Disclaimer

This document was produced by its author/and or organization and has been published on the PHO website for your use as outlined in our Website Terms of Use. PHO did not produce this document and is not responsible for the information provided within this document.
Influenza Immunization and Behaviour Change

Dr. Kim Corace, Ph.D., C. Psych.
Clinical Health Psychologist
Viral Hepatitis Program
Division of Infectious Diseases/Dept of Psychology
The Ottawa Hospital
Assistant Professor, University of Ottawa
Email: kcorace@toh.on.ca

August 27, 2013
Influenza

- Influenza affects 10-25% of Canadians each year, and 20-35% of children
- 20,000 hospitalization and 2,000-8,000 deaths/yr
- Influenza causes the highest number of death among vaccine preventable vaccines
- Our patients are among the most vulnerable
- Vaccination protects HCWs and is the most effective way to reduce the impact of influenza among HCWs and patients
- HCW vaccination rates fall considerably below public health target of 90% (usually around 50%).
Ontario Influenza Vaccination Rates

Median Ontario influenza immunization coverage rates by surveillance season

Source: Ontario Ministry of Health and Long-Term Care (MOHLTC), Ontario Influenza Immunization Database, analyzed by Public Health Ontario.
pH1N1 Pandemic Influenza

- In fall of 2009, a novel strain of influenza spread across the globe
- Rapid vaccination of HCWs was considered essential for outbreak management
- HCW were prioritized to get the vaccine
- Following PHAC’s guidelines, a mass pH1N1 vaccination campaign targeting HCWs was launched
- HCW pH1N1 vaccination rates of over 70% was achieved at TOH (almost a 50% increase over previous best vaccination campaign)
- However, 30% of staff opted not to receive pH1N1 vaccine despite an aggressive campaign, perceived vaccine shortage and national media hype
Our study*

• Examine the **motivators and barriers** influencing pH1N1 and seasonal influenza vaccination among HCWs in order to design and implement a more effective vaccine campaign that addresses these barriers.

Why do a core group of HCWs refuse vaccination?

• Likely that the greatest obstacles to vaccine uptake among HCWs are their knowledge, perceptions, and attitudes about influenza and the vaccine.

Motivating for Change.....

Change Video

“All Washed Up” by VitalSmarts, 2009
Key Messages

- Change is hard, but change is possible
- We often use underwhelming solutions to solve overwhelming problems
- Use multiple strategies (personal, social, and environmental) to facilitate behaviour change
- Lessons are widely applicable to a variety of patient and organizational behaviours
Health Belief Model*

Methods

• Setting: The Ottawa Hospital (one of the largest tertiary care hospitals in Canada)

• Design and Procedure:
  • TOH compiled information on employee’s vaccine uptake
  • Occupational Health and Safety at TOH houses a list of employees pH1N1 vaccination status
  • Using this list, staff were recruited by mass mail out of a survey
  • Occ Health collected questionnaires and de-identified them
  • Confidentiality and privacy ensured
  • TOH REB approved
Methods: Survey Measures

• Demographics and vaccine history
• Influenza associated risk factors
• Influenza vaccine knowledge and attitudes: 34-item questionnaire adapted from previous influenza measures\(^1\). Based on 5 constructs of Health Belief Model.
  • Perceived susceptibility to pH1N1
  • Perceived severity of pH1N1
  • Perceived benefits of vaccination
  • Perceived barriers to vaccination
  • Cues to action (e.g., external motivators)

\(^1\) Looijmans-van den Akker et al. (2009), Blue et al (2002), Mok et al. (2006).
Methods: HCW Participants

• Final Sample: N= 3275 HCWs
  • Received pH1N1 vaccination: 2862 (87%)
  • Received 2008/09 flu vaccination: 2433 (74%)

• Study sample representative of TOH staff (occupation, campuses, part/full-time status)
## Results: Demographics

<table>
<thead>
<tr>
<th>Job Classification</th>
<th>HCW Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nursing</td>
<td>35%</td>
</tr>
<tr>
<td>Physician</td>
<td>5%</td>
</tr>
<tr>
<td>Allied Health</td>
<td>11%</td>
</tr>
<tr>
<td>Administrative/Clerical</td>
<td>22%</td>
</tr>
<tr>
<td>Healthcare Technicians</td>
<td>7%</td>
</tr>
<tr>
<td>Research and Laboratory*</td>
<td>8%</td>
</tr>
<tr>
<td>Facilities and Logistics*</td>
<td>7%</td>
</tr>
<tr>
<td>Other (Non-Clinical)</td>
<td>4%</td>
</tr>
</tbody>
</table>
# Results: Demographics

<table>
<thead>
<tr>
<th>Demographic Items</th>
<th>Refused pH1N1 Vaccine (n=413)</th>
<th>Received pH1N1 Vaccine (n=2862)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age: M years (SD)*</td>
<td>40 (11.7)</td>
<td>43 (11.1)</td>
</tr>
<tr>
<td>Sex: Female</td>
<td>84%</td>
<td>81%</td>
</tr>
<tr>
<td>Presently in a Relationship*</td>
<td>71%</td>
<td>77%</td>
</tr>
<tr>
<td>Have Dependent Children*</td>
<td>42%</td>
<td>50%</td>
</tr>
<tr>
<td>Formal religious belief**</td>
<td>65%</td>
<td>76%</td>
</tr>
<tr>
<td>Full-time work**</td>
<td>61%</td>
<td>73%</td>
</tr>
<tr>
<td>Received Seasonal Influenza Vaccination in 2008/09**</td>
<td>24%</td>
<td>82%</td>
</tr>
<tr>
<td>Received Seasonal Influenza Vaccination in 2009/10**</td>
<td>10%</td>
<td>60%</td>
</tr>
</tbody>
</table>

*p<.05, **p<.001
Results: Influenza related Risk Factors

<table>
<thead>
<tr>
<th>Risk Factor Items</th>
<th>Refused pH1N1 Vaccine (n=413)</th>
<th>Received pH1N1 Vaccine (n=2862)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regular contact with children**</td>
<td>50%</td>
<td>62%</td>
</tr>
<tr>
<td>Regular contact with elderly**</td>
<td>46%</td>
<td>60%</td>
</tr>
<tr>
<td>Living with someone with chronic illness*</td>
<td>9%</td>
<td>14%</td>
</tr>
<tr>
<td>Egg allergy**</td>
<td>3%</td>
<td>&lt;1%</td>
</tr>
<tr>
<td>Allergy to vaccine components**</td>
<td>11%</td>
<td>&lt;1%</td>
</tr>
<tr>
<td>Previous influenza infection</td>
<td>42%</td>
<td>41%</td>
</tr>
</tbody>
</table>

*p<.05, **p<.001
## Results: HCW Attitudes

<table>
<thead>
<tr>
<th>1. Perceived Susceptibility to Influenza</th>
<th>Refused pH1N1 Vaccine (n=407) % Agree</th>
<th>Received pH1N1 Vaccine (n=2849) % Agree</th>
<th>Odds Ratio (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vaccine required even if healthy</td>
<td>28%</td>
<td>79%</td>
<td>9.6 (7.6, 12.1)</td>
</tr>
<tr>
<td>I will get pH1N1 if I don’t get the vaccine</td>
<td>5%</td>
<td>28%</td>
<td>6.7 (4.3, 10.4)</td>
</tr>
<tr>
<td>I will infect patients if don’t get pH1N1 vaccine</td>
<td>14%</td>
<td>47%</td>
<td>5.6 (4.2, 7.5)</td>
</tr>
<tr>
<td>I am at risk for getting pH1N1</td>
<td>12%</td>
<td>41%</td>
<td>3.6 (2.9, 4.5)</td>
</tr>
<tr>
<td>HCWs are at higher risk of catching pH1N1</td>
<td>60%</td>
<td>82%</td>
<td>3.0 (2.4, 3.8)</td>
</tr>
</tbody>
</table>
Results: HCW Attitudes

<table>
<thead>
<tr>
<th>2. Perceived Severity of Influenza</th>
<th>Refused pH1N1 Vaccine (n=407) % Agree</th>
<th>Received pH1N1 Vaccine (n=2849) % Agree</th>
<th>Odds Ratio (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>pH1N1 is dangerous for me</td>
<td>25%</td>
<td>58%</td>
<td>3.8 (3.0, 4.8)</td>
</tr>
<tr>
<td>Getting pH1N1 interferes with my activities</td>
<td>69%</td>
<td>88%</td>
<td>3.3 (2.6, 4.2)</td>
</tr>
<tr>
<td>The thought of getting pH1N1 scares me</td>
<td>23%</td>
<td>48%</td>
<td>3.2 (2.5, 4.1)</td>
</tr>
<tr>
<td>pH1N1 is dangerous for patients</td>
<td>71%</td>
<td>88%</td>
<td>2.9 (2.3, 3.7)</td>
</tr>
<tr>
<td>pH1N1 is a bad disease</td>
<td>78%</td>
<td>90%</td>
<td>2.6 (2.0, 4.0)</td>
</tr>
</tbody>
</table>
## Results: HCW Attitudes

<table>
<thead>
<tr>
<th>3. Perceived Benefits of Vaccination</th>
<th>Refused pH1N1 Vaccine (n=407) % Agree</th>
<th>Received pH1N1 Vaccine (n=2849) % Agree</th>
<th>Odds Ratio (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>If I get vaccinated then I will protect patients</td>
<td>27%</td>
<td>76%</td>
<td>8.7 (6.9, 11)</td>
</tr>
<tr>
<td>Protect family members</td>
<td>30%</td>
<td>81%</td>
<td>10 (8.0, 12.7)</td>
</tr>
<tr>
<td>Protect self</td>
<td>17%</td>
<td>56%</td>
<td>6.2 (4.7, 8.1)</td>
</tr>
<tr>
<td>Prevent spread</td>
<td>30%</td>
<td>80%</td>
<td>9.3 (7.4, 11.7)</td>
</tr>
<tr>
<td>The vaccine is safe</td>
<td>15%</td>
<td>70%</td>
<td>13.2 (10.0, 17.6)</td>
</tr>
<tr>
<td>The vaccine will not cause pH1N1</td>
<td>52%</td>
<td>80%</td>
<td>3.6 (2.9, 4.4)</td>
</tr>
<tr>
<td>Don’t expect vaccine side-effects</td>
<td>11%</td>
<td>27%</td>
<td>3.6 (2.1, 4.0)</td>
</tr>
<tr>
<td>Don’t expect allergic reaction</td>
<td>29%</td>
<td>64%</td>
<td>4.5 (3.6, 5.6)</td>
</tr>
</tbody>
</table>
### Results: HCW Attitudes

#### 4. Perceived Barriers to Vaccination

<table>
<thead>
<tr>
<th>Perceived Barrier</th>
<th>Refused pH1N1 Vaccine (n=407) % Agree</th>
<th>Received pH1N1 Vaccine (n=2849) % Agree</th>
<th>Odds Ratio (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>No time to be vaccinated†</td>
<td>39%</td>
<td>9%</td>
<td>6.5 (5.1, 8.2)</td>
</tr>
<tr>
<td>Vaccine will make me sick†</td>
<td>71%</td>
<td>26%</td>
<td>7.0 (5.5, 8.8)</td>
</tr>
<tr>
<td>Worry about vaccine side-effects†</td>
<td>79%</td>
<td>43%</td>
<td>4.9 (3.8, 6.3)</td>
</tr>
<tr>
<td>Getting the vaccine interferes with† my daily activities</td>
<td>45%</td>
<td>18%</td>
<td>3.8 (3.1, 4.7)</td>
</tr>
<tr>
<td>Vaccine is painful†</td>
<td>62%</td>
<td>42%</td>
<td>2.3 (1.8, 2.8)</td>
</tr>
<tr>
<td>Fear of needles</td>
<td>22%</td>
<td>20%</td>
<td>1.1 (0.9, 1.5)</td>
</tr>
<tr>
<td>Don’t like getting injections</td>
<td>47%</td>
<td>45%</td>
<td>1.1 (0.9, 1.4)</td>
</tr>
</tbody>
</table>
## Results: HCW Attitudes

<table>
<thead>
<tr>
<th>5. Cues to Action</th>
<th>Refused pH1N1 Vaccine (n=407) % Agree</th>
<th>Received pH1N1 Vaccine (n=2849) % Agree</th>
<th>Odds Ratio (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colleagues think vaccination is important</td>
<td>29%</td>
<td>61%</td>
<td>3.8 (3.0, 4.8)</td>
</tr>
<tr>
<td>Supervisors think vaccination is important</td>
<td>45%</td>
<td>75%</td>
<td>3.6 (2.9, 4.5)</td>
</tr>
<tr>
<td>People close to me think vaccination is important</td>
<td>18%</td>
<td>62%</td>
<td>7.3 (5.6, 9.5)</td>
</tr>
<tr>
<td>Physician encouraged to get vaccinated</td>
<td>15%</td>
<td>48%</td>
<td>5.3 (4.0, 7.1)</td>
</tr>
</tbody>
</table>
What do HCWs have to say?

• What motivates HCWs?
  • Protect Self
    • “To prevent myself from getting it and getting sick”
    • “Keep myself healthy”
    • “My own safety”
  • Protect family and loved ones
    • “My father has health problems, it would be dangerous for him”
    • “My husband’s health”
    • “Not bring influenza home to family”
What do HCWs have to say?

• What motivates HCWs?
  • Protect Patients
    • “For patient safety”
    • “Protect vulnerable patient populations”
    • “Prevent my patients from catching the flu from me”
  • Community/Society
    • “To break the transmission chain”
    • “Prevent spread of influenza”
  • Co-workers/Colleagues
    • “I got the vaccine to make my boss happy”
    • “Our entire unit went as a group to get the vaccine”
What do HCWs have to say?

- What motivates HCWs?
  - Employment
    - “I can’t afford to be off with out pay”
    - “I do not want to miss work”
    - “It is the right thing to do in a healthcare workplace”
  - Vaccine was accessible (pH1N1)
    - “No lineups when I went”
    - “They were doing the vaccine in our unit”
    - “The hospital offered it”
What do HCWs have to say?

- What do HCWs say are their barriers?
  - Personal
    - “Didn’t think I needed it”
    - “My immune system will take care of it”
    - “I don’t think it’s necessary for a healthy individual”
    - “I never get sick”
  - Vaccine safety and efficacy
    - “Little data proving effectiveness”
    - “I believe that some vaccines are the cause of other health problems”
    - “I do not need any possible side-effects”
    - “The vaccine causes influenza”
What do HCWs have to say?

- What do HCWs say are their barriers?
  - pH1N1 vaccine development
    - “Not enough information about this vaccine”
    - “Medical community not united in their opinion of the vaccine”
  - Seasonal influenza vaccine efficacy
    - “Don’t believe they have the right strain year to year
    - “Seasonal vaccination is an educated guess at best”
    - “May not be the right vaccine”
  - pH1N1 was misrepresented
    - “Media hysteria turned me off”
    - “Money making business—pharmaceutical companies”
    - “Exaggerating seriousness”
Modeling factors predictive of vaccination

• Can attitudes predict vaccination behaviour?

• Two regression models
  • Base model: includes sociodemographics, occupation, influenza infection risk factors, and vaccination history related variables
    • AUC .84 (CI 0.81, 0.87). Correctly predicted 84% of HCW vaccination behaviour
  • Base model plus Vaccine Attitude Scale items: Includes all variables in base model plus the vaccine attitude scale items
    • AUC .95 (CI 0.93, 0.96). Model correctly predicted 95% of vaccination behaviour
Get a flu vaccine. Your patients are counting on you.
Summary of Findings

• Modifiable MOTIVATORS predicting influenza vaccination include:
  • Desire to protect family members, patients, and loved ones
  • Protect community and co-workers
  • Belief that vaccination is important even if HCW is in good health
  • Belief in influenza being serious illness
  • Confidence in vaccine safety and effectiveness
  • Supervisor, colleagues/co-workers, and physician encouragement
  • Trust in public health communities
Summary of Findings

- Modifiable BARRIERS to influenza vaccination include:
  - Fear of infection (pH1N1)
  - Inconsistent messaging and miscommunication from external sources
  - Misrepresentation of virus (pH1N1)
  - Limited knowledge and misinformation about the vaccine
  - Concern of vaccine safety due to rapid vaccine development (pH1N1)
  - Concern over vaccine side-effects
  - Concern over vaccine efficacy (seasonal influenza)
  - Belief vaccine is unnecessary for healthy adults
  - Belief in “natural immunity”
Health care workers need a flu vaccine too.
How do we increase HCW uptake?

- Emphasize benefits of HCW influenza vaccination
- Address barriers to vaccine uptake
- Establish a culture of vaccine promotion in the workplace through encouragement from supervisors, co-workers, physicians, and organizational leaders
- Develop strategies to spread scientifically valid and evidence-based information
- Ensure consistent pro-vaccination messaging
- Promote altruistic benefits of vaccination
- Target modifiable vaccination attitudes and beliefs
- Incorporate gender-specific messaging
How do we increase HCW uptake?

• Important messages:
  • Vaccination is important even if one is good health
  • Influenza is a serious and severe disease
  • Getting vaccinated is imperative for patient safety
  • Influenza vaccination is safe and effective in preventing infection

Incorporating these messages into our vaccination programs may help us reach our target goal of 90% HCW vaccination coverage in our institutions.
Thank You!

- This research was supported by the Canadian Institute of Health Research (CIHR) Institute of Population and Public Health (IPPH) and the Institute of Gender and Health (IGH); Operating Grant: Health Systems Research on H1N1.

- Thank you to TOH Occupational Health and Safety, and TOH staff
This season, protect yourself and those around you by getting a flu vaccine. The flu ends with U.

Visit www.flu.gov