Developing a Nurse Driven Universal Screening Assessment for an Inpatient Population

Screening for Methicillin Resistant Staphylococcus Aureus (MRSA), Pregnancy, Influenza/Pneumonia vaccines and Chlorhexidine (CHG) Bathing Needs at Hospital Admission

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Introduction

An innovative solution that uses clinical decision support (CDS) to improve compliance with certain quality metrics for an admitted patient while reducing clinician workload. The Universal Screening Assessment (USA) combines CDS with nursing assessments to reliably screen patients for pregnancy, MRSA, Methicillin Resistant Staphylococcus Aureus (MRSA), Influenza/Pneumonia and at least one Chlorhexidine (CHG) bath.

Objectives

- Increase compliance with Influenza and Pneumococcal (Figure 1) screening and vaccine ordering for at-risk patients (supported by CDC guidelines for vaccine administration).
- Implement pregnancy screening to safeguard against pregnancy-related complications in females, 15-55 years old (with a uterus) related to surgery, medications and radiologic procedures (supported by Petro Medicine OB/GYN Leadership).
- Implement screening to heighten compliance with daily CHG bathing to reduce the risk of developing a hospital acquired infection in ICU and Oncology patients and those with Central Venous Catheters.
- Allow for earlier intervention and heightened compliance in MRSA screening related to legal requirements in the state of PA (for patients admitted to an ICU or from an outside facility).<ref>Figure 2</ref>
- Standardize nursing workflow by reducing clicks through the restructuring of admission navigations, screening workflow, alerting, order mode and co-sign functionality.
- Reduce redundant or delayed provider ordering of labs and medications.

Project Process and Key Success Factors

- A multidisciplinary team developed the universal screening protocol – nursing, providers, clinical informatics, infusing precious time, data, and regulatory.
- Consensus on screening criteria across six acute hospitals.
- Senior leadership, CNO/CMO endorsement and alignment with strategic priorities.
- Stakeholder engagement in system design: key clinical champions and frontline staff.
- The protocol was developed in a health system-wide inpatient EHR system (Epic, Madison WI).
- The USA tool was implemented on December 3, 2018 after a year of bi-weekly meetings, iterative design, testing and feedback.
- Rapid cycle Plan-Do-Check-Act (PDCA) quality improvement strategy used for 4 weeks post-go live for continuous improvement.

Evaluation and Design of Pneumococcal Vaccinations based on CDC guidelines

(Continued later)

The Universal Screening Electronic Process in the Inpatient Electronic Health Record (Figure 1)

The CDS tool is designed to trigger based on the provider utilizing an order set to admit the patient. Assessment orders are then placed to guide the nursing staff to assess for additional criteria (Figure 3). The initial provider assessment order set serves as an encoded protocol, within the Electronic Health Record (EHR) supporting the nurse-driven orders for a MRSA nasal swab, serum pregnancy test, daily CHG baths, and/or Pneumococcal and Influenza vaccinations.

Utilize CDS Software (PHRASE) to Analyze Impact of the Universal Screening

Post Implementation: (December 2018) – (Figure 4)

- Alert to order influenza vaccine fired 4,237 times (reducing unnecessary screening): Influenza vaccine ordered 306 times, (73.21% conversion). Alert cancelled (or another action taken) 20% of the time without order.

Creating Value: Nurses, Providers and Patients (Figure 5)

- CDS triggers the addition of only the necessary screening rows, thus reducing unnecessary documentation and time spent assessing for irrelevant indications.
- Reduced order delivery time is improved by providing through intuitive system design and collaboration with nursing.
- Screenings report: one step review of the outcome of nurse assessment orders and documentation.

Nurses

- Alert to order influenza vaccine fired 418 times (reducing unnecessary screening). Reducing the Alert Burden: nurses alerting in a single alert with 4 signs (as opposed to 10 disparate invariant alerts).
- Order Mode: using “No-o-sign-required”: reducing thousands of unnecessary co-signs and time spent by Nurse Managers following-up on scripted alerts by providers.
- Implemented mechanisms to encourage placement of required downstream orders (hard steps to alert to guide, appropriate behavior and make it easy to block the right alert for users).

Patients

- Screened patients: adjusted the sequence of screening questions asked by nursing, from simple to complex to create a more fluid patient-user experience.
- Patient benefit: now includes criteria to account for Preventor 13 and Preventor 23 (originally, only Preventor 23 was administered).

Summary

- Innovation: Through the implementation of smart, streamlined design, we were able to change behavior and make it easy for nurses to order appropriate interventions for their patients. This also heightened compliance with additional screenings: fall risk, skin integrity, clinical nutrition needs and social work/case management consults.
- Documentation and intervention workflows were optimized resulting in a significant rise in the placement of appropriate orders, at the time of hospital admission.
- Delivering Standardized Care across 6 entities: partnered with infection prevention to co-create protocols for MRSA, CHG bathing and vaccine screening to create consistency for our patient care.
- Nursing Efficiency: Reducing Clicks: the nursing pre/post evaluation showed a reduction in 14-25 clicks per patient admission. Reducing the Alert Burden: while adding additional alerts, we were able to reduce the overall alert firings to nurses by 26%.
- Time saver: once nursing adjusted to the new design, we realized a decrease in unnecessary documentation, calls to providers and an increase in appropriate interventions.
- Provider Efficiency: reduced latent or unnecessary ordering of labs/medications and unnecessary co-signs.

Figure 2

- Premature Neonatal Intensive Care Unit (NICU) discharge
- Rehospitalization due to nosocomial infections
- Mortality from nosocomial infections
- Risk of MRSA transmission to susceptible patients

Figure 3

- Prior to Implementation: (Nov 2018) – (Figure 3)
- Alert to order influenza vaccine fired 2,257 times (reducing unnecessary screening): Influenza vaccine ordered 306 times, (73.21% conversion). Alert cancelled (or another action taken) 20% of the time without order.

Figure 4

- After Implementation: (December 2018) – (Figure 4)
- Alert to order influenza vaccine fired 418 times (reducing unnecessary screening): Influenza vaccine ordered 306 times, (73.21% conversion). Alert cancelled (or another action taken) 20% of the time without order.

Figure 5

- Post Implementation (December 2018) – (Figure 4)