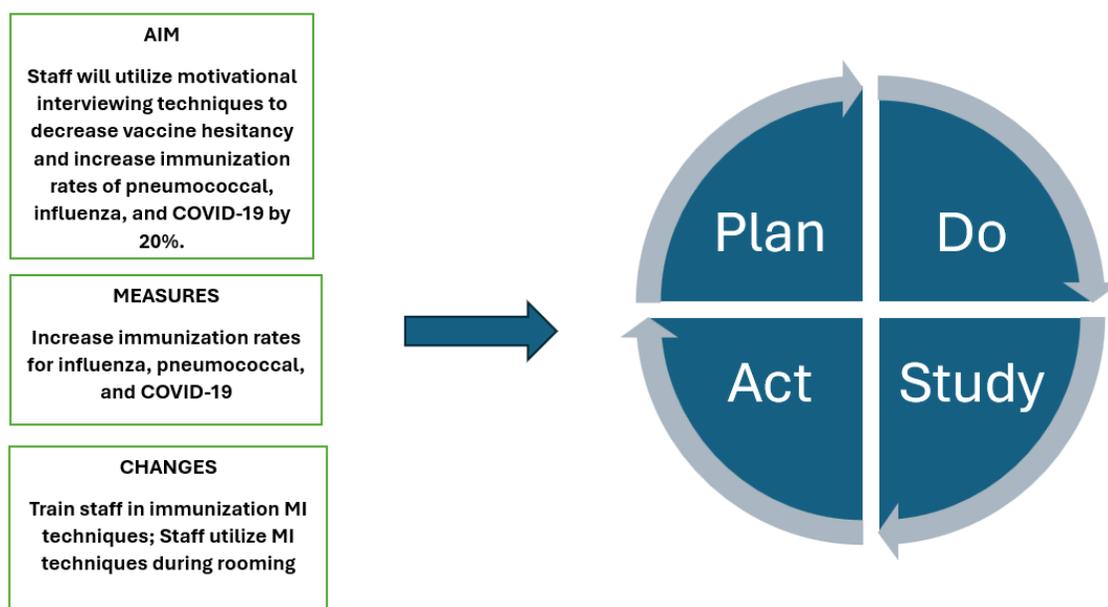
Theoretical Framework

This project follows the Institute for Healthcare Improvement (IHI) Model for Improvement. The Model for Improvement is a theoretical framework useful in healthcare settings for diagnosing problems and closing quality gaps (Ogrinc et al., 2023). According to Ogrinc et al. (2023), “The model uses three questions to guide the improvement process: What are we trying to accomplish? (aim); How will we know that a change is an improvement? (measures); What change can we make that will result in improvement? (changes)” (p. 17). Once these three questions are answered, testing can begin using the Plan-Do-Study-Act (PDSA) process.

There are many quality gaps in healthcare. The IHI Model for Improvement provides a simple and organized way for multidisciplinary teams to identify gaps, create a specific and measurable goal, and measure whether their chosen interventions work. The PDSA process is generally completed numerous times, with minor changes being made until the goal of the aim statement is reached (Ogrinc et al., 2023). If the PDSA shows positive outcomes based on data collection over time, the multidisciplinary team will know that their intervention helps reach the goal set in the aim statement. The IHI Model for Improvement applies to this project as a gap in patient education to decrease vaccine hesitancy has been identified, an aim has been created to decrease vaccine hesitancy and increase immunization rates, and measurable steps will be taken to achieve the aim, as outlined in Figure 2 below.

Figure 2

The IHI Model for Improvement



Synthesis of the Literature

Researchers have found through systematic, meta-analysis, and scoping reviews that techniques to decrease vaccine hesitancy and increase adult immunization rates are often multifactorial (Lo Moro et al., 2023; Malik et al., 2023; Nasreen et al., 2022). Of the literature reviewed, healthcare provider recommendation of immunizations was found to have the most significant impact on increasing immunization rates (Lo Moro et al., 2023; Malik et al., 2023; Nasreen et al., 2022; Nguyen et al., 2024). Beyond healthcare provider recommendations, healthcare staff engaging patients in vaccine education specific to the patient population decreased vaccine hesitancy (Lo Moro et al., 2023; Malik et al., 2023; Nasreen et al., 2022). Healthcare providers recommending and promoting vaccines are essential to increasing immunization rates.

Knowledgeable Healthcare Providers

Nasreen et al. (2022) discovered in their scoping review of ways to increase older adult pneumococcal vaccination rates that deterrents to immunization were healthcare providers' lack of vaccine knowledge regarding the safety and effectiveness of the vaccine. This showcases the importance of healthcare providers receiving vaccine education to address patient concerns and answer patient questions. Lo Moro et al. (2023) found that communication-based training for staff, such as motivational interviewing (MI), was more effective than information-based training in reducing vaccine hesitancy and increasing vaccination rates. Communication-based training equips staff with the skills necessary to engage patients in educational conversation, allowing patients to be involved in their healthcare decisions. Patients respond better to tailored education that is specific to their needs and concerns than traditional patient education, which can be broad and dumps information on patients.

Motivational Interviewing

Motivational interviewing is an evidence-based tool that can be used to overcome vaccine hesitancy. Through MI, the patient and healthcare provider work together to guide the patient in understanding their options and empower the patient to make positive decisions about their healthcare (Breckenridge, 2022; Gagneur et al., 2019; Garrison et al., 2023; Labbé et al., 2022). Through MI, healthcare staff actively listen and empathize with the patient's point of view. A systematic review of 139 articles from 2016 to 2022 by Lo Moro et al. (2023) found that vaccine hesitancy is significantly reduced through patient and staff conversations, specifically through MI. Motivational interviewing has effectively increased influenza immunization rates and shows promise for increasing rates of other vaccines (Breckenridge, 2022; Gagneur et al., 2019; Garrison et al., 2023; Labbé et al., 2022). Motivational interviewing is a valuable tool for healthcare providers to utilize when educating patients about immunizations.

Healthcare Provider Training

Motivational interviewing is a learned skill. Studies have shown that nurses, interns, and physicians can become proficient in immunization MI through training sessions and practice (Gagneur et al., 2019; Garrison et al., 2023; Labbé et al., 2022). Pre-and post-test design studies using validated tools such as the Motivational Interviewing Skills in Immunization (MISI), Motivational Interviewing Treatment Integrity Scale (MITI), and the Health Professional Vaccine Confidence and Behaviors (Pro-VC-Be) questionnaire show that immunization MI training that is 4-11 hours is successful in preparing healthcare providers in the core concepts of using MI with patients to increase immunization rates (Gagneur et al., 2019; Garrison et al., 2023; Labbé et al., 2022). In the study conducted by Labbé et al. (2022), providers had the opportunity to practice their newly learned MI skills with randomly selected vaccine-hesitant rheumatoid arthritis patients. Of the patients who had MI encounters with their provider, 86% reported a decrease in vaccine hesitancy toward the influenza vaccine (Labbé et al., 2022).

Limitations

Literature to decrease hesitancy was lacking for the mRNA COVID-19 vaccine. The mRNA COVID-19 vaccine is a newer vaccine, and its release has been surrounded by public controversy. In their comparison study, Nguyen et al. (2024) found that adults display more hesitancy toward the COVID-19 vaccine than vaccines in general. Breckenridge (2022) encourages using MI with the COVID-19 vaccine due to its success with other vaccines, but actual evidence is needed. Future research is needed to explore how attitudes and acceptance of the vaccine have changed as the vaccine is now more widely available and if MI is a successful tool for facilitating its uptake.

Summary

Vaccine hesitancy is one of the top ten global health concerns designated by the World Health Organization (Garrison et al., 2023). Immunization rates for older adults in a rural south-central county of Montana for influenza, pneumococcal, and COVID-19 are 66% or less, which falls below the national goal of at least 70% (CDC, 2021; CDC, 2024b; Montana.gov, 2023; Office of Disease Prevention and Health Promotion, n.d.). It is essential for healthcare providers to utilize evidence-based tools and techniques to increase immunization rates.

Healthcare provider recommendations and engaging patients through motivational interviewing are evidence-based practices that increase immunization rates (Lo Moro et al., 2023). It is imperative that healthcare providers make immunization recommendations and engage patients using MI techniques in conversations about immunizations to increase the immunization rates for pneumococcal, influenza, and COVID-19.

Motivational interviewing training has successfully equipped healthcare providers with the skills to discuss immunizations with patients and decrease vaccine hesitancy (Gagneur et al., 2019). A communication-based immunization training course that focuses on MI should be part of ongoing staff education and training. In closing, the current evidence supports healthcare staff utilizing MI techniques combined with provider recommendations to achieve the aim of this project: *Staff will utilize motivational interviewing techniques to decrease vaccine hesitancy and increase immunization rates of pneumococcal, influenza, and COVID-19 by 20%.*

Chapter Three

Overview

This quality improvement project aims to increase immunization rates for the pneumococcal, influenza, and COVID-19 vaccines in patients aged 65 and older in a rural internal medicine clinic in Montana. This project follows the Institute for Healthcare

Improvement (IHI) Model for Improvement. Through the IHI Model for Improvement, staff will be trained in motivational interviewing techniques to address vaccine hesitancy in adult patients, specifically for the pneumococcal, influenza, and COVID-19 vaccines. At every visit, staff will engage patients in conversation about pneumococcal, influenza, and COVID-19 vaccines to decrease vaccine hesitancy and increase immunization rates. Immunization rate data will be collected pre- and post-intervention from the clinic's electronic health record to determine if the intervention successfully reaches the project's aim: Staff will utilize motivational interviewing techniques to decrease vaccine hesitancy and increase immunization rates of pneumococcal, influenza, and COVID-19 by 20%.

Design

This Clinical Quality Improvement project takes place in a rural health clinic affiliated with a critical access hospital in south-central Montana. The target population consists of patients aged 65 and older in the internal medicine department of the rural health clinic. Internal medicine staff and patients are the stakeholders who will benefit the most from this improvement. Internal medicine staff will benefit from the immunization MI training to improve their ability to discuss the pneumococcal, influenza, and COVID-19 vaccines with patients and answer patient questions. Patients will benefit from the improvement by engaging in education tailored to their vaccine hesitancy concerns, enabling them to make informed, preventive health decisions. More detailed information about the microsystem is presented in Chapter One.

Planning

A microsystem assessment was conducted, which included patient and staff interviews and observing the patient rooming process in the internal medicine clinic. A problem was identified in that patients are not engaged in conversations and education regarding

pneumococcal, influenza, and COVID-19 vaccines during the rooming process. Through a literature review, evidence-based interventions were chosen to train staff in immunization motivational interviewing (MI) techniques specific to the pneumococcal, influenza, and COVID-19 vaccines and have staff use these techniques when rooming patients in the internal medicine clinic to increase immunization rates for pneumococcal, influenza, and COVID-19 vaccines (Breckenridge, 2022; Gagneur et al., 2019; Garrison et al., 2023; Labbé et al., 2022).

The clinic manager, clinic educator, and hospital data analyst will play key roles in this clinical QI project. The clinic manager will assist with project promotion and communication with staff. The clinic educator will facilitate the immunization MI training. The hospital data analyst will pull data from Cerner for the pneumococcal, influenza, and COVID-19 vaccines and place the data in an XmR control chart to evaluate baseline historical immunization rates in the internal medicine clinic.

Theoretical Framework

As mentioned in Chapter Two, the Institute for Healthcare Improvement (IHI) Model for Improvement serves as the theoretical framework guiding the project. During the planning phase of the IHI Model for Improvement, an aim was created based on the results of the microsystem assessment. The project's aim is "Staff will utilize motivational interviewing techniques to decrease vaccine hesitancy and increase immunization rates of pneumococcal, influenza, and COVID-19 by 20%." The interventions chosen to achieve the aim of this clinical QI project are:

1. Staff complete immunization MI training and education specific to the pneumococcal, influenza, and COVID-19 vaccines.

2. Staff utilize immunization MI techniques for the pneumococcal, influenza, and COVID-19 vaccines at each visit when rooming patients.

The interventions will be tested using the IHI Model for Improvement's Plan-Do-Study-Act (PDSA) process. The PDSA process will provide an organized and detailed framework to plan and implement the interventions, guide data collection, and measure the success of the interventions in achieving the project's aim. If the interventions are unsuccessful, changes will be explored, and a new PDSA process will be completed (Ogrinc et al., 2023).

Possible Barriers

The first potential barrier to the success of this QI project is resistance to change. There is great potential that some staff will resist incorporating motivational interviewing techniques into their daily practice when rooming patients. There is a potential that some staff will not take the training seriously and think that it is not essential to have conversations with patients about vaccines or address vaccine hesitancy. To overcome this barrier, staff can be presented with concise, peer-reviewed evidence showing why the intervention is essential at staff meetings and during the immunization MI training course. During the microsystem assessment interviews, several staff members expressed frustration that they had not received training to prepare them for vaccine discussions with patients. These staff members can be early adopters of the proposed changes in this project and can help motivate other staff members to accept the change. Data can be consistently shared to keep staff engaged and show their progress toward increasing immunization rates in the internal medicine clinic.

The second potential barrier is poor communication. The potential for success is low if the aim and interventions are not communicated well to staff. Staff buy-in is vital. The clinic

manager and clinic educator can combat poor communication by frequently discussing the project at staff meetings, presenting information in a clear and concise format, answering questions, sharing the project's milestones, and providing opportunities for staff to practice and refine their MI techniques. Project information, challenges, and successes can also be shared at leadership meetings to keep clinic leadership engaged in the project and its potential impact on the community's preventive health.

Implementation

The project implementation is broken down into seven steps. Appendix B provides a detailed timeline for each step and includes who is responsible for completing each step.

Step One

The project's aim will be communicated to staff during a staff meeting in the first step. Staff will be presented with the findings of the microsystem assessment, preliminary immunization data, information on the project's importance, and an explanation of how training in immunization MI techniques will help achieve the project's goals. Questions about the project will be answered.

Step Two

The second step of the implementation plan is to create an email that will lead staff to a free motivational interviewing training module for immunizations. In addition, in-person motivational interview skills sessions will be planned and organized, which include education specific to the pneumococcal, influenza, and COVID-19 vaccines. Staff will complete all training during their scheduled work time.

Step Three

In the third step, data will be gathered from Cerner, the clinic's electronic health record. Data will be collected for historical and current immunization rates of internal medicine patients aged 65 and older for pneumococcal, influenza, and COVID-19 vaccines from the past 12 months and placed in an XmR control chart.

Step Four

Staff will complete the online immunization MI training module during normal working hours in the fourth step.

Step Five

In step five, staff will attend one of two in-person skills sessions to practice immunization MI techniques based on presented scenarios and complete education about the pneumococcal, influenza, and COVID-19 vaccines. Training will be completed during normal working hours.

Step Six

In the sixth step, staff will begin using immunization MI techniques to engage patients in conversations about pneumococcal, influenza, and COVID-19 vaccines during the rooming process at each visit.

Step Seven

The first round of data analysis will be completed in the seventh step. Three months after the project initiation, data will be gathered from Cerner for internal medicine patients aged 65 and older for pneumococcal, influenza, and COVID-19 vaccines. The data will be plotted in the XmR control chart to determine if immunization rates have improved by 20%, indicating that the project's goal has been met. If the goal has not been met, another PDSA process will begin to address the newly identified issues. Please refer to Appendix B for the anticipated timeline for each step, along with the individual responsible for each step.

Implementation Budget

Appendix C provides a detailed estimated budget for the project's implementation. Staff hourly salaries are estimated from the mean pay ranges of staff at the clinic. The initial implementation is estimated to cost \$1521.80. The budget includes staff hourly salaries and the necessary supplies. Please refer to Appendix C for budget details.

Evaluation

Three months after implementing the second intervention, in which staff utilize immunization MI techniques during rooming, data will be collected from Cerner for the pneumococcal, influenza, and COVID-19 vaccines. The immunization rate data will be included in the XmR control chart, which was previously initiated using historical immunization data. The XmR control chart enables trend visualization over time.

The expected outcome measure of this clinical QI project is that immunization rates will increase for pneumococcal, influenza, and COVID-19 vaccines in patients aged 65 and older in the internal medicine clinic. The project's aim will be met when immunization rates increase by 20% for each vaccine. Improvement will be noted by upward immunization rates, even if the 20% goal is not met by the first data collection cycle at three months. If the project's aim is not met within the first three months, another PDSA cycle will be initiated to evaluate why the goal was not achieved and what adjustments are needed.

Summary

This clinical QI project follows the IHI Model for Improvement, with the first PDSA process taking approximately six months. Resistance to change is the most significant potential barrier to the success of this project. This barrier can be mitigated with careful and thorough communication and encouragement. Project implementation is broken down into seven steps

following the IHI Model for Improvement PDSA process. The first project evaluation will take place three months after implementation to see if the project's aim is met: Staff will utilize motivational interviewing techniques to decrease vaccine hesitancy and increase immunization rates of pneumococcal, influenza, and COVID-19 by 20%.

Chapter Four

Introduction

This quality improvement project sought to increase immunization rates for the pneumococcal, influenza, and COVID-19 vaccines in patients aged 65 and older in a rural internal medicine clinic in Montana by 20% through motivational interviewing. A microsystem assessment revealed a gap in care: Patients were not receiving education or guidance from healthcare staff to reduce vaccine hesitancy and increase immunization rates. A literature review was conducted, and interventions were developed to achieve the project's objectives and close the identified gap. This chapter will provide a project summary, discuss surprises in the literature review, and discuss how well the Institute for Healthcare Improvement (IHI) Model for Improvement fits the project. Implications for the project's findings will be discussed, and recommendations will be given for future projects. Lastly, this project and how it fits the Clinical Nurse Leader role will be presented.

QI Project Summary

This project aimed to decrease adult vaccine hesitancy in a rural primary care setting and increase pneumococcal, influenza, and COVID-19 immunization rates among patients aged 65 and older. Data show that only 66% of older adults in Montana were vaccinated against influenza in 2019 (CDC, 2021). Only around 50% of Medicare-enrolled Montanans aged 65 and older

were vaccinated for pneumococcal in 2019 (CDC, 2024b). In 2023, only 32% of older adult residents in Park County were fully immunized against COVID-19 (Montana.gov, 2023).

A literature review showed that motivational interviewing is an effective technique for reducing adult vaccine hesitancy and increasing immunization rates by engaging patients in conversation, providing patient-specific education, and empowering patients to make informed decisions about immunizations (Breckenridge, 2022; Gagneur et al., 2019; Garrison et al., 2023; Labbé et al., 2022). The literature review also discovered that motivational interviewing is a learned skill. Therefore, healthcare staff must attend training sessions and practice to become proficient in motivational interviewing (Gagneur et al., 2019; Garrison et al., 2023; Labbé et al., 2022).

This project followed the IHI Model for Improvement. The IHI Model for Improvement Framework was selected for its ability to provide a structured approach to identifying quality gaps in healthcare, developing measurable interventions, and then evaluating whether these interventions achieve the project's goal. Through the IHI Model for Improvement, an aim was created: Staff will utilize motivational interviewing techniques to decrease vaccine hesitancy and increase immunization rates of pneumococcal, influenza, and COVID-19 by 20%. To achieve the aim, two interventions were chosen: training staff in immunization MI techniques specific to the pneumococcal, influenza, and COVID-19 vaccines through online and in-person education and having staff utilize MI techniques when rooming patients at each appointment. Following the IHI Model for Improvement framework, a Plan-Do-Study-Act (PDSA) plan was developed, which consisted of seven steps to achieve the aim.

The microsystem assessment revealed that staff were not engaging patients in conversation or providing education on the pneumococcal, influenza, and COVID-19

vaccines, despite the EHR prompting staff to ask patients about their immunization status at each appointment. Pneumococcal, influenza, and COVID-19 are in the top 15 causes of death in the United States (National Center for Health Statistics, 2021). Influenza was responsible for the death of 25,000 Americans in 2021, with adults aged 65 and older accounting for 64% of those deaths (CDC, 2024a). Increased immunization rates for pneumococcal, influenza, and COVID-19 in patients aged 65 and older will prevent illness, hospitalization, and death in this patient population.

Discussion

Nasreen et al. (2022) found that vaccine knowledge among healthcare staff is crucial in reducing vaccine hesitancy regarding the pneumococcal vaccine. Patients expect healthcare staff to be able to answer questions they may have regarding vaccine safety and efficacy. Labbé et al. (2022) found that MI is an effective technique for increasing influenza immunization rates among adults and allows staff to focus on patients' specific questions and concerns regarding vaccines. Surprisingly, the literature review revealed little regarding the mRNA COVID-19 vaccine and decreasing vaccine hesitancy. Nguyen et al. (2024) found that vaccine hesitancy is greater toward COVID-19 than other vaccines. Due to the lack of published evidence, researchers recommend using MI to decrease COVID-19 vaccine hesitancy, citing its success with other vaccines (Breckenridge, 2022). Further research is needed to reveal if MI is as successful with the COVID-19 vaccine as with other vaccines.

The PDSA process outlined by the IHI Model for Improvement proved to be a good framework for organizing and guiding this QI project. Following the seven steps of the PDSA process is predicted to increase immunization rates for pneumococcal, influenza, and COVID-19. The PDSA framework allowed for clear organization and a straightforward way to create the

steps needed to achieve staff buy-in, training, and implementation of MI, as well as how the project progress will be tracked. A benefit of using the PDSA process is that it can be studied, updated, and repeated multiple times to achieve the goal. The most significant anticipated barrier of the project was staff resistance to change. Using the PDSA process allowed steps to be added to facilitate change, such as planning staff meetings, emails, and gaining staff buy-in.

Implications and Recommendations

This QI project has implications for both education and practice. Initial and continued staff education is necessary for proficiency in motivational interviewing techniques for the pneumococcal, influenza, and COVID-19 vaccines. Staff engaging patients through MI at each appointment during the rooming process is a practice change in the internal medicine clinic. Positive implications of this practice change in rural healthcare could be increased vaccination rates in older adults and decreased hospitalization and death from pneumococcal disease, influenza, and COVID-19. Motivational interviewing could also be added to nursing school curriculum and taught as an effective tool for patient education, especially when addressing vaccine hesitancy.

A gap identified during the project is a lack of evidence that MI effectively increases COVID-19 vaccine uptake. Future research is needed to explore how patient attitudes have changed toward the vaccine now that it is widely available and has been available for a longer period. If this project is repeated, a potential improvement would be to provide staff education specifically about COVID-19 vaccine hesitancy, as Nguyen et al. (2024) found that vaccine hesitancy is more pronounced toward the COVID-19 vaccine than vaccines in general. If MI successfully increases immunization rates for pneumococcal, influenza, and COVID-19 vaccines, future QI projects could include additional vaccines or other health-related topics.

Conclusion

This project addresses vaccine hesitancy, which the World Health Organization has designated as a global health concern (Garrison et al., 2023). Educating nurses in MI techniques provides an evidence-based tool to address vaccine hesitancy and increase immunization rates. This project guides a nursing practice change in rural primary care by addressing a gap in patient education. The Clinical Nurse Leader (CNL) guides patient care for patient populations utilizing evidence-based practices to improve patient care processes and outcomes (American Association of Colleges of Nursing, 2013). This project meets the CNL competencies for quality improvement and safety. Following CNL essential competency three, a microsystem assessment was completed, a gap in patient care was identified, a plan was made to close the gap with evidence-based techniques, and measures were created to track the improvement in patient care (American Association of Colleges of Nursing, 2013). This nursing practice change can reduce illness, hospitalizations, and death in older adults in rural primary care.

References

- American Association of Colleges of Nursing. (2013, October). *Competencies and curricular expectations for clinical nurse leader education and practice* [White Paper].
<https://www.aacnnursing.org/Portals/0/PDFs/White-Papers/CNL-Competencies-October-2013.pdf>
- American Hospital Association. (2024, March). *Fact sheet: Majority of hospital payments dependent on Medicare or Medicaid*.
<https://www.aha.org/system/files/media/file/2022/05/fact-sheet-majority-hospital-payments-dependent-on-medicare-or-medicaid-congress-continues-to-cut-hospital-reimbursements-for-medicare.pdf>
- Breckenridge, L. A., Burns, D., & Nye, C. (2022). The use of motivational interviewing to overcome COVID-19 vaccine hesitancy in primary care settings. *Public Health Nursing, 39*(3), 618–623. <https://doi.org/10.1111/phn.13003>
- Center for Disease Control. (2021, May 28). *Influenza vaccination coverage for persons 6 months and older*. <https://www.cdc.gov/fluview/interactive/general-population-coverage.html>
- Center for Disease Control. (2024a, May 13). *Estimated flu disease burden 2019-2020 flu season*. <https://www.cdc.gov/flu-burden/php/data-vis/2019-2020.html>
- Center for Disease Control. (2024b, July 9). *Pneumococcal vaccination among U.S. Medicare beneficiaries aged ≥ 65 years, 2010-2019*.
https://www.cdc.gov/adultvaxview/publications-resources/pcv13-medicare-beneficiaries-2010-2019.html?CDC_AAref_Val=https://www.cdc.gov/vaccines/imz-

[managers/coverage/adultvaxview/pubs-resources/pcv13-medicare-beneficiaries-2010-2019.html](https://www.cdc.gov/coverage/adultvaxview/pubs-resources/pcv13-medicare-beneficiaries-2010-2019.html)

Center for Disease Control. (2024c, September 17). *Vaccine glossary*.

<https://www.cdc.gov/vaccines/glossary/index.html#heading-c>

de Gomensoro, E., Del Giudice, G., & Doherty, T. M. (2018). Challenges in adult vaccination. *Annals of Medicine (Helsinki)*, *50*(3), 181–192.

<https://doi.org/10.1080/07853890.2017.1417632>

Dubé, E., Gagnon, D., & Vivion, M. (2020). Optimizing communication material to address vaccine hesitancy. *Canada Communicable Disease Report*, *46*(2–3), 48–52.

<https://doi.org/10.14745/ccdr.v46i23a05>

Gagneur, A., Bergeron, J., Gosselin, V., Farrands, A., & Baron, G. (2019). A complementary approach to the vaccination promotion continuum: An immunization-specific motivational-interview training for nurses. *Vaccine*, *37*(20), 2748–2756.

<https://doi.org/10.1016/j.vaccine.2019.03.076>

Garrison, A., Fressard, L., Mitilian, E., Gosselin, V., Berthiaume, P., Casanova, L., Gagneur, A., & Verger, P. (2023). Motivational interview training improves self-efficacy of GP interns in vaccination consultations: A study using the Pro-VC-Be to measure vaccine confidence determinants. *Human Vaccines & Immunotherapeutics*, *19*(1).

<https://doi.org/10.1080/21645515.2022.2163809>

Labbé, S., Colmegna, I., Valerio, V., Boucher, V. G., Peláez, S., Dragomir, A. I., Laurin, C.,

Hazel, E. M., Bacon, S. L., & Lavoie, K. L. (2022). Training physicians in motivational

communication to address influenza vaccine hesitation: A proof-of-concept study. *Vaccines (Basel)*, *10*(2), 143-. <https://doi.org/10.3390/vaccines10020143i>

Lo Moro, G., Ferrara, M., Langiano, E., Accortanzo, D., Cappelletti, T., De Angelis, A., Esposito, M., Prinzivalli, A., Sannella, A., Sbaragli, S., Vuolanto, P., Siliquini, R., & De Vito, E. (2023). Countering vaccine hesitancy: A systematic review of interventions to strengthen healthcare professionals' action. *European Journal of Public Health*, *33*(5), 905–915. <https://doi.org/10.1093/eurpub/ckad134>

Malik, A. A., Ahmed, N., Shafiq, M., Elharake, J. A., James, E., Nyhan, K., Paintsil, E., Melchinger, H. C., Team, Y. B. I., Malik, F. A., & Omer, S. B. (2023). Behavioral interventions for vaccination uptake: A systematic review and meta-analysis. *Health Policy (Amsterdam)*, *137*, 104894–104894. <https://doi.org/10.1016/j.healthpol.2023.104894>

Montana.gov. (2023, February). *Montana vaccine uptake graphs*. <https://dphhs.mt.gov/assets/publichealth/CDEpi/DiseasesAtoZ/2019-nCoV/Reports/MTUptakeGraphs2023-02-24.pdf>

Nasreen, S., Gebretekle, G. B., Lynch, M., Kurdina, A., Thomas, M., Fadel, S., Houle, S. K. D., Waite, N. M., Crowcroft, N. S., & Allin, S. (2022). Understanding predictors of pneumococcal vaccine uptake in older adults aged 65 years and older in high-income countries across the globe: A scoping review. *Vaccine*, *40*(32), 4380–4393. <https://doi.org/10.1016/j.vaccine.2022.06.056>

National Center for Health Statistics. (2022, April 12). *Provisional leading cause of death for 2021*. CDC's WONDER Platform.

https://www.cdc.gov/nchs/data/health_policy/provisional-leading-causes-of-death-for-2021.pdf#:~:text=Provisional%20count%20of%20deaths%20by%20leading

Nguyen, K. H., Coy, K. C., Black, C. L., Scanlon, P., & Singleton, J. A. (2024). Comparison of adult hesitancy towards COVID-19 vaccines and vaccines in general in the USA. *Vaccine*, 42(3), 645–652. <https://doi.org/10.1016/j.vaccine.2023.12.042>

Office of Disease Prevention and Health Promotion. (n.d.). *Increase the proportion of people who get the flu vaccine every year*. Retrieved November 9, 2024, from <https://odphp.health.gov/healthypeople/objectives-and-data/browse-objectives/vaccination/increase-proportion-people-who-get-flu-vaccine-every-year-iid-09>

Ogrinc, G. S., Headrick, L. A., Barton, A. J., Dolansky, M. A., Madigosky, W. S., Miltner, R. S., & Hall, A. G. (2022). *Fundamentals of health care improvement* (4th ed.). The Joint Commission Resources.

Reece, S., CarlLee, S., Scott, A. J., Willis, D. E., Rowland, B., Larsen, K., Holman-Allgood, I., & McElfish, P. A. (2023). Hesitant adopters: COVID-19 vaccine hesitancy among diverse vaccinated adults in the United States. *Infectious Medicine*, 2(2), 89–95. <https://doi.org/10.1016/j.imj.2023.03.001>

Appendix A
Evidence Table

Full Citation	Conceptual Framework	Design/Method	Sample/Setting	Major Variables Studied and Their Definitions	Measurement of Major Variables	Data Analysis	Study Findings	Strength of the Evidence (i.e., level of evidence + quality [study strengths and weaknesses])
Breckenridge, L. A., Burns, D., & Nye, C. (2022). The use of motivational interviewing to overcome COVID-19 vaccine hesitancy in primary care settings. <i>Public Health Nursing, 39</i> (3), 618–623. https://doi.org/10.1111/phn.13003	Professional education article		PC	MI and VH	Practical tips for using MI in PC		MI useful to decrease VH, COVID-19; 4 MI communication skills, OARS; OARS can help reduce COVID 19 VH	Strengths: included results of systemic reviews, explained OARS and how to use, explained how to apply to PC VH and COVID-19
Gagneur, A., Bergeron, J., Gosselin, V., Farrands, A., & Baron, G. (2019). A complementary approach to the	Randomly selected Single group, pre/post test design	In-person MI training workshop, 11 hours over 2	Canada immunization nurses, n=34	MI knowledge acquisition, MI skills application, self-confidence in applying MI in practice	Multiple pre-test/post-test, MISI	rates written response with manual, 10 point Likert scale;	Successful in raising all three variables, MISI tool	Strengths: validated measurement tool limitations: small sample, only 3 month follow up

<p>vaccination promotion continuum: An immunization-specific motivational-interview training for nurses. <i>Vaccine</i>, 37(20), 2748–2756. https://doi.org/10.1016/j.vaccine.2019.03.076</p>		<p>days, 3 months apart</p>				<p>Friedman test, Wilcoxon signed rank test; SPSS version 24</p>		
<p>Garrison, A., Fressard, L., Mitilian, E., Gosselin, V., Berthiaume, P., Casanova, L., Gagneur, A., & Verger, P. (2023). Motivational interview training improves self-efficacy of GP interns in vaccination consultations: A study using the Pro-VC-Be to measure vaccine</p>	<p>Randomly selected single group pre/post test design</p>	<p>Zoom workshop MI training for immunizations, 2 days then 3rd day 2 months later</p>	<p>Final year medical interns; n=35</p>	<p>Confidence in vaccines, Trust in Authorities, proactive efficacy, openness to patients, vaccine recommendation frequency</p>	<p>Pro-VC-Be questionnaire pre-test/post-test; instrument for measuring variations in psychosocial determinants of vaccination behavior</p>	<p>8 dimensions measured with 5 point Likert scale; Wilcoxon-Pratt signed-rank tests for each dimension ; Z scores, R values, p=<0.5</p>	<p>100% increase in perceived self-efficacy post-workshop; all variables improved except commitment score in proactive efficacy</p>	<p>Strengths: validated measurement tool Limitations: small sample, voluntary participation so participants may have been more motivated regardless</p>

confidence determinants . <i>Human Vaccines & Immunotherapeutics</i> , 19(1). https://doi.org/10.1080/21645515.2022.2163809								
Labbé, S., Colmegna, I., Valerio, V., Boucher, V. G., Peláez, S., Dragomir, A. I., Laurin, C., Hazel, E. M., Bacon, S. L., & Lavoie, K. L. (2022). Training physicians in motivational communication to address influenza vaccine hesitation: A proof-of-concept study. <i>Vaccines (Basel)</i> , 10(2), 143-. https://doi.org/10.3390/va	Proof of concept study, pre-test/post-test design	4-h MC training program	Rheumatologists n=7; patients with RA n=30	5 MC competencies: Evocation, Collaboration, Autonomy/support, Direction, and Empathy Pt assessment of intent to vaccinate	1 week Post-training, assessment of MC competencies. MC assessments (baseline and post-training) consisted of a recorded 10-min role-play with a VH RA patient	MITI scale	improved communication competencies of RA doctors as well as influenza vaccine intentions in patients	Strengths: validated training and validated tool used; tested effect on pt's as well to see if the training worked Limitations: small study, only RA patients, only for flu vaccine, no long-term follow-up

ccines10020143i								
<p>Lo Moro, G., Ferrara, M., Langiano, E., Accortanzo, D., Cappelletti, T., De Angelis, A., Esposito, M., Prinziavalli, A., Sannella, A., Sbaragli, S., Vuolanto, P., Siliquini, R., & De Vito, E. (2023). Countering vaccine hesitancy: A systematic review of interventions to strengthen healthcare professionals' action. <i>European Journal of Public Health</i>, 33(5), 905–915. https://doi.org/10.1093/eurpub/ckad134</p>	<p>Systematic review</p>	<p>3 databases searched</p>	<p>N=139 articles</p>	<p>PICOS framework: HCPs or healthcare students (population); intervention to reduce vaccine hesitancy or increase vaccination rates in patients (intervention); any comparison, outcome and study design</p>	<p>Reduce vaccine hesitancy or increase vaccination rates</p>	<p>6 authors reviewed articles, each article reviewed by 2 authors, data extracted by 4 authors for excel, 4 authors assessed risk of bias</p>	<p>Communication training most effective over information training; conversational and MI most effective in increasing vaccine uptake; multifactorial approaches most effective; in person training with role play is better</p>	<p>Strengths: articles newer (2016+), followed PRISMA guidelines, large number of articles included, high level of evidence</p> <p>Limitations: Most studies have uncontrolled variables, short follow up, inconsistent variables</p>

<p>Malik, A. A., Ahmed, N., Shafiq, M., Elharake, J. A., James, E., Nyhan, K., Paintsil, E., Melchinger, H. C., Team, Y. B. I., Malik, F. A., & Omer, S. B. (2023). Behavioral interventions for vaccination uptake: A systematic review and meta-analysis. <i>Health Policy (Amsterdam)</i>, 137, 104894–104894. https://doi.org/10.1016/j.healthpol.2023.104894</p>	<p>Systematic Review/ Meta-analysis</p>	<p>1 database searched, medline</p>	<p>N=613 studies</p>	<p>9 domains: education campaigns, on-site vaccination, incentives, free vaccination, institutional recommendation, provider recommendation, reminder and recall, message framing, and vaccine champion</p>	<p>vaccine uptake as the primary outcome of interest</p>	<p>2 coders reviewed articles using GRADE criteria, extracted odds ratios</p>	<p>All behavioral interventions (domains) improved vaccine uptake with the highest effect size associated with Provider Recommendation and onsite vaccination, then catered educational interventions</p>	<p>Strengths: high level of evidence, comprehensive review of behavioral domains for vaccine uptake</p> <p>Limitations: some studies excluded from meta-analysis due to lack of information, included older studies (1990+)</p>
<p>Nasreen, S., Gebretekle, G. B., Lynch, M., Kurdina, A., Thomas, M., Fadel, S., Houle, S. K. D., Waite, N. M., Crowcroft, N. S., &</p>	<p>Scoping review of literature</p>	<p>5 databases searched, 2015-2020</p>	<p>N=52</p>	<p>the predictors of pneumococcal vaccine uptake in older adults aged 65 years and above across high-income settings</p>	<p>Predictors of pneumococcal vaccine uptake</p> <p>Deterrents to pneumococcal vaccine uptake</p>	<p>Authors screen articles with inclusion/exclusion criteria; results</p>	<p>Predictors: Health provider's recommendation and education, provider positive vaccine attitude; pt</p>	<p>Strengths: PRISMA-ScR followed/scoping review</p> <p>Limitations: no studies that examined the barriers and enablers of pneumococcal vaccine uptake related to public health communication and the media environment;</p>

<p>Allin, S. (2022). Understanding predictors of pneumococcal vaccine uptake in older adults aged 65 years and older in high-income countries across the globe: A scoping review. <i>Vaccine</i>, 40(32), 4380–4393. https://doi.org/10.1016/j.vaccine.2022.06.056</p>						<p>placed in excel</p>	<p>getting flu shot; perceived risk of contracting pneumonia;</p> <p>Deterrents: Health provider not mentioning pneumococcal vaccine; provider lack of knowledge of recommendations, safety, and effectiveness</p>	<p>only English studies included; only looks at pneumococcal vaccine</p>
<p>Nguyen, K. H., Coy, K. C., Black, C. L., Scanlon, P., & Singleton, J. A. (2024). Comparison of adult hesitancy towards COVID-19 vaccines and vaccines in general in</p>	<p>Comparison study</p>	<p>RANDS</p>	<p>N= 5,458 adults</p> <p>Web & Phone interviews in 2021</p>	<p>General vaccine hesitancy</p> <p>COVID-19 vaccine hesitancy</p>	<p>Validated survey questions</p>	<p>prevalence ratios in a logistic multivariable regression ; Complete case analysis was conducted and weighted estimates were</p>	<p>A higher percentage of adults were hesitant toward COVID-19 vaccines (41.8 %) than vaccines in general (35.3 %)</p>	<p>Strengths: large sample size, random, validated survey questions</p> <p>Limitations: coverage bias, did not ask “why” people were hesitant toward vaccine, conducted when COVID-19 vaccine was new</p>

the USA. <i>Vaccine</i> , 42(3), 645–652. https://doi.org/10.1016/j.vaccine.2023.12.042						calculated using SAS- callable SUDAAN ; t-tests		
--	--	--	--	--	--	--	--	--

Legend:

MC- motivational communication

MI- motivational interviewing

MISI- motivational interviewing skills in immunization

MITI- motivational Interviewing Treatment Integrity scale

OARS- open ended questions, affirmations, reflection, and summary

PC- primary care

Pt- patient

RA- rheumatoid arthritis

RANDS- Research and Development Survey

VH- vaccine hesitancy

Appendix B

Implementation Plan

<p>Step One (1 week to complete) Clinic Educator & Clinic Manager</p>	<ol style="list-style-type: none"> 1. Share results of microsystem assessment, current immunization rates, aim, and interventions with staff at staff meeting 2. Answer questions and get staff buy-in
<p>Step Two (1 week to complete) Clinic Manager & Clinic Educator</p>	<ol style="list-style-type: none"> 1. Create email leading staff to free online immunization MI training module 2. Organize in-person MI skills practice sessions which includes education specific to the pneumococcal, influenza, and COVID-19 vaccines 3. Send staff email with link to training module and in-person MI skills sign-up
<p>Step Three (1 week to complete) Hospital QI Analyst</p>	<ol style="list-style-type: none"> 1. Gather preliminary immunization data from the Cerner EHR for patients in IM aged 65 and older for pneumococcal, influenza, and COVID-19 vaccines for the last six months
<p>Step Four (4 weeks to complete) IM Staff</p>	<ol style="list-style-type: none"> 1. Staff complete online module
<p>Step Five (2 weeks to complete) Clinic Educator IM Staff</p>	<ol style="list-style-type: none"> 1. Staff attend in-person MI skills/vaccine education session
<p>Step Six (3 months to complete) IM Staff</p>	<ol style="list-style-type: none"> 1. Staff implement immunization MI skills during every patient rooming
<p>Step Seven (2 weeks to complete, 3 months after step six is implemented) Hospital QI Analyst Clinic Educator</p>	<ol style="list-style-type: none"> 1. Gather immunization data from the Cerner EHR for patients in IM aged 65 and older for pneumococcal, influenza, and COVID-19 vaccines for the last three months and present in XmR control charts to share with staff 2. Review results of data and determine if another PDSA cycle is needed

Appendix C

Projected Budget

Step One	<ol style="list-style-type: none"> 1. Create email leading staff to free online immunization MI training 2. Organize in-person MI skills practice sessions 	<p>Completed by Clinic Educator</p> <p>Approx 4 hours x \$40= \$160</p>
Step Two	<ol style="list-style-type: none"> 1. Gather preliminary immunization data from the Cerner EHR for patients in IM aged 65 and older for pneumococcal, influenza, and COVID-19 vaccines for the last six months 	<p>Completed by Hospital QI Analyst</p> <p>Approx 4 hours x \$30= \$120</p>
Step Three	<ol style="list-style-type: none"> 1. Share aim and interventions with staff at staff meeting (held during normal working hours) 2. Send staff email with link to training module and in-person MI skills sign up 	<p>Completed by Clinic Educator</p> <p>Approx 1 hour x \$40= \$40</p>
Step Four	Staff complete online module	<p>Completed by IM staff</p> <p>Approx 1 hour x \$40 x 8 staff= \$240</p>
Step Five	Staff attend in-person MI skills session in clinic conference room	<p>Taught by Clinic Educator Completed by IM staff</p> <p>Approx 2 hours x \$40 x 9 staff= \$720</p> <p>9 skills scenario pages x \$0.20 copy = \$1.80</p>
Step Six	<ol style="list-style-type: none"> 2. Staff implement immunization MI skills during every patient rooming 	<p>Completed by IM staff during normal working hours</p>

Step Seven	3. Gather immunization data from the Cerner EHR for patients in IM aged 65 and older for pneumococcal, influenza, and COVID-19 vaccines for the last three months and present in run charts to share with staff	Completed by Hospital QI Analyst Approx 6 hours x \$30 = \$240
Approximate Cost		\$1521.80