# AN EVIDENCE BASED INTERVENTION TO IMPROVE VACCINATION RATES FOR SEASONAL INFLUENZA AMONG REGISTERED NURSES
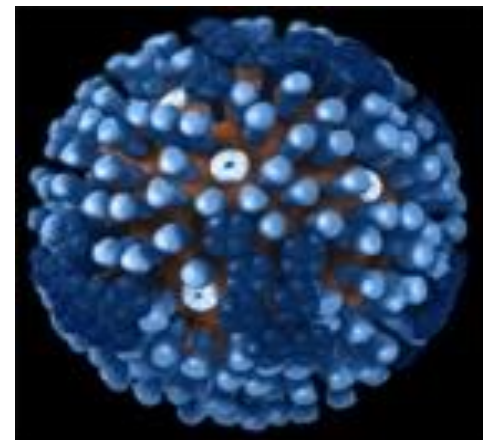
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Sigma Theta Tau International

26th International Nursing Research Congress

July 2015

# 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

(Music, 2012; Talbot et al, 2010)

If 70% vaccinated      ⬇ 30,000 hospitalizations
                       ⬇ 40% deaths of hospitalized patients

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

Reduces absenteeism (Music, 2012; Talbot et al, 2010)

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

Savings of  $15,210.20  and   48% ROI

(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**
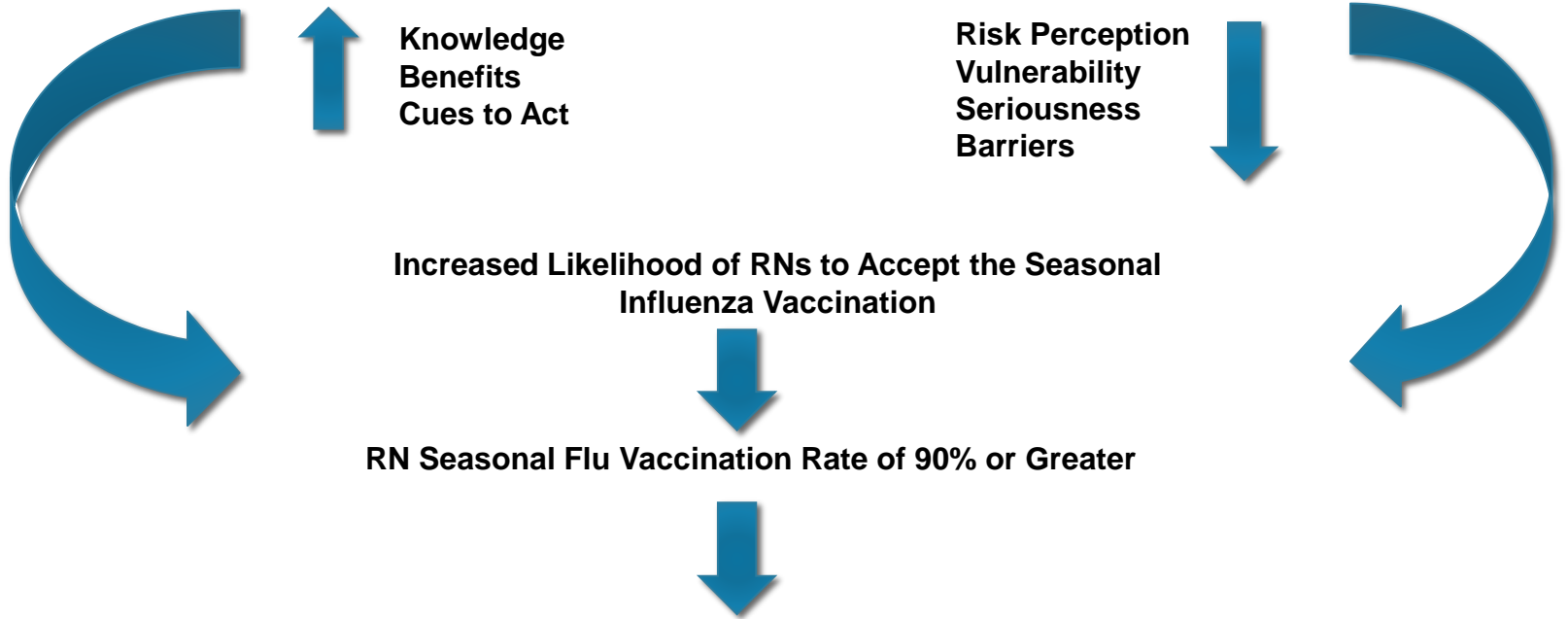
**Knowledge**
**Benefits**
**Cues to Act**

**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**

| Demographics | N | Percent % |
|---|---|---|
| **Gender** | | |
| Male | 7 | 12.3 |
| Female | 50 | 87.7 |
| **Race/Ethnicity** | | |
| Asian | 19 | 33.3 |
| African American | 18 | 31.6 |
| Hispanic | 4 | 7.0 |
| Caucasian | 12 | 21.1 |
| Other | 2 | 3.5 |
| **Educational Level** | | |
| Diploma | 2 | 3.5 |
| Associate's Degree | 7 | 12.3 |
| Bachelor's Degree | 27 | 47.4 |
| Master's Degree | 17 | 29.8 |

**Age and Years of Experience**

| | N | Range | Minimum | Maximum | Mean | Std. Deviation |
|---|---|---|---|---|---|---|
| Age | 47 | 48 | 27 | 75 | 51.23 | 10.186 |
| Years Experience | 51 | 51 | 4 | 55 | 24.96 | 11.560 |

- **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

| Vaccination Status | No | Percent | Yes | Percent | Total |
|---|---|---|---|---|---|
| 2012-13 (Pre – Intervention) | 24 | 42.1% | 33 | **57.9%** | 57 |
| 2013-14 (Post –Intervention) | 23 | 40.4% | 34 | **59.6%** | 57 |

## All Employed RN Vaccination Rate

| | RNs Vaccinated | Total RNs | Vaccination Rate |
|---|---|---|---|
| 2012-13 | 396 | 985 | **40%** |
| 2013-14 | 396 | 1038 | 38% |

# Results and Discussion

Change in vaccination status after intervention ***Not Significant***

$X^2$  $p = 1.00$ (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

(Champion & Skinner, 2008; Marshall et al, 2010; Teitler-Regev et al, 2011)

- ### 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

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