Evaluation of an Influenza Vaccination In-Service Program for Health Care Workers in Philadelphia Nursing Homes

By

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Abstract

**Background:** Influenza remains a significant cause of morbidity and mortality in residents of long-term care facilities (LTCFs). Vaccination rates among Philadelphia LTCF direct-care staff are consistent with poor national averages despite minimal cost and access barriers. Low vaccination rates among LTCF staff and deficiencies in infection control practices increase the risk for facility-wide influenza outbreaks.

**Objectives:** Providing educational in-services at select LTCFs would serve as a community intervention and secondary component of a comprehensive Philadelphia Department of Public Health (PDPH) influenza in long-term care project.

**Methods:** In early 2009, influenza prevention in-services were provided at eight Philadelphia LTCFs. The in-service presentation consisted of a PowerPoint presentation followed by a brief written evaluation. Additional signage and guidance were provided post-in-service.

**Results:** Fourteen presentations were delivered to 8 LTCFs in Philadelphia. The presentations reached a median of 16% of total staff (n=6). Significant attitudinal differences were found between vaccinated and unvaccinated staff for 4 of 5 Likert questions on the post-in-service evaluation.

**Conclusions:** PDPH will use feedback from the in-services to improve current interventions directed to increasing vaccination rates and standardizing influenza prevention practices in LTCFs.
**Introduction**

Influenza is a highly infectious, respiratory disease that leads to significant morbidity and mortality within long-term care facilities (LTCFs).\(^2\) Influenza attack rates among LTCF residents can reach 30\%, with mortality rates near 5\%.\(^{11}\) Health advocates continue to stress the importance of receiving annual influenza vaccination – for both residents and staff.\(^2,^{15}\) (ACIP) The National Foundation for Infectious Diseases (NFID) lists four top priorities for increasing staff vaccination rates: \(^{15}\)

1. Make vaccination convenient
2. Remove cost barriers
3. Educate health care workers
4. Include management and administration as vaccination advocates

Thus, a primary component of any influenza prevention and control program in long-term care settings is vaccination for both residents and health care workers.\(^{15}\) Influenza vaccination is widely accepted as a safe and effective method of prevention, especially in healthy adults.\(^{1,6}\) Based upon initial data review of returned surveys from Philadelphia nursing facilities, the local median vaccination rates are 79\% for nursing home residents and 38\% for nursing home staff.\(^{19}\) While resident vaccination is approaching the national recommended level of 90\%, the vaccination rates among health care workers in Philadelphia are consistent with poor national averages, and well below the Healthy
People 2010 objective for 60% coverage. The Society for Healthcare Epidemiology of America considers 80% vaccine uptake in staff necessary to achieve herd immunity. Low influenza vaccination rates pose health dangers to the residents of long-term care facilities, other staff, and the unvaccinated workers themselves.

This project carries public health significance because it seeks to improve the low influenza vaccination rates among health care workers at Philadelphia LTCFs through health care worker (HCW) education. Higher vaccination rates in turn reduce the risk of influenza transmission to residents and other staff. The intervention will use the education and administrative support as essential components consistent with NFID’s recommendations.

Health education is an essential aspect of any healthcare organization. Because HCWs, as a group, may “vary greatly in terms of their healthcare knowledge” novel methods for sustaining influenza awareness and appropriate actions are needed. These education programs must emphasize infection control measures and basic influenza knowledge (signs and symptoms in elderly, e.g.), and not focus solely on vaccination as a cure-all.

Further education of health care workers at nursing homes remains an important step to impact the low vaccination rates. The present study implements a secondary component of a comprehensive “Influenza in Philadelphia Long-Term Care Facilities” PDPH project, which surveyed local LTCFs on demographic, vaccination, outbreak measures, and infection control measures. This secondary component brings public health
education to the facilities, based on needs and information gathered through surveys and research. As the proportion of U.S. residents over the age of 65 increases, developing stronger influenza prevention and control practices within long-term care settings is a priority for public health programs across the country.

Statement of Problem: Influenza vaccination rates among health care workers are low in Philadelphia long-term care facilities (LTCFs), signifying a need for improved influenza control education within that demographic.

Background

The Community Based Master’s Project (CBMP) is the culmination of a year-long comprehensive influenza project undertaken with the Philadelphia Department of Public Health (PDPH). The entire project, which contains the CBMP, was conducted between March, 2008 and June, 2009.

The CBMP represents a public health intervention in the community. The intervention detailed here required background data in support of its aims and methodologies. Thus, data were obtained through a survey of Philadelphia LTCFs for the 2007-2008 influenza season. (Appendix C) The subsequent CBMP occurred in the beginning and middle of the relatively mild 2008-2009 influenza season.
In June 2008, surveys were mailed to the administrators of 46 nursing homes and 128 personal care homes in Philadelphia. The response rate was 89% (41/46) among nursing homes. Preliminary findings from the survey indicated that health care workers at Philadelphia area LTCFs have vaccination rates (38%) below recommended guidelines (60%), despite all surveyed facilities offering the flu shot to residents and staff both on-site and at no cost. Personal reasons (85%) were cited as the most common reason for staff refusal of the vaccine. The survey responses indicated a need to provide educational outreach to nursing homes and personal care homes with general information about influenza, the importance of vaccination for all health care workers, and primary infection control methods during flu season. (Appendix C) A major purpose of the present project, therefore, is to provide updated health messages to the health care workers of Philadelphia LTCFs relative to influenza vaccination. These messages will clarify the significant benefits of receiving annual flu vaccine.

Among residents, rates of influenza vaccination are encouraging. Over 80% of Philadelphia nursing home residents received the flu shot in the 2007-08 flu season.\textsuperscript{19} While the overall level of protection from influenza is debatable – human immune systems weaken with age – recent studies have shown that the vaccine prevents more serious flu-related complications; a recent meta-analysis has shown vaccine efficacy of 50 percent in preventing hospitalization, 53 percent in preventing pneumonia, and 68 percent in preventing death.\textsuperscript{11} Furthermore, the cross-protection afforded to residents by having HCWs vaccinated “has been surprisingly inconclusive.”\textsuperscript{1} Despite the lack of
strong support for cross-protection, evidence exists that HCWs can be the primary source of infection for a LTCF – the virus must get into the facility through people. ¹ Because influenza mortality disproportionately affects persons over the age of 65, providing annual flu shots to all LTCF residents remains a top priority for infection control programs.²⁵ Federal standards have made vaccination programs in LTCFs mandatory – in 2005, the Centers for Medicare and Medicaid (CMS) “published a final rule requiring LTCFs to offer annually to each resident immunization against influenza and to offer lifetime immunization against pneumococcal disease.”²³ Providing influenza vaccination to all persons residing, working, or visiting LTCFs is an ideal public health goal – achieving this goal incrementally, and primarily, through education of health care workers is the basis for the proposed project.

The CBMP focused on the education of health care workers as a means to increase influenza vaccination rates in local nursing homes and personal care homes. Residents in these settings predominantly live and interact in close quarters to other residents and health care workers, which opens major routes of exposure for infectious diseases like influenza.²³ Thus, the disease must be brought into the facility from the outside – from visitors, direct-care staff, volunteers, food handlers, and other persons that come in contact with residents. Members of direct-care staff – doctors, nurses, and other health personnel – have significant and regular contact with residents. Vaccinating the health care staff represents a preventive measure at least tantamount to resident vaccination.
In this paper, LTCFs will refer to both nursing homes and personal care homes. Nursing homes, or skilled nursing facilities (SNFs), are classified as LTCFs, which are “defined as institutions that provide health care to people who are unable to manage independently in the community.” Nursing homes are licensed facilities “with an organized professional staff and inpatient beds that provide continuous nursing and other services to patients who are not in the acute phase of an illness.” Nursing homes in the U.S. provide services to over 1.5 million people, mostly adults over the age of 65. Within the city of Philadelphia, 49 nursing homes are licensed by the Pennsylvania Department of Health, with a total capacity of nearly 7,000 beds, which are close to 95% full.

Personal care homes (PCHs) in Pennsylvania are licensed and regulated by the Department of Public Welfare (DPW) and “serve … residents including the elderly and persons with disabilities who require assistance beyond the basic necessities of food and shelter but do not need hospitalization or the services of a nursing care home.” A “personal care home” is an umbrella term for assisted living facilities and boarding homes. Personal care homes usually have fewer residents than nursing homes, and are not required to employ nursing staff. The DPW website lists 105 licensed PCHs in Philadelphia as of May 25, 2009.
Research Design and Methods

In November 2008, a long-term care conference on influenza in Philadelphia was sponsored by PDPH. During this conference, data were presented about the influenza survey results for the 2007-2008 flu season. At the conclusion of this presentation, an open call for long-term care facilities interested in a PDPH educational influenza in-service was announced. A sign-up sheet for future in-services was provided at the registration table, where 9 facilities provided contact information. Between December 2008 and January 2009, 8 of the original 9 facilities were contacted to schedule an in-service. (One facility – neither a SNF nor PCH – was not targeted for the pilot intervention.) The dates of in-service presentations are listed in Table 1. Of the 8 facilities included in the project, 6 were SNFs, 1 PCH, and 1 ICF-MR (Intermediate Care Facility for the Mentally Retarded).
Table 1: In-service facility characteristics

<table>
<thead>
<tr>
<th>Facility</th>
<th>In-Service Date</th>
<th>Facility Type</th>
<th>Resident Capacity (Range)</th>
<th>Presentations (#)</th>
<th>Evaluations Received</th>
<th>Vaccinated Staff 2007-08 (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1/20/09</td>
<td>PCH</td>
<td>25-50</td>
<td>1</td>
<td>11</td>
<td>20</td>
</tr>
<tr>
<td>2</td>
<td>1/22/09</td>
<td>SNF</td>
<td>150-200</td>
<td>1</td>
<td>7</td>
<td>58</td>
</tr>
<tr>
<td>3</td>
<td>1/27/09</td>
<td>SNF</td>
<td>&gt;200</td>
<td>4</td>
<td>38</td>
<td>18</td>
</tr>
<tr>
<td>4</td>
<td>1/29/09</td>
<td>SNF</td>
<td>150-200</td>
<td>2</td>
<td>44</td>
<td>90</td>
</tr>
<tr>
<td>5</td>
<td>2/12/09</td>
<td>SNF</td>
<td>25-50</td>
<td>2</td>
<td>16</td>
<td>50</td>
</tr>
<tr>
<td>6</td>
<td>2/19/09</td>
<td>SNF</td>
<td>100-150</td>
<td>1</td>
<td>20</td>
<td>50</td>
</tr>
<tr>
<td>7</td>
<td>2/24/09</td>
<td>ICF-MR</td>
<td>N/A</td>
<td>1</td>
<td>19</td>
<td>N/A</td>
</tr>
<tr>
<td>8</td>
<td>2/26/09</td>
<td>SNF</td>
<td>100-150</td>
<td>2</td>
<td>15</td>
<td>51</td>
</tr>
</tbody>
</table>

The intervention consisted of a site visit and follow-up by email or telephone. The site visit included a 20-minute interactive PowerPoint presentation, immediately followed by a written evaluation distributed to the attendees. The PowerPoint presentation was standardized for the entire pilot project and targeted to the HCWs of LTCFs. Facility specific data such as vaccination rates, if available, were updated. In addition, the local seasonal influenza A graphs prepared by epidemiologists at PDPH were updated throughout the project.
The presentation, entitled “Preventing Influenza (Flu) in Long-Term Care” was divided into two principal sections (see appendix for the entire PowerPoint Presentation):

1. What is the problem? Flu in nursing homes/personal care homes
2. What can you do? Prevention and control

Subsections included:
- Overview of influenza and its significant burden on elderly persons
- Public health importance of flu in LTCFs
- Treatment
- Current Philadelphia data on flu cases and vaccination rates
- Benefits of flu vaccine (and dispelling common myths)
- Infection control measures
- Summary of major talking points
- Contact information

The presentation averaged 35 slides (Appendix F), which included graphics and several interactive slides. Content was organized in an easy-to-read format, with minimal technical jargon. Minor themes of responsibilities of HCWs in a Do No Harm environment were indirectly presented.

A one-page written evaluation was distributed to all attendees immediately following the presentation. Six questions were included, of which 5 followed a Likert Scale scoring. Additional space for feedback or comments was also provided. Follow-up emails were
sent to the primary contacts of each facility with relevant information and signage, according to the needs and preferences of the primary contact. Most primary contacts were Infection Control Practitioners or Nursing Administrators. Signage included PDPH adapted posters for the importance of HCW vaccination, hand hygiene and cough etiquette, and reminders about staying home if sick.

**Box 1: Evaluation questions**

1.) This presentation – “Preventing Influenza (flu) in Long-Term Care” – was informative.

2.) I received the flu shot (or Flumist) for the current flu season (2008-09). (Yes/No)

3.) This presentation makes me more likely to receive a flu shot (or FluMist) for next year.

4.) It is my responsibility as a health care worker in long-term care to receive influenza vaccination every year.

5.) Influenza is a serious health concern for the residents at this facility.

6.) For myself, the benefits outweigh the risks of receiving influenza vaccination every year.

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Likert Scale scoring for Questions 1, 3-6:
1 = Strongly Disagree
2 = Disagree
3 = Undecided (No Impact – Question 3)
4 = Agree
5 = Strongly Agree
Institutional Review Board (IRB) exemptions were granted by both the City of Philadelphia and Drexel University. No personal identifying data were obtained for the project and facility specific information remained anonymous.

The evaluations were entered into a Microsoft Access database and subsequently imported and analyzed by the statistical software package SAS version 9.1 using descriptive analyses including frequencies, means, and medians. Differences in medians were assessed using Wilcoxon tests, while Chi-square tests were performed to test significance for qualitative data. A P-value $\leq 0.05$ was considered statistically significant. Other analyses were verified by researcher calculation.

**Results**

As Table 1 shows, a total of 14 in-service presentations were given to 8 Philadelphia LTCFs. A median of 18 completed evaluations were received at each talk (range 7-44). The median attendance as a percentage of the total facility staff was 16% (n=6). Figure 1 shows the reporting differences between the 2007-2008 PDPH flu survey and the in-service staff vaccination rates. Interestingly, 6 of the 7 facilities with staff vaccination data from both sources reported overall increases in vaccine acceptance. However, the in-service reporting only captured a small fraction of the total staff and the differences were not statistically different.
Table 2 shows the overall responses to the post-in-service evaluation. Only question 2 – flu status – was not coded by the 1-5 Likert Scale. All Likert questions had a mean response over 4, with the highest value in question one (4.4, n=169), and the lowest mean value for question 3 (4.1, n=170). Overall, 64% of in-service attendees (n=170) were vaccinated. Significant differences in responses by vaccination status were found for all questions but one – whether or not the presentation was informative. The greatest difference in mean response between subgroups was on question 3 – the likelihood of receiving a flu shot in the future (4.6 vs. 3.4 in unvaccinated staff, p < 0.01).
Table 2: In-service response to evaluation questions, stratified by HCW vaccination status

<table>
<thead>
<tr>
<th>Question</th>
<th>Mean All Attendees (N=170)</th>
<th>Mean Vaccinated Staff (64%, N=108)</th>
<th>Mean Unvaccinated Staff (36%, N=61)</th>
<th>P-value (Wilcoxon test)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.) Informative</td>
<td>4.4 (n=169)</td>
<td>4.5 (n=107)</td>
<td>4.2 (n=61)</td>
<td>0.10</td>
</tr>
<tr>
<td>3.) Likelihood of receiving flu shot in future</td>
<td>4.1 (n=170)</td>
<td>4.6 (n=108)</td>
<td>3.4 (n=61)</td>
<td>&lt; 0.01</td>
</tr>
<tr>
<td>4.) Responsibility as HCW to be vaccinated</td>
<td>4.2 (n=170)</td>
<td>4.6 (n=108)</td>
<td>3.5 (n=61)</td>
<td>&lt; 0.01</td>
</tr>
<tr>
<td>5.) Influenza is serious health concern in LTCF</td>
<td>4.4 (n=169)</td>
<td>4.5 (n=108)</td>
<td>4.2 (n=60)</td>
<td>0.04</td>
</tr>
<tr>
<td>6.) Benefits outweigh risks</td>
<td>4.2 (n=169)</td>
<td>4.5 (n=108)</td>
<td>3.6 (n=60)</td>
<td>&lt; 0.01</td>
</tr>
</tbody>
</table>

Discussion

The CBMP was an educational community intervention for influenza prevention and control in long-term care facilities through in-services to the HCWs of 8 LTCFs.
Significant differences in attitudes toward vaccination and the seriousness of influenza in
the long-term care settings were observed between vaccinated and unvaccinated persons.
The post-in-service evaluations offered a glimpse into the multiple challenges that inhibit
increased vaccine acceptance in the HCW population.

The peer-reviewed literature is replete with studies of influenza vaccination among
HCWs. Various studies have demonstrated that HCW vaccination has been
correlated with prevention or reduction in “influenza infection and absenteeism among
HCWs” and resident mortality, which also contributes to economic savings in health care
expenditures. Achieving high rates of influenza vaccination coverage among HCWs in
the U.S. continues to be a significant obstacle. Rates have only incrementally increased
from “10% in 1989 to 34% in 1997 and ... 40% in 2003.”

The decision to use an in-service format for the study was based partly on feasibility and
schedule availability and also on research that emphasizes the need for standardized and
continued education regarding influenza and vaccination. Of note, in-services were
provided during the upswing and peak of the Philadelphia 2008-2009 flu season
(Appendix D). The 2008-2009 flu season, according to case reports from sentinel
providers to PDPH, spanned mid-January to late-April 2009. The emergence of the novel
H1N1 strain that is colloquially called “swine flu” has disrupted the usual trend of
seasonal flu, but otherwise the 2008-2009 flu season was relatively mild and the vaccine
was considered a good match.
Philadelphia data show that access barriers are not a primary factor for the low vaccination rates among HCW. (Appendix C) In fact, residents in the same surveyed facilities had a median vaccination rate of 84% in SNFs and 90% in PCHs. Moreover, Act 2001-95 in Pennsylvania requires that nursing facilities offer influenza vaccine to staff. 17 In accordance with the state regulation, all surveyed SNFs reported offering vaccine to their staff on-site and at no cost. PCHs did not have the same overall level of access to vaccine for their workers, but PDPH survey data show the majority of PCH respondents offer vaccine on-site and at no cost. (Appendix C-4)

Several HCWs agreed to vaccination in the days following the in-service, although these data were not captured by the researchers. More attention to the specific time and location of vaccine clinics would be an improvement to the intervention; during most in-services, a reminder that it is not too late to vaccinate at the end of Winter was stated, but not included in the slides.

While 6 of 7 facilities with data from both survey and in-service reports for staff vaccination rates show increases, these figures are skewed – only a small fraction of each facility’s total direct-care staff were captured in the in-service evaluations. Furthermore, it is unlikely that significant changes over a range of facilities were achieved in consecutive flu seasons. No current data is available for the 2008-09 flu season vaccination rates.
No information – beyond vaccination status – were collected from the attendees. It is unknown whether certain LTCF staff were more or less likely to attend the in-service presentations, all of which were conducted in the morning or early afternoon. The reason for multiple presentations at several facilities was to capture more staff members over several shifts. No facilities were re-visited.

**Health Behavior**

Health behavior underlies the decision to be vaccinated.\(^9\) Because influenza vaccination is not mandated in Pennsylvania, the personal biases and decisions of individuals factor into the complex equation of influenza morbidity and mortality in healthcare settings. The in-service presentation was designed to confront common myths and misunderstandings about the influenza virus and vaccine that may lead an individual to decline the vaccine for personal reasons. The 2007-08 PDPH influenza survey showed that 85% of staff members decline the vaccine for personal reasons.

Importantly, Philadelphia data show that, especially for HCWs in SNFs, health behaviors are a more important factor than access to vaccine for vaccine acceptance within the local long-term care environment. (Appendix C-4) This finding is consistent with current literature in the U.S. for influenza vaccination among HCWs.\(^1\)
The post in-service evaluation did not examine influenza knowledge – only attitudes and beliefs, scored through the Likert scale. Still, our results support previous studies, conducted mostly in hospitals, that show differences in attitudes toward influenza vaccination among vaccinated and unvaccinated HCWs. 13,22

Manuel and colleagues assert that “providing further education may not improve vaccination coverage if there is not clear relationship among attitudes, knowledge, and behavior.” 13 Kimura and colleagues, in their intervention of 67 Southern California LTCFs, also found no difference in vaccine uptake for just educational intervention alone; increases in vaccination coverage were found for combined campaigns for education and access. 13 Social norms, expectancy of disease, and “desire to avoid illness” – so called value expectancy models – all factor into an individual’s health behavior. 13

Regarding LTCF HCWs attitudes toward vaccination, Manuel et al. commented that the HCWs must trust in the people delivering the information and recommendations relating to influenza and vaccination.: 

“[t]hese HCWs already know that the public health department and their supervisors think that they should be vaccinated, but they also say that they generally do not do what these individuals suggest.” (Manuel, 2002, pg. 613) Their study identified physicians as “the most influential source of information.” 13
Furthermore, stressing the protective effects of vaccination to the HCWs and their families, and not just for benefit of residents may influence behavior change.  

Manuel and colleagues recommend that influenza vaccination campaigns for HCWs “could be added to a broader approach of workplace wellness directed toward the needs of the HCWs.” Thus, vaccination campaigns should focus on worker health as a priority on par with resident health – in essence, greater attention to the health of the overall community and all its members: residents, all staff and administration, and visitors.

While our intervention and previous survey of Philadelphia LTCFs did not assess primary reasons for vaccine refusal beyond “personal reasons”, previous studies have documented main barriers as “fear of vaccine side effects (particularly ILI symptoms) ... insufficient time or inconvenience ... perceived ineffectiveness of the vaccine ... perceived low likelihood of contracting influenza ... and fear of needles” among other factors. HCWs are more likely to receive annual vaccination if they have: previously received the vaccine, a desire to protect themselves and/or their residents, and belief that the vaccine is effective.

Because of the significant barrier of changing health behavior to reach recommended vaccination coverage levels, health policy-makers have discussed the possibility of mandatory vaccination. A mandatory vaccination program would in essence eliminate the complex variable of individual health behavior – with few exceptions, HCWs would
receive the vaccine or they would not be allowed to work in a health care facility. While seemingly an obvious solution to a complex problem, mandatory vaccination programs must meet ethical standards and respect the autonomy of each worker. 27

Improving the vaccination rates of HCWs is not the only targeted health behavior – general infection control practices, such as hand hygiene, cough etiquette, Universal Precautions and Droplet Precautions, to name a few measures, are critical to minimizing the burden of influenza in the long-term care setting. Thus, the entire picture of infection control should not be lost through the discouraging vaccination rates. While vaccination is the primary prevention for influenza, it is not the only one, and certainly not the easiest to change within a particular facility. 23

Limitations

The major limitations of the intervention were the small sample size (both number of facilities and percentage of staff in attendance) and the significant selection bias for the in-service participants. Because this was a pilot intervention conducted late in the 2008-2009 influenza season, these limitations were expected at the outset of the study. The goal of the in-service project was not to reach a particular statistical power or sample size, but rather to introduce a standardized influenza education program that would be a continuing resource for all LTCFs in the Philadelphia region.
Conclusion and Recommendations

Our results indicate that clear differences exist between vaccinated and unvaccinated HCWs, and that future interventions need to target these specific beliefs to make an impact on low vaccination rates. Institutional or structural factors – staffing levels and turnover rates, and communication and education systems within the facility may also be additional factors for low vaccination levels.¹¹

This primary goal of this intervention was not to achieve immediate changes in the vaccination rates of HCWs; rather, the educational in-services were piloted to determine the feasibility of this additional component of comprehensive influenza prevention and control strategies within community settings.²² Education, awareness, and communication within LTCFs form part of the foundation of healthy behaviors and actions that promote the well-being of the community.²⁰ These points were incorporated into our presentation through emphases of team efforts rather than individual autonomy within a health care setting. Each decision, including whether or not to receive influenza vaccination each year, has the potential to create significant health outcomes for the entire community. The in-services further attempted, with limited success, to foster discussion about the attitudes, beliefs, and reactions to influenza related issues. At most
in-services, the presentations and evaluations were administered, and audience questions were infrequent, although specific data were not collected on audience discussion.

As the evaluations revealed significant differences in attitudes toward influenza and vaccination, future in-services may challenge specific health behaviors, such as refusal to receive yearly influenza vaccination or working while ill. PDPH prepared all materials for the in-service, so participating facilities were asked only to schedule the presentation, provide space, and advertise the in-service. The researchers wanted to assimilate the intervention into the existing framework for in-services, lectures or “continuing education” programs for HCWs to make the project as convenient and accessible as possible for the facility. The scheduling aspect was largely successful. Recommendations for future delivery of the in-service include targeting facilities early or just prior to the flu season, from September to November. The period between January and March would be better as a refresher or follow-up, rather than initial contact. Because the median percentage of attending HCWs out of all staff was 16%, multiple in-services or repeat visits to the each facility should be included. The in-service presentation will be available on the Internet on the PDPH Health Information Portal website for any LTCF to access and use.

A study of California nursing homes indicates that HCW education alone is insufficient to affect vaccination rates. 4 Thus, future in-service projects with PDPH should coordinate with local LTCFs to time the education with vaccine campaigns and incentives early in the influenza season. Russell and colleagues recommend institutional
programs that combine health education with a variety of interventions, including: vaccination clinics, staff surveillance and record-keeping, and specific vaccination policies. Other models recommend organizational change (separate vaccine clinics, e.g.), incentives, and, improved access to vaccine.

The emerging novel H1N1 strain that has spread globally since April 2009 will present a unique opportunity for health educators in the upcoming influenza season to emphasize the seasonal seriousness of influenza and the omnipresent potential for a pandemic. HCWs may be more open to changing health behaviors, such as receiving annual vaccination, in light of ongoing media and health organization coverage of the emergent influenza strain. Thus, education efforts, in combination with coordinated vaccination campaigns, should be redoubled for the 2009-2010 influenza season.

This project was a pilot intervention to educate the HCWs of LTCFs on influenza prevention and control within their facilities. Specific recommendations, including annual vaccination, infection control measures, and efficient communication with other staff, were provided during the in-services. (Appendix F) Post in-service evaluations revealed significant differences in attitudes between vaccinated and unvaccinated HCWs that are consistent with previous studies. Improving influenza prevention and control measures within the long-term care setting requires focused cooperation within the staff hierarchy of a particular LTCF and continued collaboration between LTCFs and local health departments. No singular intervention will protect a community from a potential influenza outbreak; coordinated and multi-faceted efforts on the part of all team members
of an LTCF continues to be the best approach to reducing the impact of the yearly influenza burden in this vulnerable population. This pilot study provides a baseline measure and introductory step toward future influenza interventions in the Philadelphia LTCF community.

References


Appendices

Appendix A: In-Service Evaluation Responses by Individual Facility (No statistical significance measurements performed.)

<table>
<thead>
<tr>
<th>Facility</th>
<th>Q 1 mean</th>
<th>Q 2 %</th>
<th>Q 3 mean</th>
<th>Q 4 mean</th>
<th>Q 5 mean</th>
<th>Q 6 mean</th>
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<tbody>
<tr>
<td>1 (n=11)</td>
<td>4.2</td>
<td>27</td>
<td>3.8</td>
<td>3.8</td>
<td>4.4</td>
<td>4</td>
</tr>
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<td>2 (n=7)</td>
<td>4.4</td>
<td>58</td>
<td>4.3</td>
<td>4.4</td>
<td>4.9</td>
<td>4.3</td>
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<td>3 (n=38)</td>
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<td>4.4</td>
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<td>4 (n=44)</td>
<td>4.4</td>
<td>91</td>
<td>4.5</td>
<td>4.5</td>
<td>4.4</td>
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<td>5 (n=16)</td>
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<td>4.3</td>
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<td>6 (n=20)</td>
<td>4.5</td>
<td>79</td>
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<td>7 (n=19)</td>
<td>4.5</td>
<td>58</td>
<td>4.4</td>
<td>4.7</td>
<td>4.2</td>
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<tr>
<td>8 (n=15)</td>
<td>4.7</td>
<td>60</td>
<td>4.2</td>
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</tbody>
</table>
Appendix B: In-Service Attendance as Percentage of Facility’s Total Staff. (No data for 2 facilities)

Appendix C: PDPH LTCF Influenza Prevention and Control Survey, June 2008:
1.) SNF and PCH response rates
2.) Surveyed LTCF characteristics
3.) Philadelphia LTCF vs. PCH influenza vaccination rates: 2007-2008
4.) LTCF HCW access to influenza vaccine
1.)

Skilled Nursing Facilities

46 mailed survey \rightarrow 41 surveyed \rightarrow 89% response rate

Personal Care Homes

128 mailed survey \rightarrow 61 surveyed \rightarrow 48% response rate

PCH non-respondents median capacity (15, n=47) vs. respondents (24, n=61): p < 0.05 (20 facilities with missing data)

2.)

Facility Characteristics

<table>
<thead>
<tr>
<th>Facility Characteristics</th>
<th>Skilled Nursing Facilities N=41</th>
<th>Personal Care Homes N=61</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Owned by a Corporation</td>
<td>21 (51%)</td>
<td>14 (25%)</td>
<td>.001†</td>
</tr>
<tr>
<td>Co-located with a PCH/SNF</td>
<td>13 (32%)</td>
<td>12 (20%)</td>
<td>.56†</td>
</tr>
<tr>
<td>Median Facility Capacity</td>
<td>138 (28–451)</td>
<td>24 (4–182)</td>
<td>&lt;.001††</td>
</tr>
</tbody>
</table>

†Chi-square; ††Wilcoxon test
3.)

![Bar chart showing vaccination rates for residents and direct care staff in LTCFs and PCHs.]

4.)

**Flu Vaccination Offered at Facilities†**

<table>
<thead>
<tr>
<th>Offer vaccine to staff</th>
<th>Skilled Nursing Facilities (N=41)</th>
<th>Personal Care Homes (N=61)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n/N (n/N) (%)</td>
<td>n/N (n/N) (%)</td>
</tr>
<tr>
<td>Offer vaccine to staff</td>
<td>41/41 (100%)</td>
<td>38/61 (62%)</td>
</tr>
<tr>
<td>Offer vaccine to staff free of charge</td>
<td>41/41 (100%)</td>
<td>35/48 (73%)</td>
</tr>
<tr>
<td>Offer vaccine to staff on-site</td>
<td>41/41 (100%)</td>
<td>35/56 (63%)</td>
</tr>
</tbody>
</table>

† p<0.01 (Chi-square)
Appendix D: Influenza Surveillance in Philadelphia 2008-2009 and Previous 3 Year Averages.

**Laboratory-Based Surveillance for Influenza: Philadelphia, 2008/2009 Season Compared to 3 Year Averages**

*Based on 6 hospital laboratories participating in surveillance across respiratory virus seasons*
Appendix E: In-Service Evaluation

## Anonymous Evaluation Form:
“Preventing Influenza (Flu) in Long-Term Care.”

We appreciate your feedback! **Please circle one choice per question.**

1.) This presentation – “Preventing Influenza (flu) in Long-Term Care” – was informative.

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
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</thead>
<tbody>
<tr>
<td>Strongly Disagree</td>
<td>Disagree</td>
<td>Undecided</td>
<td>Agree</td>
<td>Strongly Agree</td>
</tr>
</tbody>
</table>

2.) I received the flu shot (or Flumist) for the current flu season (2008-09).

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
</table>

3.) This presentation makes me more likely to receive a flu shot (or FluMist) for next year.

<table>
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<tr>
<th>1</th>
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</thead>
<tbody>
<tr>
<td>Strongly Disagree</td>
<td>Disagree</td>
<td>No Impact</td>
<td>Agree</td>
<td>Strongly Agree</td>
</tr>
</tbody>
</table>

4.) It is my responsibility as a health care worker in long-term care to receive influenza vaccination every year.

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<tr>
<th>1</th>
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<tbody>
<tr>
<td>Strongly Disagree</td>
<td>Disagree</td>
<td>Undecided</td>
<td>Agree</td>
<td>Strongly Agree</td>
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</table>

5.) Influenza is a serious health concern for the residents at this facility.

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<tr>
<td>Strongly Disagree</td>
<td>Disagree</td>
<td>Undecided</td>
<td>Agree</td>
<td>Strongly Agree</td>
</tr>
</tbody>
</table>

6.) For myself, the **benefits** outweigh the **risks** of receiving influenza vaccination every year.

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<th>1</th>
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</thead>
<tbody>
<tr>
<td>Strongly Disagree</td>
<td>Disagree</td>
<td>Undecided</td>
<td>Agree</td>
<td>Strongly Agree</td>
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</tbody>
</table>

Comments/Questions?

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

Thank you for your participation!
Preventing Influenza (Flu) in Long-Term Care

Philadelphia Department of Public Health
Division of Disease Control
2009

Topics Covered

- What is the problem?
  - Flu in nursing homes/personal care homes
    - Symptoms, how it spreads
    - How serious is it?

- What can you do?
  - Prevention and control
    - Flu vaccine
    - Infection control
The Flu – Fact vs. Fiction

1. “The flu is only a minor health condition.”
   FALSE

2. “It doesn’t matter if I don’t get vaccinated; I never get the flu anyway.”
   FALSE

3. “Nobody dies from the flu.”
   FALSE

Why discuss influenza?

• 25-50 million cases annually

• 30,000—40,000 deaths, 200,000 hospitalizations in U.S. every year

• Severe illness most common among very young children and elderly populations
The Flu is Preventable!!

Warning!

Keep Out

Trespassers will be violated

Freddy the Flu Bug

What is Flu?

- Respiratory illness caused by the influenza virus
- Can spread very easily person to person
- Fever, chills, cough, muscle aches, lasting approximately 5-12 days
- 1 to 5 days between exposure to virus and start of flu symptoms
The More Serious Side of Flu

- Influenza can lead to serious health complications
  - Pneumonia
  - Dehydration
  - Death

- Elderly and young children are at most risk
  - In elderly, symptoms may be different – minor fever, sore throat, cough, change in mental status

How is the Flu Spread?

- Respiratory Secretions
  - Coughing, Sneezing, Mucus
  - Contact with infected surfaces and then putting hands to face/mouth

- Adults can spread flu 1 day before onset of symptoms and up to 5 days after onset

- You can have the flu without feeling sick!
Treatment

- Rest and fluids
- Antiviral drugs

For Discussion

1. When is “flu season”?  
   Winter months but can start as early as October and last through May
2. What are (usually) the peak months?  
   January-March
3. If someone is sick with flu, what is the likelihood that someone else in household will also get the flu?  
   90%!

*Based on 6 hospital laboratories participating in surveillance across respiratory virus seasons

<table>
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<tr>
<th>Week of Report</th>
<th>2005/06</th>
<th>2006/07</th>
<th>2007/08</th>
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PREVENTION

Vaccine and Infection Control Practices
Vaccine – Flu Shot

- Inactivated vaccine (3 killed virus strains) delivered by needle
- For anyone 6 months and older
- Yearly vaccination is necessary!
  - Flu virus changes every year
- Most common side effect
  - Sore arm

Vaccine - FluMist

- Inhaled vaccine through nasal spray – Live Attenuated Influenza Vaccine (LAIV)
- Appropriate for healthy persons aged 2-49 (not pregnant)
- OK for most health care workers
- Side effects
  - Runny nose
  - Sore throat
  - Slight fever
More About Vaccine

- Flu vaccine does *not* cause the flu
- Vaccine does not protect against other diseases
  - Many other similar, seasonal illnesses, but flu is the most serious!
- Not good for people who:
  - Have severe egg allergy
  - Currently very sick

Local Flu Vaccination Rates: 2007-08

![Diagram showing flu vaccination rates for residents and direct care staff in Philadelphia LTCF. The rates are 84% for residents and 37% for direct care staff.]
Benefits of Vaccination

- **Why get vaccinated?**
  - “The single best way to protect yourself and others against influenza is to get a flu vaccination each year.” (CDC)
  - For healthy adults, vaccine can prevent influenza in 70-90% of cases

- **Benefits of Vaccination – Health Care Workers**
  - **Vaccination of health care workers**
    - Less staff illness
    - Less illness and death among patients/residents
    - Fewer missed work days
    - Fewer/shorter outbreaks
    - Protects pregnant women and their newborns
    - Protects their family
Benefits of Vaccination – Residents

- For residents, the flu shot is most effective in preventing:
  - Severe illness
  - Secondary complications
  - Deaths related to the flu

- Vaccine effectiveness
  - 50%-60% effective in preventing hospitalization or pneumonia and
  - 80% effective in preventing death from the flu.

(CDC)
Flu Outbreaks

- Facility flu outbreaks associated with low vaccination rates among healthcare personnel
- Low vaccination rates provide opportunity for flu to affect many residents and staff of facility

How else can you prevent the flu in your workplace?
- Wash your hands
  - If a sink is not nearby use an alcohol-based hand sanitizer
- Stay home if sick!
- Cover your cough!
- Infection Control
  - Standard Precautions
  - Droplet Precautions
  - Facility-Wide Measures
How else can you prevent the flu in your workplace?

- **Droplet Precautions**
  - Wear standard surgical mask when working within 3 feet of resident (or upon entering room)
  - When possible, private room, or curtain between residents in a shared room
  - Resident may wear surgical mask outside of room
  - Sign on door of resident and note on medical chart
More Prevention

- **Know the Symptoms of Flu**
  - Influenza-like-illness (ILI)
    - Fever of 100°F (37.8°C) or higher,
    - And cough and/or sore throat,
    - And no other obvious explanation for the illness

- **Recognize in yourself**

- **Recognize in Residents**
  - May not be obvious

- **Communicate with other staff**
Infection Control – Facility Wide

- If you are sick, stay home!
  - Recognize symptoms of flu in yourself and in your residents (subtle)

- Visitor restrictions
  - No one ill during flu season (posters are helpful!)

Help Protect Our Residents!

Please do not visit if you have a fever or cough.

All healthy visitors please:

- Clean your hands after arriving and before leaving.
- Always cover your cough.
- Use a tissue or your sleeve when you cough or sneeze.
- Clean your hands after coughing or sneezing.

If you are ill and must visit, please ask for a mask.
Infection Control – Facility Wide

- Group ill residents
- Group staff caring for ill residents
- Limit/restrict group activities

The Big Picture

Vaccinate Residents ➔ Healthier Residents, Healthier Staff, Healthier Families ➔ Vaccinate Staff
Rapid Detection, Rapid Action ➔ Infection Control Measures

Healthier Residents, Healthier Staff, Healthier Families
Summary – Do No Harm

- Vaccinate yourself and residents!
- Stay home when you are sick! (~ 5 days)
- Even subtle symptoms in elderly may indicate influenza
  - Communicate with other staff and supervisors
  - Rapid detection and response are critical!
- Practice good infection control measures (Droplet Precautions)

PDPH Resources

- Yearly Flu Guidelines
- Signs and Posters for your Facility
- Report outbreaks to health department, we’re here to help!
  (215) 685-6740
Questions or Comments?

- Thank you for your attendance!

- Please take a moment to fill out the brief evaluation form.