Implementation of a Successful Seasonal Influenza Vaccine Strategy in a Large Healthcare System

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Influenza is the leading cause of US vaccine-preventable disease deaths.

<table>
<thead>
<tr>
<th>Disease</th>
<th>Cases</th>
<th>Deaths</th>
</tr>
</thead>
<tbody>
<tr>
<td>Influenza (millions)</td>
<td>~500,000</td>
<td></td>
</tr>
<tr>
<td>Pneumococcal diseases</td>
<td>~120,000</td>
<td></td>
</tr>
<tr>
<td>Hepatitis A</td>
<td>282,650</td>
<td>1013</td>
</tr>
<tr>
<td>Hepatitis B</td>
<td>146,644</td>
<td>9694</td>
</tr>
<tr>
<td>Measles</td>
<td>60,189</td>
<td>132</td>
</tr>
<tr>
<td>Mumps</td>
<td>24,075</td>
<td>7</td>
</tr>
<tr>
<td>Rubella</td>
<td>4412</td>
<td>21</td>
</tr>
<tr>
<td>Pertussis</td>
<td>53,634</td>
<td>65</td>
</tr>
<tr>
<td>Tetanus</td>
<td>486</td>
<td>77</td>
</tr>
</tbody>
</table>

CDC. *MMWR*. 2006;55;511-515.
The Inconvenient Truths

- Influenza is the leading cause of vaccine-preventable deaths in the US
- Influenza vaccines are safe and effective
- Influenza can be transmitted by both symptomatic and asymptomatic healthcare workers (HCWs)
- Hospitalized patients can have increased length of stay and severe life-threatening illnesses as a result of influenza transmission from HCWs
- Up to 25% of HCWs have evidence of influenza each season
- 50% of HCWs who have influenza infections are asymptomatic or have only minor symptoms
- Influenza vaccination of HCWs has demonstrated decreased HCW illness, absenteeism, and mortality
- Influenza vaccination rates among HCWs remains unacceptably low
  - CDC 39% in 2008; RAND sample – 49% in 2009
Interventions to Improve Healthcare Influenza Vaccination Rates

- Education
- Free vaccine
- Improving Access & Convenience
  - Mobile carts
  - Extended hours
- Incentives
- Declination form acknowledging education about benefits and risks to selves and patients
- (Rarely to date) Mandatory vaccination
### Table 1. Relative Impact of Various Strategies on Health Care Worker Influenza Vaccination Coverage

<table>
<thead>
<tr>
<th>Intervention and study</th>
<th>Preintervention immunization rate, %</th>
<th>Postintervention immunization rate, %</th>
<th>Overall change in vaccination rate, %</th>
<th>Randomized, controlled trial of intervention</th>
<th>Implemented with other interventions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Declination</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Polgreen et al [23]</td>
<td>54</td>
<td>65</td>
<td>+11</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Bertin et al [25]</td>
<td>38</td>
<td>55</td>
<td>+17</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Ribner et al [27]</td>
<td>43</td>
<td>65</td>
<td>+22</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Mandatory vaccination</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Virginia Mason [37]</td>
<td>30</td>
<td>98</td>
<td>+68</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>BJC HealthCare [39]</td>
<td>71</td>
<td>99</td>
<td>+28</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Education and promotion</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Harbarth et al [31]</td>
<td>13</td>
<td>37</td>
<td>+24</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Thomas et al [32]</td>
<td>8</td>
<td>46</td>
<td>+38</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Mobile cart</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sartor et al [29]</td>
<td>7</td>
<td>32</td>
<td>+25</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Cooper et al [30]</td>
<td>8</td>
<td>49</td>
<td>+41</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Incentives (raffle)</td>
<td>38&lt;sup&gt;a&lt;/sup&gt;</td>
<td>42</td>
<td>NS</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Educational letter from leadership [35]</td>
<td>38&lt;sup&gt;a&lt;/sup&gt;</td>
<td>39</td>
<td>NS</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>On-site expert education [33]</td>
<td></td>
<td>21&lt;sup&gt;a&lt;/sup&gt;</td>
<td>22</td>
<td>NS</td>
<td>Yes</td>
</tr>
</tbody>
</table>

**NOTE.** NS, nonsignificant.

<sup>a</sup> Rate from nonintervention arm of concurrent randomized trial of intervention.
### TABLE 2. Number and percentage of health-care personnel* who reported their employer has a policy† for vaccination against seasonal influenza or 2009 pandemic influenza A (H1N1), by policy requirement — United States, January 2010

<table>
<thead>
<tr>
<th>Employer policy</th>
<th>Reported policy</th>
<th>Vaccinated</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No.</td>
<td>%</td>
<td>(95% CI$)</td>
<td>%</td>
<td>(95% CI)</td>
<td>Relative risk$</td>
<td>(95% CI)</td>
</tr>
<tr>
<td>All health-care personnel</td>
<td>1,417</td>
<td>100.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Seasonal influenza vaccination**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Required</td>
<td>163</td>
<td>11.1</td>
<td>(8.4–13.8)</td>
<td>97.6</td>
<td>(95.4–99.8)</td>
<td>2.6</td>
<td>(2.0–3.4)</td>
</tr>
<tr>
<td>Recommended</td>
<td>957</td>
<td>65.4</td>
<td>(61.1–69.7)</td>
<td>64.5</td>
<td>(61.1–69.7)</td>
<td>1.7</td>
<td>(1.3–2.2)</td>
</tr>
<tr>
<td>Neither</td>
<td>293</td>
<td>23.5</td>
<td>(19.4–27.5)</td>
<td>23.5</td>
<td>(19.4–27.5)</td>
<td>Referent</td>
<td>Referent</td>
</tr>
<tr>
<td>2009 H1N1 influenza vaccination**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Required</td>
<td>110</td>
<td>8.4</td>
<td>(5.8–11.0)</td>
<td>87.0</td>
<td>(75.3–98.7)</td>
<td>7.8</td>
<td>(4.8–12.7)</td>
</tr>
<tr>
<td>Recommended</td>
<td>917</td>
<td>61.8</td>
<td>(57.4–66.2)</td>
<td>43.0</td>
<td>(37.9–48.1)</td>
<td>3.9</td>
<td>(2.4–6.2)</td>
</tr>
<tr>
<td>Neither</td>
<td>377</td>
<td>29.8</td>
<td>(25.5–34.0)</td>
<td>11.3</td>
<td>(6.1–16.4)</td>
<td>Referent</td>
<td>Referent</td>
</tr>
</tbody>
</table>
Accounted for approximately 5% of major hospital service in U.S.:

- Admissions  > 1.5 million
- Patient Days   > 7.6 million
- Deliveries  > 0.23 million
- Total Surgeries  > 1.3 million
- ED Visits     ~ 6 million

- 163 hospitals, 112 freestanding surgery centers, and 400 physician practices in 23 states and England

- Hospitals range from complex tertiary referral & academic medical centers to urban and suburban community medical centers

- ~ 194,000 employees

- 35,000 affiliated physicians

- More than 38,000 licensed beds

- ~ 150,000 Health Care Workers
Rationale for HCA “ILI Bundle”

- 2008-2009 influenza season varied from 20%-74% among facilities, with a mean of 58%
  - History of progressively increasing “usual approaches” including, education, free vaccine, mobile carts, and declination forms, etc.
  - Rate of 58% unacceptable to provide adequate protection to patients
- HCA believed that influenza vaccination of HCWs is a key patient safety issue, and is ethically and scientifically sound
  - In addition to goal of universal influenza vaccination of all health workers, developed “ILI Bundle”
HCA’s Mandatory Patient Safety Policy for Seasonal Influenza

1. Best approach to avoiding & spreading seasonal flu and spreading is getting a seasonal flu vaccination

2. All employees were eligible for free influenza vaccine

3. Employees whose routine job duties provided an opportunity to infect patients or be infected by patients were required to be vaccinated

4. If vaccination was not appropriate because of medical, religious, or for philosophical reasons, the employee was required to wear a surgical mask in proximity (6 feet) of patients or reassigned to a non-patient contact area
Results:
Seasonal Flu Vaccination

• > 96% of HCA healthcare workers (over 160,000) were vaccinated by November 1, 2009, and the remaining ~ 3 percent are wearing masks, supporting HCA’s goal of 100 percent patient safety.
Reasons for Declination

Reasons (Includes non-clinical employees)

- Allergy* 848
- Contraindicated** 424
- Fear 255
- Pregnancy*** 85
- Other/philosophical 6,611

Total 8,478

* Egg allergy not tested
** Includes Gullian-Barre, but most often not specified
*** Given as reason, despite counsel
Key Success Factors

• Enterprise-wide initiative
  – Core multi-disciplinary “influenza team”
    • ID, ICP, Nursing, Pharmacy, HR, Emergency Management, Communications & Marketing

• Evidence-based & best practice approach

• Proactive Communications
  – Intranet-based educational resources
  – National “Flu e-mail” account for questions
  – Site visits by influenza team members
  – Influenza update newsletter (internal “Flu-View”)
    • N.B.: Supported CDC, HHS Flu-tracking

• Enterprise-wide software to track immunizations

• Senior management leadership and courage
Lessons Learned

- Misconceptions about seasonal influenza vaccine
- Local leadership plays an important role
- Confusion between 2009 H1N1 and seasonal influenza
- Delayed delivery of seasonal influenza vaccine added confusion
- Confusion on when unvaccinated employees should wear a surgical mask
- H1N1 debate on mask versus respirator efficacy
• Universal HCW influenza vaccination is a patient safety issue; it
  – Protects patients
  – Protects HCW
  – Protects the institution
  – Protects the community
• Time to discuss balance of patient rights and HCW rights
  – Evidence shows this is a patient safety issue
• The challenge is not whether to vaccinate, but how to ensure patient safety
• The health care community has an ethical and professional obligation to protect at risk patients from vaccine preventable diseases
• Demonstration that 100% compliance can be achieved across systems that is highly representative of U.S. health care
For the safety of both patients and HCP, SHEA endorses a policy in which annual influenza vaccination is a condition of both initial and continued HCP employment and/or professional privileges.