AN EVIDENCE BASED INTERVENTION TO IMPROVE VACCINATION RATES FOR SEASONAL INFLUENZA AMONG REGISTERED NURSES

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Learner Objectives and Disclosures

• Debra A. Maitre, DNP, APRN-CNS (author) has no conflict of interest and has received no sponsorship or commercial support to disclose.

• Currently employed at Baylor Medical Center at McKinney, McKinney, Texas

• Learner Objectives
  ● The learner will be able to describe the commonly cited reasons nurses give for not accepting seasonal vaccination for influenza.
  
  ● The Learner will be able to identify at least one nurse characteristic associated with vaccination for influenza behaviors following and evidence based educational intervention.
## Problem Recognition

- Seasonal influenza continues to hospitalize hundreds of thousands each year and is 9th leading cause of deaths in the U.S.  
  (Centers for Disease Control and Prevention, 2012)

- RN vaccination rate of 77.7% is below Healthy People 2020 target of 90 %  
  (Centers for Disease Control and Prevention, 2013a)

- Nurses who refuse vaccination are *less knowledgeable* about influenza, vaccine safety and efficacy.  
  (Clark et al, 2009)

- Interventions targeting RN beliefs regarding influenza through education have been recommended.  
  (Clark et al, 2009)
Question

- Will an evidence based educational intervention aimed at improving knowledge regarding influenza and dispelling myths and misconceptions about the influenza vaccine increase RN vaccination rates for seasonal influenza?
Significance

Increasing vaccination of healthcare workers

Reduces hospitalized patient morbidity and mortality

If 70% vaccinated

↓ 30,000 hospitalizations
↓ 40% deaths of hospitalized patients

(Music, 2012; Talbot et al, 2010)

(Centers for Disease Control and Prevention, 2013c, Poland et al, 2005)

Reduces absenteeism

If vaccination rate = 55% at $30.00/dose and vaccine 60% effective

Savings of $15,210.20 and 48% ROI

(Music, 2012; Talbot et al, 2010)

(Flu Prevention Partners, 2013)
Review of Evidence

• Most common reasons RNs give for receiving influenza vaccine
  • Personal protection
  • Family/Friend protection
  • Patient protection
    (Baron-Epel et al, 2012; Clark et al, 2009; Friedl et al, 2012; Henrikson et al, 2011; Zhang et al, 2011)

• Most common reasons for not receiving influenza vaccine
  • Lack of concern or belief of risk of influenza
  • Fear of adverse effects of vaccine
  • Lack of belief in effectiveness in vaccine
    (Baron-Epel et al, 2012; Clark et al, 2009; Friedl et al, 2012; Henrikson et al, 2011; Zhang et al, 2011)
Review of Evidence

- Nurses who refuse influenza vaccination:
  
  *Under*-estimate risk of influenza to self and to others
  
  *Over*-estimate risk of vaccine side effects
  
  Rely on more informal sources for information

(Baron-Epel et al, 2012; Clark et al, 2009; Friedl et al, 2012; Henrikson et al, 2011; Zhang et al, 2011)
The Health Belief Model

Theoretical Constructs

- **Perceived Susceptibility**
  - Brewer & Hallman (2006) – Half of RNs not vaccinated for influenza because they did not think they were at risk of contracting influenza

- **Perceived Seriousness**
  - Premantunge et al (2012) – RNs who felt influenza was a serious illness more likely to be vaccinated

- **Perceived Benefits**
  - RNs who were vaccinated believed that vaccination protected self, family/friends and patients (Marshall, Tetu-Mouradjian, & Fulton, 2010)

- **Perceived Barriers**
  - Pain, Fear of Side Effects, Inconvenience create barriers to vaccination and overestimation of side effect risk is common among RNs not vaccinated (Marshall et al, 2010).
Health Belief Model

Poor Knowledge, Misconceptions and Myths Regarding Influenza Risks, Vaccine Efficacy, Side Effects Driving Low RN Vaccination Rates

An Evidence-Based Intervention to Improve RN Knowledge Regarding Influenza, Risks, Vaccine Efficacy, and Side Effects

Knowledge Benefits Cues to Act

Risk Perception Vulnerability Seriousness Barriers

Increased Likelihood of RNs to Accept the Seasonal Influenza Vaccination

RN Seasonal Flu Vaccination Rate of 90% or Greater

Hospitalizations Decreased and Deaths from Influenza
Sample Population

Potential Sample

- 900+ RNs employed at facility
- All RNs invited to participate in educational presentation
- Vaccination rate of RNs in past was 40%

Participants

- 105 attended - 88 RNs (9.8%), 15 LVN, 2 UAPs

Completed Survey

- 57 RNs Total Sample (65%)
## Sample Description

### Gender, Age, Race/Ethnicity, and Educational Level

<table>
<thead>
<tr>
<th>Demographics</th>
<th>N</th>
<th>Percent</th>
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<tbody>
<tr>
<td><strong>Gender</strong></td>
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</tr>
<tr>
<td>Male</td>
<td>7</td>
<td>12.3</td>
</tr>
<tr>
<td>Female</td>
<td>50</td>
<td>87.7</td>
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<tr>
<td><strong>Race/Ethnicity</strong></td>
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<td></td>
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<tr>
<td>Asian</td>
<td>19</td>
<td>33.3</td>
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<tr>
<td>African American</td>
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<td>31.6</td>
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<td>Caucasian</td>
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<td><strong>Educational Level</strong></td>
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<tr>
<td>Master's Degree</td>
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<td>29.8</td>
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### Age and Years of Experience

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<tr>
<th></th>
<th>N</th>
<th>Range</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>Std. Deviation</th>
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</thead>
<tbody>
<tr>
<td>Age</td>
<td>47</td>
<td>48</td>
<td>27</td>
<td>75</td>
<td>51.23</td>
<td>10.186</td>
</tr>
<tr>
<td>Years Experience</td>
<td>51</td>
<td>51</td>
<td>4</td>
<td>55</td>
<td>24.96</td>
<td>11.560</td>
</tr>
</tbody>
</table>

- More racially/ethnically diverse than Texas RN population  
  (Asian 33% vs. 11%, Caucasian 21% vs. 40%)
- Slightly older  
  (51yrs. vs. 46yrs.)
- Higher level of education  
  (BSN: 47% vs. 39% - MSN: 30% vs. 9%)

(Texas Center for Nursing Workforce Studies, 2013)
## Results – Change in Vaccination Status

Sample RN Vaccination Rate

<table>
<thead>
<tr>
<th>Vaccination Status</th>
<th>No</th>
<th>Percent</th>
<th>Yes</th>
<th>Percent</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012-13 (Pre – Intervention)</td>
<td>24</td>
<td>42.1%</td>
<td>33</td>
<td>57.9%</td>
<td>57</td>
</tr>
<tr>
<td>2013-14 (Post – Intervention)</td>
<td>23</td>
<td>40.4%</td>
<td>34</td>
<td>59.6%</td>
<td>57</td>
</tr>
</tbody>
</table>

All Employed RN Vaccination Rate

<table>
<thead>
<tr>
<th></th>
<th>RNs Vaccinated</th>
<th>Total RNs</th>
<th>Vaccination Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012-13</td>
<td>396</td>
<td>985</td>
<td>40%</td>
</tr>
<tr>
<td>2013-14</td>
<td>396</td>
<td>1038</td>
<td>38%</td>
</tr>
</tbody>
</table>
Results and Discussion

Change in vaccination status after intervention *Not Significant*

\[ X^2 \ p = 1.00 \text{ (binomial distribution)} \]

Health Belief Model

• **Perceived Severity & Susceptibility**
  RNs often do not apply risk to self / concern regarding influenza
  (Marshall, Tetu-Mouradjian, & Fulton, 2010; Teitler-Regev, Shahrabani, & Benzion, 2011)

• **Benefits and Barriers**
  When susceptibility and severity is not high, barriers such as side effects are more likely to motivate behavior

• **Cues to Act**
  Social and environmental cues to act were limited – low levels of vaccination among peers lessens likelihood of vaccination overall
  (D'Souza, Zyngier, Robinson, Schlotterlein, & Sullivan-Mort, 2011)
Results and Discussion

- **Age:** Older strongly associated with Vaccination \((p = .01)\)
  
  Older RNs may have higher perception of susceptibility and severity due to increased experience with influenza and chronic diseases

- **Age:** Younger moderately associated against Vaccination \((p = .05)\)
  
  Younger RNs may have lower perception of susceptibility and severity due to lack of experience with influenza and positive health status

- **Race/Ethnicity:** Asian moderately associated against Vaccination

  Asian race less likely to be vaccinated prior \((p = .023)\) and increased rate of vaccination post intervention \((p = .031)\)

  Caucasian race/ethnicity more likely to be vaccinated before intervention \((p = .045)\)

- **Behavior:** Previous vaccination strongly correlated \((p = .00)\)

  Previous behavior is strongest link to future behavior – those who have been vaccinated in the past will likely be vaccinated in the future
Results and Discussion

Education as a single intervention may not be effective in changing vaccination behavior!
Limitations

- Sample Size – under powered
- Convenience Sample
- Self-Selection Bias and “Desirability” of Vaccination Bias
- Sample Not Representative of Population
- 24 RNs Did Not Return Data Sheet
- Incomplete records
Implications for Change

- Traditional educational interventions may not be most effective method to change vaccination behavior in RNs

- Influenza campaigns should be developed that address cultural and generational differences

- Use of social media, online learning and peer champions could produce different outcomes

- Low rates of improvement from voluntary campaigns are driving push for mandatory vaccination

- Mandatory vaccination policies increasingly likely in the majority of healthcare institutions
Conclusion

Nurses will continue to require accurate information and improved knowledge in order to improve community and population influenza vaccination rates.
Thank You
References


References


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References


• Terry, A. J. (2012). *Clinical research for the doctor of nursing practice*. Sudbury, MA: Jones and Bartlett Learning.
References


