Increasing Annual Influenza Vaccination Among RI Health Care Workers: A Social Marketing Approach

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INFLUENZA and VACCINE

- Influenza type A or B causes a febrile viral infection of the upper and lower respiratory system and middle ear;

- It is highly contagious and is spread from person to person;

- Infected healthcare workers can spread influenza to patients inadvertently prior to the onset of symptoms; and

- Influenza vaccine continues to be the best method for preventing influenza in both healthcare workers and patients.

Source: CDC
INFLUENZA COMPLICATIONS

- PNEUMONIA viral  bacterial
- Exacerbation of underlying heart lung-chronic disease conditions
- Encephalopathy, transverse myelitis, Reye’s syndrome, myositis, myocarditis, pericarditis

HOSPITALIZATIONS: approximately 226,000 per year (CDC data 1979-2001).

DEATHS: 20,000 to 40,000 per year (300 in RI)
- 0.4--0.6 among persons aged 0--49 years
- 7.5 among persons aged 50--64 years
- 98.3 among persons aged ≥65 years.
MMWR Recommendations and Reports
July 29, 2010-11 / Volume 59 (Early Release); 1-62

Prevention and Control of Influenza
Recommendations of the Advisory Committee on Immunization Practices (ACIP)

DHHS
CDC

A/California/7/2009 (H1N1)-like, A/Perth/16/2009 (H3N2)-like, and B/Brisbane/60/2008-like antigens; trivalent vaccine

INFLUENZA VACCINE Indications

- Adults 65 years of age and older
- Chronic heart or lung disorders (including asthma), or other chronic &metabolic disease or immune disorder
- Residents of nursing homes/congregate living environments
- Pregnant women in any trimester
- Household members of all of the above
- All health care workers
Vaccination of Healthcare Workers

- ACIP recommends influenza vaccination of the following groups:
  - Physicians, nurses, and other personnel in both hospital and outpatient settings, including medical emergency response workers.
  - Employees of nursing homes and long term care facilities who have contact with patients or residents.
  - Employees at assisted living and other types of residences for persons in high risk groups and
  - Persons providing home care to high-risk patients

Influenza Vaccine Efficacy

- 70 to 90% effective in preventing illness in persons<65 years
- 30 to 70% effective in preventing hospitalization in the elderly
- 30 to 40% effective in preventing hospitalization in frail elderly
- 50 to 60% effective in preventing P&I hospitalization in nursing homes
- 80% effective in preventing death in nursing home elderly.
HCW Influenza Vaccination Rates

- The RI social marketing study was prompted by reports of low influenza vaccination coverage rates among healthcare workers.

- 33% of RI nursing home healthcare workers were vaccinated against influenza in 2004, and

- In 2006 the national influenza vaccination coverage rate for healthcare workers was 42%.


Literature review

2010

- Reviewed scientific journal articles (1989-2009) to gain insight into healthcare workers’ influenza vaccine coverage rates (19 studies)

- Determinants of influenza vaccine acceptance and rejection (10 studies), and

- Effective interventions designed to increase uptake of influenza vaccine in this group (10 studies).
Literature review

2010

- Studies—majority were cross-sectional

- Conducted in acute care hospitals and long term care facilities

- In the US, Canada, five European countries, and Brazil

- Convenience samples varied between 144 - 5,654 individuals.

Literature review

- All of the countries had national influenza vaccination recommendations for healthcare workers.

- In all studies
  - Healthcare workers offered free influenza vaccinations
  - Provided education/promotion/campaigns about influenza and vaccination.
Findings: HCW Influenza Vaccination Coverage Rates

- Low influenza vaccination coverage rates among HCW’s is a national and international problem confronting public health authorities.

- Wide variations existed in HCW overall influenza vaccination coverage rates 2% to 82%; for nurses 4% to 76%.

- Differences were observed in influenza vaccination coverage rates among various occupational groups e.g. physicians’ rates were higher compared to nurses rates.

Findings: HCW Influenza Vaccination Coverage Rates

- One study that reported the highest overall pediatric nurses vaccination rate (76%) also cited intra-occupational variations among the nurses at a single site an acute care hospital in Canada.

- Intra-occupational variations:
  - Neuroscience Unit – 76%
  - Antepartum Unit – 26%
  - Neonatal Intensive Care (NICU) – 32%
Findings: HCW Primary Reasons to Accept/Reject Influenza Vaccination

- In 7 out of 10 studies HCW cited self-protection, avoiding illness, and protecting patients as the reasons to accept vaccine;

- In one-third of the studies HCW cited that fear of vaccine side effects, efficacy, safety and contracting the flu from vaccine were important deterrents for not receiving it.

Findings: HCW Primary Reasons to Accept/Reject Influenza Vaccination

- Unvaccinated HCW did not perceive themselves “at risk for influenza” or “see the benefits to getting immunized;”

- Some unvaccinated HCW perceived more benefits from using preventive measures e.g. hand-washing, universal precautions, eating a nutritious diet and getting regular exercise.
Findings: Interventions to Increase Influenza Vaccine Uptake among HCW’s

- Intervention sites
  - 2-70 long-term care facilities
  - 1-2,000 hospitals

- Intervention components:
  - Education/promotion/campaigns
    - about influenza and vaccine
  - Targeted toward HCW’s using various methods
    - in-service trainings
    - informational posters, handouts
    - a designated Vaccine Day
    - Vaccination clinics

Findings: Interventions to Increase Influenza Vaccine Uptake among HCW’s

- Two studies with the highest post-intervention vaccination rates (65% and 76%) used mobile carts and “flu coordinators” to vaccinate HCW’s on the units.

- HCW post intervention vaccination rates varied 2-76%

- Nurses’ rates were lower in almost all studies.
Findings: Interventions to Increase Influenza Vaccine Uptake among HCW’s

- In all but one study that included physicians as part of the HCW group, researchers cited that the significant increases in post intervention vaccination coverage rates were attributed to doctors uptake.

- Despite moderate to intensive efforts, costs, and time education/promotion/campaigns had only limited success.

- In 50% of the interventions less than one-third of the HCW’s were vaccinated.

- In 20% slightly over half were vaccinated.

Flu Vaccine Uptake Among Health Care Workers
Nursing Home and Hospital-Based
US, RI, and UK

Plateau in US 1997-2002
Related Events

50% “resist” in RI
~Sept 2009

Mandatory flu vaccination splits workers
September 27, 2009
delthia.ricks@newsday.com

NY mandates shots

Research/Program Questions -2007

1. What influences annual vaccine uptake behavior among healthcare workers?

2. How can these “influences” be addressed to promote annual uptake?

3. Are there differences between, groups, professions and/or worksites?
   • Audiences?
   • Interventions?

4. Can a Social Marketing approach help us understand and address these dynamics?
Methods

- 12 key informant interviews
  - (hospitals & nursing homes)

- Recruited healthcare workers
  - letter and flyers in hospitals and nursing homes.

- Conducted 5 focus groups
  - 4 groups unvaccinated last season
  - 1 group vaccinated last flu season

Focus Group Participants

<table>
<thead>
<tr>
<th>Hospital</th>
<th>Nursing home</th>
<th>College</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>14</td>
<td>10</td>
<td>21</td>
<td>24</td>
</tr>
<tr>
<td>0</td>
<td>2</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>0</td>
<td>8</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>7</td>
<td>6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>4</td>
<td>1</td>
<td>16</td>
</tr>
<tr>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>
Preliminary Audience Segments

a. “Makes Me Sick” – Vaccinated before and believe it did not protect them or made them sick.

b. “Naturally Immune” – Do not believe they are at risk for getting the flu or spreading it to their patients; Very knowledgeable about infection control techniques; Rarely sick.

c. “Health Hippies” – Extremely health conscious; Don’t want to put anything unnatural in their bodies; Skeptical of vaccines in general.


e. Mild disease – not worth worrying about

Next Steps

• Use focus group research approach to design and implement a web-based survey.

• Use quantitative date to refine audience segments and suggest tailored strategies.
Web-based Survey

- Hospital 253
- Nursing Home 372
- Medical Office 22
- Asst Living 14
- Home Care 39
- Home Nursing 13
- Hospice 7
- Other 126
- TOTAL* 846

*convenience sample of HCW

Table 3. Survey respondents’ influenza vaccine history

<table>
<thead>
<tr>
<th>Influenza Vaccine History</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Did you receive influenza vaccine last year?</td>
<td>69</td>
</tr>
<tr>
<td>How many times in the past 5 years have you received influenza vaccine?</td>
<td></td>
</tr>
<tr>
<td>Never</td>
<td>20</td>
</tr>
<tr>
<td>Once</td>
<td>12</td>
</tr>
<tr>
<td>A few times</td>
<td>22</td>
</tr>
<tr>
<td>Every year</td>
<td>46</td>
</tr>
<tr>
<td>How likely are you to get influenza vaccine next year?</td>
<td></td>
</tr>
<tr>
<td>Likely</td>
<td>62</td>
</tr>
<tr>
<td>50-50 chance</td>
<td>18</td>
</tr>
<tr>
<td>Unlikely</td>
<td>20</td>
</tr>
</tbody>
</table>
Stages of Change

Behavior Change is a process — not an event

<table>
<thead>
<tr>
<th>Stage</th>
<th>Definition</th>
<th>Potential Change Strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Procontemplation</td>
<td>Has no intention of taking action within the next six months</td>
<td>Increase awareness of need for change; personalize information about risks and benefits</td>
</tr>
<tr>
<td>Contemplation</td>
<td>Intends to take action in the next six months</td>
<td>Motivate; encourage making specific plans</td>
</tr>
<tr>
<td>Preparation</td>
<td>Intends to take action within the next thirty days and has taken some behavioral steps in this direction</td>
<td>Assist with developing and implementing concrete action plans; help set gradual goals</td>
</tr>
<tr>
<td>Action</td>
<td>Has changed behavior for less than six months</td>
<td>Assist with feedback, problem solving, social support, and reinforcement</td>
</tr>
<tr>
<td>Maintenance</td>
<td>Has changed behavior for more than six months</td>
<td>Assist with coping, reminders, finding alternatives, avoiding slips and relapses (as applicable)</td>
</tr>
</tbody>
</table>
Stages of Change – Flu Vaccine

- **Pre-contemplation** – don't get it!
- **Contemplation** – don’t but might (“50-50”)
- **Action** – took 1st time this year – “likely” next year
- **Maintenance** – took every year in past and plans to take this year
- **Relapse** – took in past but not last year and not “likely” this/next year

### Table 4. Stages of change by influenza vaccine history

<table>
<thead>
<tr>
<th>Stage</th>
<th>Last 5 years</th>
<th>Last year</th>
<th>Next year</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Precontemplation</td>
<td>Never</td>
<td>---</td>
<td>Unlikely</td>
<td>35</td>
</tr>
<tr>
<td>Contemplation</td>
<td>Never</td>
<td>---</td>
<td>50/50</td>
<td>35</td>
</tr>
<tr>
<td>Preparation</td>
<td>Never</td>
<td>---</td>
<td>Likely</td>
<td>3</td>
</tr>
<tr>
<td>Action</td>
<td>Once - few</td>
<td>Yes</td>
<td>50/50 - Likely</td>
<td>167</td>
</tr>
<tr>
<td>Maintenance</td>
<td>Every</td>
<td>Yes</td>
<td>50/50 - Likely</td>
<td>143</td>
</tr>
<tr>
<td>Relapse</td>
<td>Once - every</td>
<td>No</td>
<td>---</td>
<td>135</td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td></td>
<td></td>
<td>783</td>
</tr>
</tbody>
</table>

Comparison between Precontemplators (PRECONS) and Maintenance
Table 6. Perceptions about influenza and influenza vaccine by stage of change (Precontemplation vs. Maintenance)

<table>
<thead>
<tr>
<th>How severe are the potential health consequences of influenza?</th>
<th>Precon</th>
<th>Maint</th>
</tr>
</thead>
<tbody>
<tr>
<td>For infants?</td>
<td>2.5</td>
<td>2.5</td>
</tr>
<tr>
<td>For elderly?</td>
<td>2.8</td>
<td>2.0</td>
</tr>
<tr>
<td>For people who are immune-compromised or chronically ill?</td>
<td>2.0</td>
<td>2.0</td>
</tr>
<tr>
<td>For people who don’t take care of themselves?</td>
<td>2.0</td>
<td>2.0</td>
</tr>
<tr>
<td>For people my age?</td>
<td>1.0</td>
<td>1.8</td>
</tr>
</tbody>
</table>

How important are the following consequences of influenza for you? (Response range: from 1, “not important,” to 3, “important”)

- The burden on my co-workers when I am sick and can’t go to work: 2.6 2.3
- The financial burden when I have to miss work: 2.3 2.4
- The probability of spreading the flu to family members or co-workers: 2.0 3.0
- The burden on my family when I can’t take care of them: 2.5 2.0
- Having to stay home and miss out on life: 2.1 2.2
- The financial burden on the healthcare system: 2.3 2.5

Pretty much the same.....

Barriers and Benefits
More likely to get flu vaccine next year if:

<table>
<thead>
<tr>
<th>Percent agreeing</th>
<th>Precon</th>
<th>Maint</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personal Contagion</td>
<td>0.12</td>
<td>0.02</td>
</tr>
<tr>
<td>General</td>
<td>0.10</td>
<td>0.03</td>
</tr>
<tr>
<td>Summary Phrase</td>
<td>0.06</td>
<td>0.02</td>
</tr>
</tbody>
</table>

- Personal motives Moderate effect
- No effect

Only 1/3rd if “required”
Nearly ½ say “nothing would make me”

Maintenance already getting it
Risk Perceptions About Flu Vaccine

Agree re Non-vaccine alternatives

<table>
<thead>
<tr>
<th>Do you agree or disagree with the following statements?</th>
<th>Pre-con</th>
<th>Main</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Influenza Vaccine vs. Other Preventive Measures</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>It's better to build up natural immunity than to take flu vaccine.</td>
<td>3.0</td>
<td>1.7</td>
</tr>
<tr>
<td>Taking good care of myself is as good or better than getting flu vaccine.</td>
<td>4.0</td>
<td>2.7</td>
</tr>
<tr>
<td><strong>Side Effects Concerning Vaccine</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I'm worried about the possible side effects of vaccine...</td>
<td>3.0</td>
<td>2.8</td>
</tr>
<tr>
<td>The flu vaccine can cause the flu...</td>
<td>2.9</td>
<td>1.8</td>
</tr>
</tbody>
</table>

Vaccine “worries”

Disagree with mandates for patients and HCW

Summary: Precontemplators vs. Maintenance

- **Precontemplators**
  - Dubious “need”
  - Poor exchange; few benefits
  - Substantial risk of vaccine
  - Against requiring vaccination

- **Maintenance**
  - Many benefits/little risk
  - Support policies requiring vaccination
Precons and Relapsers

“Unlikely” to get vaccine next year

Nothing would make me get vaccine

<table>
<thead>
<tr>
<th></th>
<th>PRECONS</th>
<th>RELAPSE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Group</td>
<td>N=95</td>
<td>N=60</td>
</tr>
<tr>
<td>Number</td>
<td>43</td>
<td>10</td>
</tr>
<tr>
<td>Percent</td>
<td>45%</td>
<td>17%</td>
</tr>
</tbody>
</table>

PRECON-RELAPSE: Health facts, personal consequences
(Unlikeley to get vaccine next year)

How severe are the potential health consequences of influenza?
[Response range: From 1, “mild,” to 3, “severe”]

- For infants?
  - PRECON-No: 2.6
  - PRECON-Agree: 2.4
  - RELAPSE-No: 2.6
  - RELAPSE-Agree: 2.5

- For elderly?
  - PRECON-No: 3.0
  - PRECON-Agree: 2.8
  - RELAPSE-No: 2.8
  - RELAPSE-Agree: 3.0

- For people who are immuno-compromised or chronically ill?
  - PRECON-No: 2.5
  - PRECON-Agree: 2.5
  - RELAPSE-No: 2.5
  - RELAPSE-Agree: 2.7

- For people who don’t take care of themselves?
  - PRECON-No: 1.6
  - PRECON-Agree: 1.7
  - RELAPSE-No: 1.7
  - RELAPSE-Agree: 2.0

- For people my age?
  - PRECON-No: 1.8
  - PRECON-Agree: 1.7
  - RELAPSE-No: 1.7
  - RELAPSE-Agree: 2.0

How important are the following consequences of influenza for you?
[Response range: From 1, “not important,” to 3, “important”]

- The burden on my co-workers when I am sick and can’t go to work
  - PRECON-No: 1.3
  - PRECON-Agree: 1.5
  - RELAPSE-No: 1.2
  - RELAPSE-Agree: 1.3

- The financial burden when I have to miss work
  - PRECON-No: 1.7
  - PRECON-Agree: 1.6
  - RELAPSE-No: 1.8
  - RELAPSE-Agree: 1.5

- The possibility of spreading the flu to patients
  - PRECON-No: 1.2
  - PRECON-Agree: 1.2
  - RELAPSE-No: 1.1
  - RELAPSE-Agree: 1.0

- The possibility of spreading the flu to family members or co-workers
  - PRECON-No: 1.1
  - PRECON-Agree: 1.1
  - RELAPSE-No: 1.1
  - RELAPSE-Agree: 1.1

- The burden on my family when I can’t take care of them
  - PRECON-No: 1.5
  - PRECON-Agree: 1.6
  - RELAPSE-No: 1.6
  - RELAPSE-Agree: 1.3

- Having to stay home and miss out on life
  - PRECON-No: 1.8
  - PRECON-Agree: 1.9
  - RELAPSE-No: 1.7
  - RELAPSE-Agree: 1.5

- The financial burden on the healthcare system
  - PRECON-No: 1.6
  - PRECON-Agree: 1.8
  - RELAPSE-No: 1.6
  - RELAPSE-Agree: 1.4

No differences
### PRECON-RELAPSE: Barriers & Benefits

**Stage of Change:** Precon Precon Relapse Relapse

<table>
<thead>
<tr>
<th>Nothing would make me get flu vaccine</th>
<th>Precon</th>
<th>No</th>
<th>Agree</th>
<th>No</th>
<th>Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N: 52</td>
<td>43</td>
<td>50</td>
<td>10</td>
<td></td>
</tr>
</tbody>
</table>

Would you be more likely to get the flu vaccine next year if:

**AVG. SCORES**

#### Lesser Barriers to Receipt of Vaccine?

- The vaccine was offered to you free, or covered by your insurance: 0.1 0.0 0.5 0.1
- You had more time to get the vaccine or it was more easily accessed: 0.6 0.0 0.2 0.1
- It was offered in another form, rather than a shot: 0.6 0.0 0.1 0.1

#### Personal Contingencies?

- Someone close to you was immuno-compromised: 0.4 0.2 0.5 0.1
- You had a bad case of the flu in the past: 0.3 0.0 0.3 0.2
- You were diagnosed with a serious chronic disease: 0.6 0.0 0.4 0.2

#### General Contingencies?

- There was a really bad flu season: 0.1 0.0 0.2 0.1
- Your doctor recommended it: 0.8 0.0 0.4 0.1

**Summary Position**

- It was required for all direct care healthcare workers: 0.6 0.1 0.7 0.1
- Nothing would make me more likely to get vaccinated next year: N/A 1.0 N/A 1.0

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### PRECON-RELAPSE: Vaccine Concerns & Personal Choice

**Stage of Change:** Precon Precon Relapse Relapse

<table>
<thead>
<tr>
<th>Nothing would make me get flu vaccine</th>
<th>Precon</th>
<th>No</th>
<th>Agree</th>
<th>No</th>
<th>Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N: 52</td>
<td>43</td>
<td>50</td>
<td>10</td>
<td></td>
</tr>
</tbody>
</table>

#### Influenza Vaccine vs. Other Preventive Measures

**AVG. SCORES**

- It’s better to build up natural immunity than to take flu vaccine: 2.6 2.2 3.6 2.0
- Taking good care of myself is as good or better than getting flu vacc: 2.2 1.7 2.7 1.8

#### Side Effects of Influenza Vaccine

- I’m worried about the possible side effects of vaccine: 2.3 2.0 2.7 3.1
- The flu vaccine can cause the flu: 3.5 2.6 3.6 2.5

#### Mandating the Use of Influenza Vaccine

- Vaccines should be mandated for healthcare workers: 3.8 4.1 2.3 3.8
- All patients over 50 should get the flu vaccine: 2.6 3.1 1.8 2.3
- Vaccines should be mandated for school entry: 3.6 3.0 2.1 3.4

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Resistant Precons/Relapse clearly alike
Conclusions: Precons & Relapse

- Health care workers in Precontemplation and Relapse
  - least likely to receive flu vaccine in the future

- One-third of Precons and Relapsers
  - “unlikely” to get vaccine next year
  - AND
  - say “nothing would make me”
  - alike in strong aversion to getting vaccine.

Conclusions: Precons & Relapse

- The resistance ("intransigence") to vaccine is strong in both groups and does not appear to be based on factual information, anticipation of barriers & benefits or personal or family consequences
- Intransigence is related to “dubious” prevention measures, vaccine fears and personal objection to policies requiring vaccination.
- Non-cognitive sources of opposition
- These dynamics may act generally in the US and even other countries
Conclusions: Precons & Relapse

(*not a probability sample)

- Precons = 12% (95/783)
- “Intransigent” Precons = 45% (43/95)
- Relapse = 17% (135/783)
  - only 60 “unlikely” to get vaccine next year
- “Intransigent” Relapse = 17% (10/60)
- Total “Intransigents” = 33% (53/155)
- Total “non-intransigents” = 66% (102/155)
  - Behavior subject to change
  - May comply with doctor recommendation – 80%
  - More responsive to “personal contingencies”
  - Less likely to oppose policy intervention

Possible Strategies

- Information and education campaign
  - Minimal impact (maximum individual effort)*
- Strengthen organization commitment
  - Substantial impact
- Public or private policies (mandates)
  - Approach to “intransient” groups
  - Maximum impact/minimum individual effort
  - “shift” the focus from “personal” to “population” impact
  - Changes the “offer” (career choice)

*health impact pyramid- Frieden, AJPH, 2010
Conclusions

- Increasing the percentage of health care workers getting flu vaccine annually protects the population’s health.
- A social marketing approach helps us understand the dynamics underlying the desired “behavior.”
- Informs the benefits of vaccine in a way that addresses the determinants of behavior for those who don’t always get it.
- Information/education for the majority; policy change (“repackage” career choice) for others.
- Stay tuned for more…..