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Improving Inpatient Influenza Compliance Rates with a
Standing Orders Program

Marlee Gruber

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Abstract

Influenza vaccinations are recommended yearly as part of a primary care performance measure to prevent and control seasonal influenza. Rates of influenza are steadily increasing and can lead to severe negative impacts and even fatalities with patients. According to the Center for Disease Control (CDC)'s Morbidity and Mortality Weekly Report (MMWR), less than 40 percent of the U.S. population receives the flu vaccine yearly. It is suggested by the CDC that Annual vaccination is the most effective method for preventing influenza virus infection and its complications. The Department of Health and Human Services' Healthy People 2020 includes a goal of reaching 90 percent vaccination rates for both influenza and pneumococcal vaccinations for persons 65 and older, however this should stand for the rest of the population as well. Research suggests that inpatient vaccination is a method of improving overall vaccination rates, especially in the population that is 65 and older. It is imperative that compliance rates and policies be reviewed in order to utilize best practice. This quality improvement project was designed to find the best practice to implement a solution to improving the existing low compliance rates on a step-down unit in a city centered Level 1 Trauma hospital. After interviews with both nurses and patients and review of best practice literature, the conclusion was made that a Standing Orders Program should be implemented. Taking into consideration resources, timing and staff compliance of a new policy, the use of Standing Orders can help improve compliance rates at the Level 1 Trauma center in the San Francisco Bay Area.

Statement of the Problem

In combination with pneumonia, influenza is the 8th leading cause of death in the United States. The Center for Medicare and Medicaid estimated that 226,000 hospitalizations yearly are related to influenza and 3000-49,000 die annually in the U.S. Not only does influenza increase morbidity and mortality rates, but it also increases costs to hospitals associated with care.

Influenza viruses can cause disease among people in all age groups. Infection rates are the highest among children but the risk for complications, hospitalizations and deaths are higher among people that are 65 and older. The Trauma Center in the San Francisco Bay Area has acknowledged that this is a topic of priority. Because immunizations are a part of the Joint Commission Core Measures set, this hospital is committed to upholding the institution to the highest standards for vaccinations.

Microsystem Analysis

Purpose

In order to best assess the needs and environment of this step-down unit, a microsystem assessment was conducted. This unit serves patients that are transitioning from critical care to a more acute care unit, with the potential to have to escalate care to an intensive care setting. This is for patients that require immediate and medical/surgical levels of nursing care. This unit includes telemetry monitoring and comprises 29 inpatient beds. Not counted in the overall bed capacity, this unit also conducts inpatient dialysis. After careful assessment of unit needs to best care for their patients, support of a quality improvement project began.

Patients

The patient population is diverse in age, however, it is primarily an adult unit. Like the rest of the hospital population, this unit contains a large percentage of ethnic minorities such as African American, Latinos, and Asian. Patient age ranges from 20's all the way into 90's and elderly care. The percentage of male to female is almost half and half, female percentage at 49% and male at 51%. As far as health coverage goes, a large portion of the patients are uninsured or are enrolled in Medi-Cal/Medicare. In assessing the patient living situation, many of the patients live in a SNF, SRO, low income housing, or state they are homeless. There is also a subset of the unit population that is incarcerated.

Professionals

The professionals that care for this population of patients consists of a wide range of specialties. On this step-down unit there are registered nurses, and often student nurses with them. Their degrees range from ADN to BSN, and there are some that hold MSN degrees. There

are mostly young nurses on this unit, with critical care experience. There is also the Rapid Response Team, which is run by nurses, that has a role on this unit. The physicians also work closely with the RN's. Because it is one of the larger teaching hospitals in the city, the attending physicians are often accompanied by their residents and first year medical students. They have a big role in patient care as well. Many times their direct care is through rounding every morning, while the nursing staff engage in patient care through out the entirety of their shifts. The nurses and physicians work closely together and they usually have help from other members of the patient care team. A few examples of these members include: physical therapy, occupational therapy, social work, dietary etc. The working environment between these healthcare professionals is mostly friendly, however this unit is notorious for having high patient acuity and gets extremely busy.

Processes

This unit is considered a step-down unit from the Intensive Care Unit. This means that majority of the time the patients come down from the ICU on their road to recovery. They usually need to be monitored closely before sending them down to a lower acuity medical/surgical floor because they are still considered unstable and the possibility of escalating care remains a possibility. Sometimes patients come from the medical/surgical floors if they need cardiac monitoring or a higher level of care. There is also an area for inpatient dialysis, and a small percentage of patients come for treatment in the dialysis area. The average length of stay on this unit is two to three days. Most patients admitted to this step-down are transferred to a lesser acuity medical/surgical floor then discharged home. Compared to the rest of the

medical/surgical units in this hospital, there is a low percentage of patients that get discharged home directly from this unit.

Patterns

Being a transitional care unit, often times the patient condition can change where care needs to be escalated or deescalated. The goal of care is to get a patient from the ICU and care for them until they are stable enough to be moved down to a lower acuity unit for further care or be discharged home. Sometimes however, care needs to be escalated. Because of the higher acuity of these patients, there is a low percentage of patients being discharged home. The total discharges in quarter 1 of 2015 was 313. During the same time frame on lower acuity units, discharges ranged from 545 all the way up to 683. Majority of the time they are moved down to a lower acuity unit to be cared for before they are discharged home.

The discharge process for a patient is typically a very busy and stressful time. Not only are the patients anxious to leave, but the nurses have numerous tasks to complete before letting a patient go. On this unit when nurses are expecting a patient to be discharged they have to:

- Get patient belongings (there are 3 possible locations in this hospital)
- Review and finalize electronic discharge instructions, takes coordination and corrections with the physicians
- Coordinate with social worker as needed to make sure patients has everything needed for successful discharge home. For example, if home oxygen therapy is needed or an EMT transfer to a skilled nursing facility etc.
- Coordinate the patient's ride home, call family, get a taxi voucher, whatever transportation the patient needs.
- Education for the patient on medications, home care, and follow up appointments

- Get medications from the pharmacy and handle secure scripts
- Coordinate with the discharge lounge or find an escort out
- Screen for flu, educate on vaccinations and administer, if indicated

Considering how many tasks it takes to get through discharging a patient correctly, some things are not always completed. For example, screening for influenza on this unit is a low priority, as shown by the compliance rate. There is a 39% compliance to screen and administer the influenza vaccination. This is the lowest rate amongst the rest of the medical/surgical units in the hospital. Per hospital policy, there is a need to take advantage of the opportunity to screen and vaccinate on discharge of the inpatient population.

Patient safety is a primary responsibility of the nursing staff. Every flu season, hospitals become a source of care for many effected by the flu. Primary interventions are necessary for positive patient outcomes. There's only so much healthcare providers can do to screen and vaccinate in the community, so per hospital policy, every patient admitted should be screened and vaccinated, if indicated to reduce negative outcomes for both the patient and the larger community every flu season.

The quality improvement project being implemented is designed to increase the screening and vaccination compliance rates on this unit in order to lower morbidity and mortality rates related to influenza. Through collaboration with the IT department and the quality improvement department, this project utilizes the steps needed in order to discharge a patient and to comply with screening and vaccination. The combination of both visual cues and creating a standing orders program have been shown to increase compliance rates in an inpatient setting. As a

mandatory step in the discharge process, the Standing Orders Program will improve the percentage of patients being both screened and vaccinated.

Literature Review

During the examination of literature support for the topic of Influenza Compliance Rates, multiple online databases were accessed through the University of San Francisco library. Two meetings were also scheduled for assistance with referencing articles with the Reference Librarian at the University of San Francisco. The online databases used were CINAHL, PubMed, and Scopus. Search terms such as “Influenza Compliance Rates”, “Inpatient Screening”, “Standing Orders Programs”, “Visual Cues”, “Visual Reminder”, “Implementation of SOP”, “SOP in an Inpatient Setting”, “Clinical Vaccinations”, “Influenza Vaccination”, “Adult Vaccination and Screening”, and “Inpatient Vaccination Program” were all used, along with assessing the reference lists of articles found relative. Aside from the online databases used to find articles, the Google Search engine was also used to find more information. The search of articles resulted in literature supporting Standing Orders Programs in inpatient settings and even examples of how to implement them with positive results. Six articles were carefully selected after narrowing down outcomes that proved to increase compliance rates in order to support this quality improvement project.

Each year influenza impacts many members of the community. Screening and vaccinating cuts numbers of hospital inpatient visits related to influenza down significantly. Screening and vaccinating the population of patients that are hospitalized and being ready to be discharged to the community is underutilized. By taking advantage of vaccinating the inpatient population, rates of influenza will be lowered. Typically, patients are screened and vaccinated on discharge. Because this process takes time and planning, screening can be easily looked over, or patients refuse. Instead of making the order to screen and vaccinate as a PRN, or “as needed” order on admission, there should be a Standing Orders Program in place to ensure that this

population of patients getting discharged to the community are both screened and vaccinated and well informed on the importance of receiving the influenza vaccination.

Below are articles to support the increase in compliance rates of inpatient screening and vaccination by implementing a Standing Orders Program.

Article 1:

Designing and Implementing a Hospital-Based Vaccine Standing Orders Program

Screening and vaccinating is increasing in importance for overall health. Because of the increase in morbidity and mortality rates of influenza and pneumococcal disease annually, organizations like Healthy People 2010 and 2020 are making immunizations a key goal. Medicare and Medicaid Services have also created a statute regarding the use of Standing Orders to screen and administer vaccines. Thus, the importance of creating a system in which screening and administering vaccines can be easily accessible and completed.

In order to meet federal and state regulatory requirements, the University of Pittsburgh completed a study using a Standing Orders program at the University of Pittsburgh Medical Center. Giving both nurses and pharmacists the statute to practice to the extent of their licenses, they were able to screen for vaccine eligibility and vaccinate if indicated without a physicians' exam (Sokos et al., 2007). New admissions and data such as patient age, medications taking, and previous vaccination records were listed in patient charts in order to easily identify at risk patients.

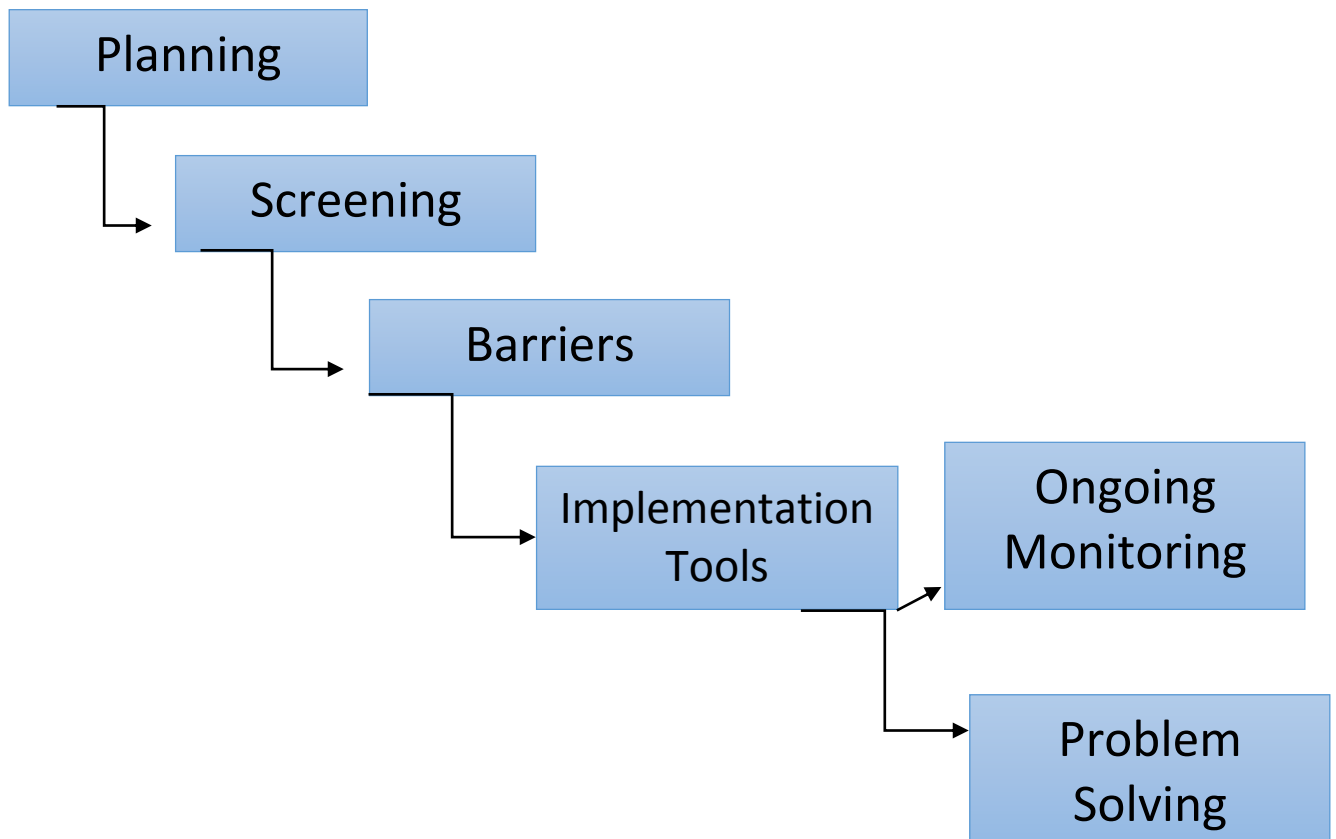
To increase adult vaccination rates, a Standing Orders program proved to be the most effective and least burdensome on the workflow in a hospital. Trends with vaccinating on

discharge proved to not be a priority, thus, not always being completed. With the freedom of the nurses and pharmacists to screen and vaccinate, rates increased. Please see appendix A for an example provided by the University of Pittsburg Medical Center of a Standing Order.

The key to implementation is to also understand the potential barriers to the specific environment. Barriers could include but are not limited to: knowledge deficit among healthcare workers and patients of vaccination contraindications, vaccination orders that are not finalized and signed, or lack of understanding the process of a Standing Order.

Success to increased vaccination rates is through a multidisciplinary team approach where other team members can utilize the inpatient population for vaccination and other disciplines can practice under the extent of their licensure.

Stages to implement a Standing Orders program:



Article 2:***Increasing Appropriate Vaccination: Standing Orders***

The Community Preventative Services Task Force, a subdivision of the Centers for Disease Control (CDC) created a systematic review of the use of Standing Orders. Trends in research show different components used with Standing Order as well as using Standing Orders alone. Other components can be but are not limited to: visual cues, chart reminders, contraindications, etc. When using a Standing Order in combination with another component, rates in compliance for vaccination and screening greatly increase.

For example, from this systematic review: (Guide to Community and Preventative Services, 2009).

- Standing Orders when used alone has a median increase of 53 percentage points.
- Standing Orders when used in combination with additional components has a median increase of 16 additional percentage points.

These percentage calculations were based in a variety of settings and populations such as clinics, hospitals, pharmacies and long term care facilities. Also tested with both adult, elderly and pediatric populations, presenting a stronger evidence based approach for implementation.

Not only did Standing Orders suggest a better compliance rate, but the program was shown to be cost effective compared to a physician order. According to the Community Guide, program cost per patient were:

	Standing Orders	Provider Reminders
Program Cost Per Patient	\$4.66	\$6.25
Additional Vaccinated Patient	\$65.42	\$101.87

Trends across multiple articles in this meta-analysis suggest that a Standing Orders strategy to improving compliance rates for vaccination administration works across multiple settings of care and with a wide range of patient populations.

Article 3:

Clinical Trial of Standing-Orders Strategies to Increase the Inpatient Influenza Vaccination Rate

When in combination with another visual component, Standing Orders is shown to be most effective. Components include electronic nursing reminders, pop-up message reminders, visual cues in charting, or a physician opt-out form. Trends in literature suggest that many hospital policies state to use this process on discharge, so finding what increases rates at that time is most effective.

There is difficulty in implementing a universal Standing Orders Program that will work across all healthcare settings and patient populations. However, there is a general principle that can be applied to all institutions and the institution itself should be responsible for recognizing what changes to make according to that specific environment, population, and level of care. As suggested by Trick et. al., when taking into consideration a Standing Orders program in a hospital, it can pose a challenge when physicians are responsible for patient vaccination orders because they are focused more on acute care of the patient, not so much the preventative interventions (Trick et. al., 2009).

For Trick et. al. challenges with implementation included mainly work-flow factors. These factors included logistical challenges, electronic health record limitations, incomplete vaccination records, complications with vaccinating on discharge, and education of patients.

As with every institution, there are going to be barriers with the implementation process, however, taking the universal guidelines and critiquing them to fit the policies, procedures and resource availabilities of that specific environment will lead to increasing compliance rates.

Article 4:

Success of the 4 Pillars Toolkit for Influenza and Pneumococcal Vaccination in Adults

Implementation of a Standing Orders Protocol entails a multifactorial approach. Taking into consideration the environment in which will be implemented, the population targeted, and the resources available will guide successful practice. The Community Preventative Services Task Force recommends using three ideas to approach increasing compliance rates of vaccinations:

1. Increasing access to vaccination services
2. Increasing the demand for vaccination amongst patients, reminding and educating on when vaccination is necessary and the importance of vaccination
3. Using both healthcare provider and system approaches for intervening (ex: standing orders, electronic tracking, reminder systems etc.)

Research has consistently shown that Standing Orders contribute to the success of vaccinations, however they are underutilized by many physicians. In order to show an increase in vaccination rates in adult patients, Nowalk et. al. designed a 4 pillars toolkit to aid in the improvement of primary care practices (Norwalk et al., 2014).

The 4 pillars approach is a system based technique that was shown to be highly effective in the tested populations. The approach supports the trend in literature of an increase in adult vaccinations. Results were better when these strategies were utilized. Also, on a qualitative scale,

staff members rated these methods higher when utilized. Please see Appendix B for the charted results from staff.

The 4 Pillars include:

Pillar 1:

Convenient vaccination services (ex: longer vaccination season or using the opportunity to assess for other appropriate vaccinations)

Pillar 2:

Patient education on the importance of the vaccine, the availability of the vaccine, and screening for previous vaccines.

Pillar 3:

Use of information technology services to facilitate vaccination, like the electronic medical record, prompts and visual provider cues to serve as a reminder, and managing workflow through use of Standing Order Programs.

Pillar 4:

Motivation of staff to encourage adherence to long term maintenance and implementation.

When using all four pillars in the toolkit, results demonstrated larger increases in rates. Strategies that incorporate both Standing Orders and other opportunities to broaden the approach of implementation strengthen the vaccination compliance amongst inpatient settings. Furthermore, using this toolkit can also be useful in increasing rates of vaccination in primary care settings.

Article 5:

Implementation and Evaluation of a Nursing Assessment/Standing Orders-based Inpatient Pneumococcal Vaccination Program

As evidenced by the reoccurrence of trends in research above, this is another article that is in support of a Standing Orders program. According to Eckrode et.al., when used successfully, rates for vaccination administration increased dramatically when tested amongst study groups. Opportunity to vaccinate went from 9% to 59.1% and overall vaccination compliance improved up to 15% after designing a standing orders program (Eckrode et al., 2007). This study measured vaccination of the pneumococcal vaccine, however the same is implemented for influenza.

A stronger approach for this change is to have it in combination with another component. For example, Eckrode et. al. stated that having a nurse driven Standing Order system and a combination of patient and provider reminders gave stronger outcomes of increasing rates of vaccination.

Article 6:***Improving the Inpatient Influenza Vaccination Process***

Because nurses have the responsibility to screen and vaccinate with a Standing Order, having feedback from them is important to consider when planning. A structured redesign of the current system from a nursing opinion will be beneficial, especially when taking into consideration the workflow barriers. Standing orders are most effective when the workflow and barriers are addressed as well as the process being aligned with the current resources.

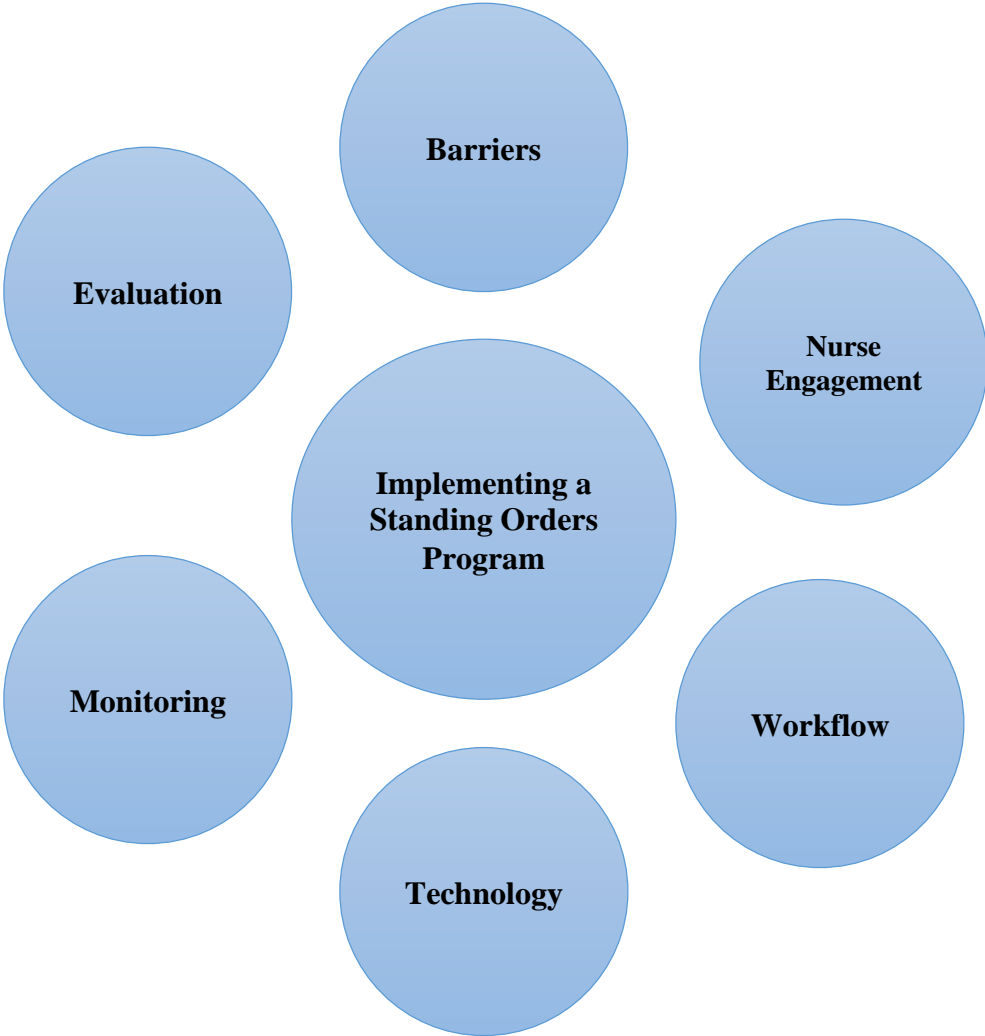
Pal et. al. states that using a new, electronic framework with a clear and concise design increased vaccination rates in an inpatient setting. This team valued the nursing opinion and used those tools to create a smarter protocol based on nursing workflow and clearer assessment criteria (Pal et al, 2015).

The following barriers were addressed:

- Vague assessment criteria that did not give clear direction on high risk patients
- Electronic health record system that accepted orders even when the patient has contraindications with administering the vaccine

The final piece that made this change so successful was implementing an alert on discharge for patients who may not have been screened. Pal et. al. reported a percentage of 99.1% compliance after using the discharge alter system. Pal et. al. also stated that the most important part of this process came down to the nurses having the competency and confidence to accurately assess and vaccinate appropriately. With the technology and clear protocols, nurses can have the confidence to vaccinate patients appropriately.

The steps taken by Pal et. al. to successfully identify opportunities to vaccinate included:



Summary

Every year thousands of people are infected with the seasonal influenza virus. Complications such as urgent care and hospitalization increase costs of care. Serious complications from this infection can lead to morbidity and mortality rates, and yearly cause a high rate of complications for patients, even though it can be completely preventable. According to the Centers for Disease Control (CDC), the most effective strategy for prevention of these complications is to vaccinate (Centers for Disease Control, 2009).

Currently, vaccination rates have not met goals for compliance in many facilities. This quality improvement project focuses on improving the process on inpatient vaccination using a systems approach. By taking into consideration the workflow, the educational level of staff and patients, the technological resources, the supply available, and the competence of the staff, the most cost effective and least burdensome process to increase inpatient influenza vaccination compliance rates is to implement a Standing Orders Program.

There is a universal model and strategy for every inpatient facility to use as a guide to start the process, however it is the responsibility of the facility and the policy made for that facility to recognize that it is a tool. Each facility has a different set of barriers, staff and resources so necessary changes personalized to that site will have to be put into action.

An alternative to a physician order is a Standing Order. These orders can be driven by nurses or pharmacy. The basics of a standing order include: the patient who needs to be screened and/or given the vaccine, contraindications and precautions specific to that patient regarding the vaccine, procedure of administration (dose, route, schedule, time), any provisions, correct documentation, emergency management protocol and directions for reporting possible adverse

events. Please see appendix C for an example of a Standing Order provided by the Immunization Action Coalition.

Standing Orders for vaccinations are recommended by the Community Preventative Services Task Force and the Centers for Disease Control (CDC). According to the Immunization Action Coalition, Standing Orders increase vaccination coverage rates (Immunization Action Coalition). Strong evidence shows that rates increase among adults and children, when used alone or in combination with additional interventions and across differing facilities and populations.

Cost Analysis

There are no costs necessary for implementing this quality improvement project, however there are significant cost savings. Comparing the use of Standing Orders and provider reminders, standing orders was \$4.66 per patient and provider reminders was \$6.25. Also according to the Community Guide to Preventative Services, the cost of additional vaccinated patient was \$65.42 and for provider reminders was \$101.87, nearly double.

In addition to the lower costs associated with vaccinating by standing order, hospitalizations associated with influenza are a factor. Since influenza can be preventable by vaccination, there are significant cost savings associated with administration. The CDC quoted from a national study that the annual economic burden of seasonal influenza in the United States from 2003 was \$10.4 billion in direct medical costs.

Project Overview

The goal of this quality improvement project is to increase the inpatient influenza vaccination rates on a step-down unit from 39% to at least 93% compliance. As a safety and quality measure, increasing rates of influenza vaccination will help reduce morbidity and mortality related to influenza in the community. In order to increase vaccination compliance rates, a Standing Orders protocol was researched and continues the process of being implemented.

Interviews were done with nursing staff, patients and IT staff to find the most appropriate intervention according to workflow and technical resources available. The majority agreed that Standing Orders, with out the order from a physician, would stop the delay of discharge so the nurse could screen and administer the influenza vaccine, if indicated. A hard stop was placed on

patient discharge instructions that would not allow the electronic process of discharge to happen without screening the patient for vaccinations.

Methodology

Data Source

Data used for this quality improvement project was both collected and provided by the institution. The specific data regarding the percentages of compliance was provided by the institution for use. This data helped to quantitatively measure compliance and the goal rates of the institution. The information technology system data on charting and documentation was also provided by the facility for use to measure how screening and vaccination was being previously documented.

Data was also collected through interviews with nurses, patients and members of the IT team working on the project. Qualitative data on the current system for screening and vaccinating and suggestions for improvement were collected and reviewed anonymously, Interviews were completed on October 1st, 12th, 13th, 14th, and 19th 2015.

Timeline

Tasks	Start Date	End Date	Duration
Preliminary Assessment	September 18	September 22, 2015	4.00
Quantitative Data Collection- Interviews	October 1	October 19, 2015	6.00

Data Analysis	October 20	October 30, 2015	5.00
Intervention Research	September 7	October 30, 2015	19.00
Intervention Implementation	October 27	Ongoing through 2015 flu season	15.00
System Analysis	November 1	November 20, 2015	10.00

Summary Report

This quality improvement project started out as a meeting with a preceptor from the facility where the project took place. This preceptor was responsible for the quality improvement projects being conducted throughout the hospital. One of the current problems the facility had was the compliance rates of the influenza vaccinations. After identifying a problem, it was then agreed that a project could be started with the goal of increasing vaccination rates of influenza for the upcoming flu season on the unit that had the lowest compliance rate. The current policies and procedures of that facility were reviewed which lead to a microsystem assessment of the unit with the lowest compliance rates of influenza vaccination.

Meetings with the IT department were held throughout the course of the project in order to make changes necessary for correct documentation of screening and vaccination administration. Because of hospital policy, vaccinations were administered on discharge. In order to ensure this was being done, there was a “hard stop” placed by IT on the electronic health record so that patients were not able to be discharged without being at least screened for the influenza vaccination. The nurse was forced to input screening results before printing out and finalizing discharge papers.

Interviews were also completed. Because of the importance of the nursing staff in patient care and Standing Orders, the nurses on the unit were interviewed and asked for their thoughts on the current process and suggestions for how to improve it. Patients were also interviewed on the unit and asked what their thoughts were about the discharge process, how they feel about immunizations, and how important they rated being vaccinated for the flu each year. These interviews helped create the change process. Many are resistant to change, however it was important when staff felt like their opinion was taken into consideration and valued. As an addition, majority of the nurses supported Standing Orders. The interview data collected was put into an Excel spreadsheet for further analysis. Interviews were also done on the unit with the highest compliance rate at the same facility in order to compare results and see what processes may or may not have worked better.

Results

Extensive research was done supporting the topic of having a standing orders program. Because of the time restraints and because the flu season was still underway, implementing standing orders took the form of reviewing literature on steps to implement and to help support a policy review and potential change of policy and procedure. Research was also done on how to sustain the change on this unit for further flu seasons.

Final results for the improvement on rates was not yet calculated. Because of the timing of the flu season and time restraints on the project, data collection has not yet been collected because the flu season is still underway. However, the hard stop on discharge instructions will put the percentage of patients being screened for the flu significantly higher because the electronic medical record system will not allow discharge instructions with out screening.

Recommendations

This project was successful in researching and analyzing which methods of implementing and maintaining standing orders was most beneficial. It is recommended that vaccination still be done as part of the discharge process. However, with a standing order the nurse in charge of patient care has the option to complete this before then if they deem appropriate. It is recommended to have standing orders in place at admission on every patient to be screened and vaccinated if indicated on discharge. It is also recommended to gain support of the nursing staff, because they are the providers that have the primary role in implementing this change.

Sustainability

This project will be continued and sustained by another Clinical Nurse Leader (CNL) student in the upcoming term. Because of the timing of the flu season, the next CNL student will be able to view current data and then collect future data on how vaccination rates were affected by these interventions. Extensive review of the literature also helped to find ways to sustain a standing orders program on an inpatient unit.

Nursing Relevance

Nurses are the primary stakeholders in sustainability for this quality improvement project. They have direct influence on patient care and the standing orders program was designed so that the nurses will have the freedom and trained judgment to practice vaccination administration without a direct order from the physician. The nurses are the ones completing the screening and administration.

Root Cause Analysis

Multiple factors were examined to determine the root of the problem of low compliance for inpatients on a step-down unit for influenza vaccinations. The four categories that were assessed included people/staffing, materials and supplies, the current methods of screening and vaccination, and the microsystem in which there was low compliance rates.

As far as people and staffing, the screen is conducted at the time of discharge and it was found that there are seven other major components of care during that time. Components such as coordinating with other team members, gathering patient belongings, patient education, finalizing discharge instructions etc. Discharge is a busy time during patient stay and many times screening was overlooked. This unit also has what is called a “bridge” or “flex” nurse that is responsible for picking up task driven responsibilities when the unit is busy. These tasks include blood work, helping with discharge or depending on workload, screening the patients for vaccinations. The screening also required documentation of education provided to the patient before providing the vaccine. Since discharge is a busy time, patients also were at times in a hurry and would refuse the screen because they wanted to leave.

Materials assessed during the root-cause analysis included the supply provided by the pharmacy. There were three issues regarding supply of the vaccines. The levels are set in the Omnicel but the nurses chart on the removal of the key to the Omnicel not the removal of the actual vaccine creating issues regarding shortages and incorrect vaccines because the counts are off and, lastly, there are coding issues related to pharmacy regarding the Omnicell.

Current methods of screening and vaccination were also assessed. Nurses on this unit are trained to screen and vaccinate if appropriate on discharge. Doing so at a different time during the patient stay was assessed, and concluded that policy should remain on discharge since this is

when the patient is most stable. The policies of influenza vaccination for this facility are not updated to reflect the current documentation practices. Also, the vaccine that is listed on the electronic medication administration record is under a PRN or “give as needed” which the nurse only charts on if it is administered. There was also no current force in the electronic medication administration record for screening and vaccinating so the nurses had no reminder system in place before discharge.

Lastly, the environment was assessed as part of the root cause analysis. On this step-down unit the staff are trained to screen and vaccinate as part of the discharge process. They are aware that the discharge process is also extremely time sensitive, and some nurses have reported during interviews that they feel that they are in a hurry to get everything done necessary in a short amount of time.

All of these causes lead to inconsistent documentation for influenza screening and vaccination. Refer to appendix D for the fishbone graph of the root cause analysis. This quality improvement project focused on the method of documentation. By creating a standing orders program, documentation will be more consistent, the nurses do not need a physician order to screen and vaccinate, and a visual reminder system will be in place for the nurses when a patient is ready for discharge.

Appendix A

CASE STUDY Vaccine standing orders program

Figure 1. Pneumococcal polysaccharide vaccine assessment and standing order form.



UPMC
University of Pittsburgh Medical Center

PHYSICIAN ORDER SET

ALPHANUMERIC CODE TO THE PHYSICIAN TO IDENTIFY THIS ORDER SET
NAME TO IDENTIFY THE SERVICE OR CLINICAL EQUIPMENT WHICH THE ORDER IS PLACED BY THE PHYSICIAN OF THE ORDER SET CENTER
IDENTIFY UNUSUAL MEDICATIONS (DOSE)

Pneumococcal Polysaccharide Vaccine Assessment and Standing Order Form

Check all boxes that apply with a

Risk Assessment - No Active Orders	Order Section
<p>Step 1: Determine the patient's risk:</p> <p><input type="checkbox"/> Age ≥ 65 years. Proceed to Step 2.</p> <p><input type="checkbox"/> Age 2 – 64 years with any of the following: Chronic (chronic) : cardiovascular disease, pulmonary disease, (COPD/asthma), diabetes mellitus, alcoholism, liver disease, sickle cell anemia, cerebrospinal fluid leaks, cochlear implant recipients, and/or immunocompromised: HIV infection, leukemia, lymphoma, Hodgkins disease, multiple myeloma, generalized malignancy, splenectomy, chronic renal failure, nephrotic syndrome, organ or bone marrow transplantation, immunosuppressive medications.</p> <p>Proceed to Step 2</p> <p><input type="checkbox"/> Age 2-64 years and an American native or of other Native American descent. Proceed to Step 2.</p> <p><input type="checkbox"/> Age 2-64 years with no risk factors. Proceed to Order Section and check "do not administer vaccine" box.</p>	<p><input type="checkbox"/> Administer pneumococcal polysaccharide vaccine 0.5 mL:</p> <p><input type="checkbox"/> deep IM in deltoid</p> <p><input type="checkbox"/> Subcutaneous if (Hb) > 1.2 or platelets < 100,000</p> <p><input type="checkbox"/> Subcutaneous if patient is on heparin 40g or warfarin</p> <p>and give:</p> <p><input type="checkbox"/> None</p> <p><input type="checkbox"/> on _____ at _____:00</p> <p><input type="checkbox"/> Do NOT administer pneumococcal vaccine.</p>
<p>Step 2: Assess for contraindications:</p> <p><input type="checkbox"/> Hypersensitivity to vaccine component. Proceed to Order Section and check "do not administer vaccine" box</p> <p><input type="checkbox"/> Severe reaction to prior pneumococcal vaccine. Proceed to Order Section and check "do not administer vaccine" box</p> <p><input type="checkbox"/> Patient received chemotherapy within the last three months or may receive chemotherapy within two weeks. Proceed to Order Section and check "do not administer vaccine" box</p> <p><input type="checkbox"/> Patient's vaccinations are evaluated and administered in outpatient clinic/office. Proceed to Order Section and check "do not administer vaccine" box</p> <p><input type="checkbox"/> No contraindications noted from available information. Proceed to Step 3.</p>	<p>Signature: _____</p> <p>Printed Name: _____</p> <p>Pager/phone: _____</p> <p>Date: _____</p>
<p>Step 3: Assess previous vaccination history:</p> <p><input type="checkbox"/> Uncertain or unknown status. Proceed to Order Section and check "administer vaccine" box</p>	

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*Example of a written Standing Order, as provided by the University of Pittsburg Medical Center.

Appendix B

Table 2. Qualitative Assessment of Strategies Used to Increase Adult Vaccinations from Staff Postintervention Debriefings

Strategy	Site			
	1	2	3	4
Ratings: 0 = dislike/did not use; 1 = ambivalent; 2 = endorsed; 3 = used/highly useful				
Pillar 1—Convenient access				
After hours influenza vaccine clinics	0	0	0	0
Pillar 2—Notification				
Have fliers and posters in patient areas	1	2	2	2
Pillar 3—Office systems				
Immunizations given as part of vital signs	2	3	0	2
Use standing order programs (SOPs) to vaccinate	2	0	3	3
Physicians support SOPs	1	0	3	3
Use prompts in electronic medical record (EMR)	2	0	2	2
Use health maintenance section of EMR	2	2	2	3
Pillar 4—Motivation				
Immunization champion in practice	1	3	1	3
Feedback on rates to staff	1	2	0	2
Total score	12	12	13	20
Weighted score*	19	27.5	22.5	35.5
<p>Staff members were asked as a group whether they used each strategy and how useful each strategy was for implementing a standing order program for adult vaccinations.</p> <p>*Due to the unequal number of strategies in each pillar, weights were assigned to each strategy such that the maximum score for each pillar was equal to those of the other three pillars.</p>				

*Under Pillar 3, the high ratings for the site that actually used the Standing Orders Program. Measure of qualitative ratings.

Resource used from Norwalk et al., 2014.

Appendix C

Screening Checklist for Contraindications to Vaccines for Adults

PATIENT NAME _____

DATE OF BIRTH: _____ / _____ / _____
month day year

For patients: The following questions will help us determine which vaccines you may be given today. If you answer "yes" to any question, it does not necessarily mean you should not be vaccinated. It just means additional questions must be asked. If a question is not clear, please ask your health care provider to explain it.


	yes	no	don't know
1. Are you sick today?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Do you have allergies to medications, food, a vaccine component, or latex?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Have you ever had a serious reaction after receiving a vaccination?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Do you have a long-term health problem with heart disease, lung disease, asthma, kidney disease, metabolic disease (e.g., diabetes), anemia, or other blood disorder?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Do you have cancer, leukemia, HIV/AIDS, or any other immune system problem?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. In the past 3 months, have you taken medications that affect your immune system, such as prednisone, other steroids, or anticancer drugs; drugs for the treatment of rheumatoid arthritis, Crohn's disease, or psoriasis; or have you had radiation treatments?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Have you had a seizure or a brain or other nervous system problem?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. During the past year, have you received a transfusion of blood or blood products, or been given immune (gamma) globulin or an antiviral drug?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. For women: Are you pregnant or is there a chance you could become pregnant during the next month?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Have you received any vaccinations in the past 4 weeks?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

FORM COMPLETED BY _____ DATE _____

FORM REVIEWED BY _____ DATE _____

Did you bring your immunization record card with you? yes no

It is important for you to have a personal record of your vaccinations. If you don't have a personal record, ask your health care provider to give you one. Keep this record in a safe place and bring it with you every time you seek medical care. Make sure your health care provider records all your vaccinations on it.



immunization
action coalition
IAC
immunize.org

Technical content reviewed by the Centers for Disease Control and Prevention

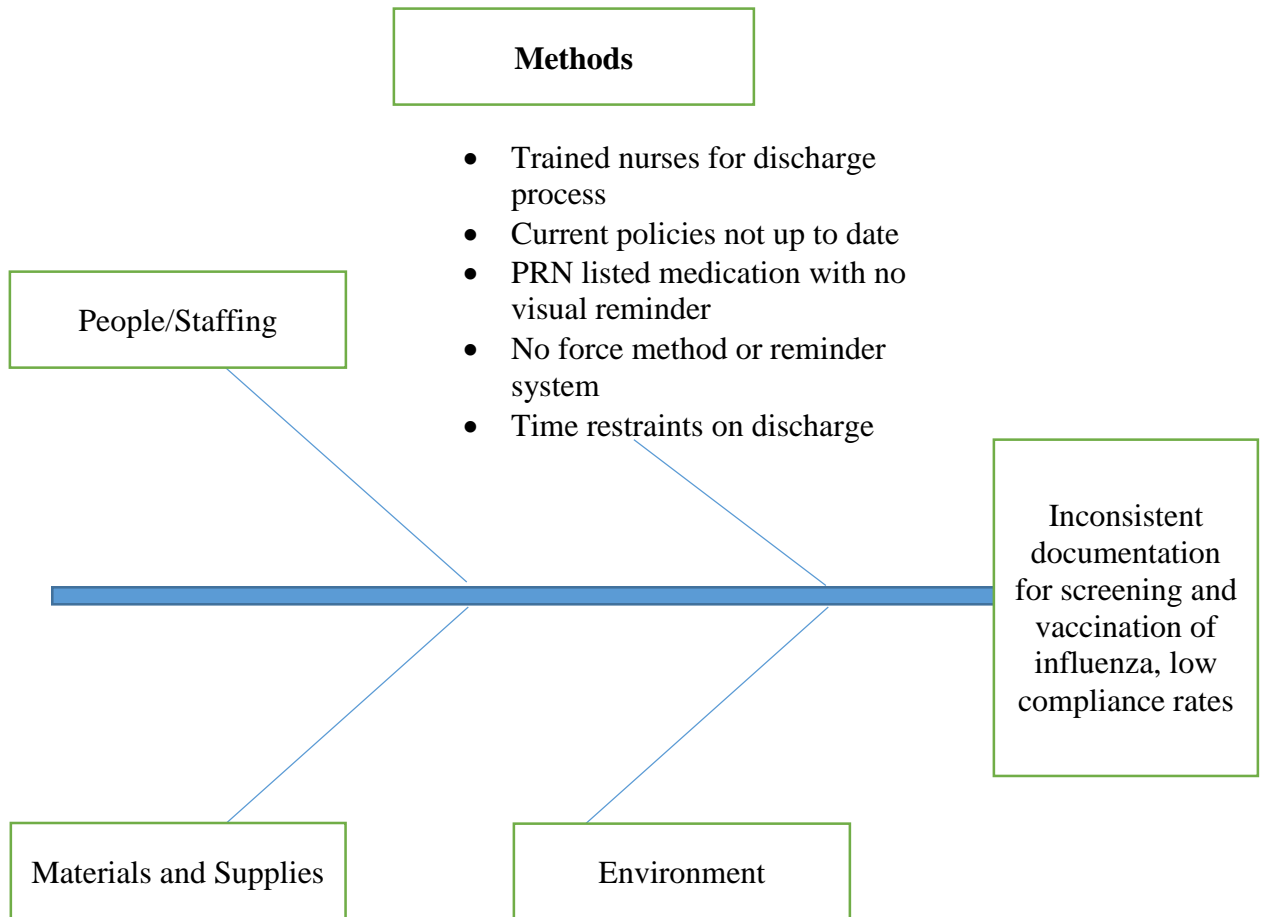
Saint Paul, Minnesota • 651-647-9009 • www.immunize.org • www.vaccineinformation.org

www.immunize.org/catg.d/p4065.pdf • Item #P4065 (9/12)

*Example of a Standing Order provided by the Immunization Action Coalition.

Appendix D

Root Cause Analysis- Fishtail Graph



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