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## A Practice Innovation to Improve Staff Vaccination Knowledge and Skills

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## Abstract

This practice improvement project explored the best practices for equipping CentraCare Health System's (CCHS) Licensed Practical Nurses (LPNs) and Certified Medical Assistants' (CMAs) with childhood vaccination knowledge and communication skills necessary to educate hesitant patients and parents about the benefits of vaccination compliance. Innovative computer-based education (CBE) was identified and developed to empower LPNs and CMAs working in the ambulatory setting with childhood vaccination knowledge and communication skills to improve their ability to educate hesitant patients and parents about the benefits of vaccination. The CBE module was guided by the Theory of Planned Behavior in identifying vaccination knowledge and communication intention. Intentions to use acquired vaccination knowledge and communication skills were assessed pre and post the CBE.

**Results:-** The results are statistically significant indicating that both new and existing LPNs and CMAs gained the necessary vaccination knowledge and communication skills to be advocates of vaccination compliance. Post CBE mean scores on vaccination knowledge and communication skills were statistically higher in both new and existing employees (all  $p < 0.0005$ ). Self-reported intentions to use vaccination knowledge, initiate vaccination conversations, and utilize the vaccination communication skills post CBE were high. Continuation of the CBE vaccination education may increase vaccination compliance rates and avert potential outbreak of communicable diseases. Further studies should explore LPNs and CMAs experiences with hesitant patients at the point-of-care.

## Background

Vaccination completion rates are declining, especially rates for easily transmitted and potentially high morbidity illnesses i.e. measles, mumps and rubella (MMR). MMR vaccine completion rates are below what is required to achieve herd immunity in the United States, Minnesota and in CentraCare Health System (CCHS).

(MDH, 2016; CDC, 2016; B. Lapping., personal communication, October 11, 2107).

### MMR Vaccination Rates:

- Herd immunity: >96%
- United States: 68% - 92%
- Minnesota: 56% - 96% (CDC, 2011; Hall et al., 2017).
- CentraCare Health System: 72% - 96%
- Sub-population in CCHS (Somali): 87% (CCHS, 2017).

### Vaccine Preventable Diseases Outbreak in Minnesota

- 2011, 13 measles cases in Hennepin county
  - 2017, 65 measles cases in MN- 95% (62) were unvaccinated
    - 85% (55) of cases were among Somali Americans.
- (CDC, 2011; Wolff, & Madlon-Kay, 2014; Hall et al., 2017)

## Purpose

- To implement a vaccination CBE module aimed at equipping CCHS clinic LPNs and CMAs with vaccination knowledge and communication skills necessary to educate hesitant patients and parents about the benefits of vaccination.
- Long-term, improved staff vaccination knowledge and communication skills is expected to result in increased vaccination completion rates in CCHS ambulatory patient population.

### Clinical Problem:

- CCHS LPNs and CMAs' deficiency in the knowledge of vaccine preventable childhood communicable diseases and associated symptoms.
- Lack of communication skills on ways to encourage vaccination compliance among hesitant patients and parents.

## Methods

**Setting:** CentraCare Health System Clinics

**Sample:** CCHS Clinic LPNs and CMAs

**Target Population:** CCHS Vaccine Hesitant Patients & Parents

### Process Implementation

- PowerPoint e-learning format
- CBE module training (time: 12-15 mins)
- Guidelines based on Adult Learning Principles (Bryan, Kreuter, and Brownson 2009).

### Project Design

#### Evidence Based Quality Improvement Project

- Computer based education module
- Integrated adult learning principles and nursing professional development role standards (Katie S, personal communication, January 15, 2018).
- Communication skill content adopted from the CASE-method tool designed per clinician's experience and standardized values. (Jacobson, Sauver, & Finney Rutten, 2015).
- Based on the Theory of Planned Behavior (Ajzen, & Fishbein 1980).

### Paired Sample T-Test Examined:

- Change in childhood vaccination knowledge among CCHS clinic LPNs and CMAs pre and post CBE.
- Change in vaccination communication skills among CCHS LPNs and CMAs pre and post CBE.

### Descriptive Statistics Examined:

- Self-reported intention to initiate vaccination conversation.
- Self-reported intention to utilize new vaccination knowledge presented in CBE.
- Self-reported intention to utilize communication model presented in CBE in practice.

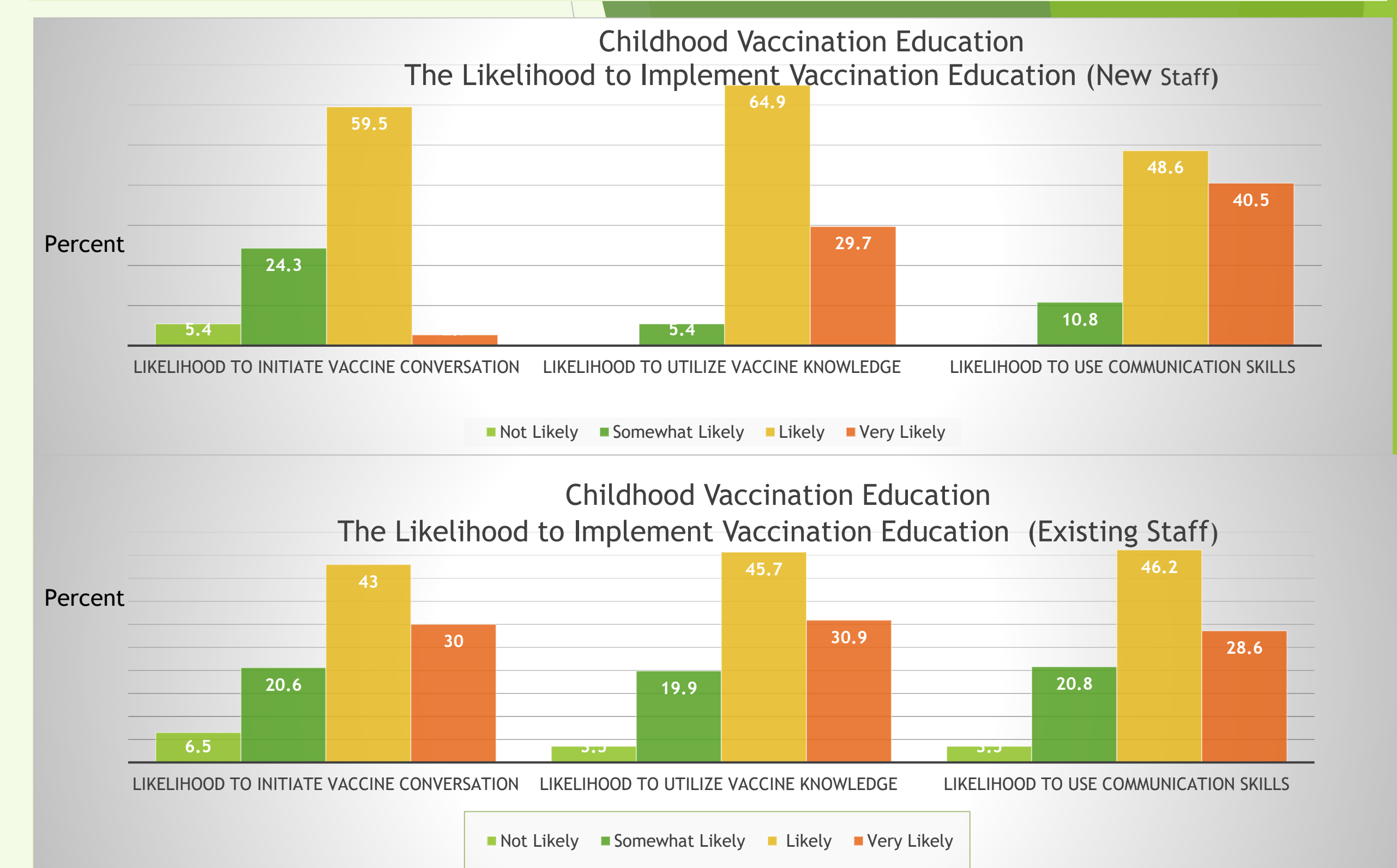
## Results

### Paired Sample T-test of Pre and Post Test Results (New and Existing Staff)

Computer Based Vaccination Education	N	Pre-CBE Mean	Post-CBE Mean	Mean Difference	SD	t	P value
Vaccination Knowledge -New Staff	37	5.32	7.05	1.73	0.90	11.66	<0.0005
Communication Skills -New Staff	37	4.92	6.84	1.92	0.59	19.60	<0.0005
Vaccination Knowledge - Existing Staff	476	6.87	7.79	0.92	0.52	37.94	<0.0005
Communication Skills - Existing Staff	476	6.77	7.65	0.88	0.58	33.07	<0.0005



### Descriptive Statistics (New and Existing Staff)



### Percent Reporting Likely or Very Likely Post CBE

Childhood Vaccination	New Staff	Existing Staff
Initiate vaccination Conversation	62.2	73.0
Utilize vaccination knowledge	94.6	76.6
Use communication model	89.1	74.8

## Implications for Practice

- Increase in awareness and knowledge of the importance of childhood vaccination among nursing staff, patients and parents.
- Increase vaccination compliance among hesitant patients and parents.
- Minimize potential outbreak of vaccine preventable communicable diseases.
- Potential achievement of herd immunity threshold based on higher vaccination compliance rate for MMR among CCHS patient population and the community.

## Conclusions

- CCHS LPNs and CMAs improved their knowledge and communication skills about childhood vaccination.
- LPNs and CMAs are very likely to implement the knowledge and communication skills gained from the vaccination education at the point-of-care.
- Existing staff were more confident about their knowledge of vaccination information and communication skills compared to new staff which can be attributed to their level of experience.
- Further studies should explore LPNs and CMAs' experiences with hesitant patients at the point-of-care.
- Ongoing collection of data about immunization rates among CCHS patients will be pertinent in showing the impact of the vaccination education on vaccination compliance rates.
- Caution should be exercised interpreting results as subjects of the quality improvement project may not be a sample representation of employees in other healthcare ambulatory settings.
  - About 80% of MN residents are Caucasian (U.S. Census Bureau, 2017).

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