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Title:

Improving Clinician Behaviors and Patient Safety Outcomes Through Standardization of a Pediatric Vaccine Administration Process

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ACCEPTED

Session Title:

Rising Stars of Research and Scholarship Invited Student Posters

Slot:

RS PST1: Sunday, 17 November 2019: 11:45 AM-12:15 PM

Applicable Category:

Students

Keywords:

Patient safety, Standardization and Vaccine administration

References:

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Abstract Summary:

While significant research has focused on the safety of childhood vaccines' intrinsic properties, little attention has been given to the complex and error-prone vaccine administration process. The purpose of this quality improvement project is to improve clinician knowledge of pediatric vaccines and safe administration behaviors leading to decreased error.

Content Outline:

1. Introduction

1. The majority of reported vaccine errors are attributed to programmatic errors, which are technical errors in vaccine preparation, handling, or administration.
2. The lack of a standard approach to pediatric vaccine administration, increases the risk for errors and potential adverse events following immunization, possibly jeopardizing patient safety.

2. Purpose

1. Improve clinician knowledge of pediatric vaccines and safe administration behaviors leading to decreased error.

3. Methods

1. Simplify and standardize the process
 1. Mapped current state to identify potential high-risk variation and value added or non-value added steps

2. Developed future state based on Center for Disease Control and Prevention (CDC) best practice guidelines and aligned with organization's policy
2. Streamline process
 1. Lean Six Sigma and 5S was performed on vaccine refrigerator and all workspaces where vaccines are prepared.
3. Education for administering clinician
 1. Education sessions provided to staff regarding general vaccine information, administration techniques, and simulation training of the new process.
4. Outcomes
 1. Ongoing and projected to be completed August 2019.
 2. Success measures determined with practice partners.

Topic Selection:

Rising Stars of Research and Scholarship Invited Student Posters (25201)

Abstract Text:

Introduction: Vaccines have proven to be the most economical and beneficial clinical preventive service provided to children, reducing mortality due to infectious disease by two to three million deaths per year. While significant research has focused on the safety of childhood vaccines' intrinsic properties, little attention has been given to the complex and error-prone vaccine administration process. Adverse events following immunization are more often caused by programmatic errors (technical errors in vaccine preparation, handling, or administration) than by the intrinsic properties of vaccines themselves. In 2017, there was a jump in reported vaccine errors in the United States, with the majority attributable to programmatic errors such as: administration of the wrong vaccine, incorrect dose, and contaminated, deteriorated, or expired vaccines. Traditionally viewed as errors of inadequacy of individual providers' knowledge or skill, a systems approach to failure analysis argues that most errors are a result of poorly designed systems. Standardization of processes merges best available knowledge with control and coordination to provide structured workflow that eliminates ambiguity and forgetfulness. The pediatric vaccine administration process at a nurse-led Federally Qualified Health Center (FQHC) on the west side of Chicago lacks a standard approach, increasing the risk for errors of the 5 rights (patient, medication, dose, route, time) and potential adverse events following immunization, possibly jeopardizing patient safety.

Purpose: The purpose of this quality improvement project is to improve clinician knowledge of pediatric vaccines and safe administration behaviors leading to decreased error.

Methods: Multiple observations and interviews with health center staff to accurately map the complexity and variability of the current state of the pediatric vaccine administration process were conducted from August 2018 to January 2019. The existing process was critically analyzed to identify potential high-risk variation and value added or non-value added steps and was aligned with the organization's policy and Center for Disease Control and Prevention (CDC) best practice guidelines. A

future state simplified and standardized pediatric administration process was developed with input from clinicians who perform and oversee the process. Further streamlining the process, a Lean Six Sigma and 5S method management, broadly referring to maintaining cleanliness and promoting efficient workflow for safety was performed on the vaccine refrigerator and all workspace areas where vaccines are prepared. Prior to implementation, administering clinicians completed a survey on the perceived benefits of the new process. All respondents identified a reduction of vaccine costs and improvement in patient safety as potential benefits and most believe the process will decrease risk for human error and improve efficiency. Each administering clinician completed seven hours of education regarding general vaccine information, administration techniques, and simulation training of the new process. Vaccine education was evaluated using a self-assessment competence tool developed by the Immunization Action Coalition and included teach-back demonstration to the project leader. An audit tool was developed to monitor compliance to 3 key steps in the process during real-time administration.

Outcomes: The implementation of this project is ongoing and projected to be completed August 2019. Measures for success of the project were determined with the practice partners and include improvement in knowledge scores after the education and 100% compliance with the 3 key behaviors linked to a safe pediatric vaccine administration outcome (5 rights).