INFLUENZA AND PNEUMOCOCCAL VACCINATION DATA
Since 2006, pneumonia and influenza combined have remained the seventh leading cause of death in people over 65 years of age in the United States. Lower respiratory tract infections (LRTIs), including pneumonia and influenzalike illness, are the second most common healthcare-associated infections (HAIs) in Pennsylvania nursing homes. Analysis of HAI events reported through the Pennsylvania Patient Safety Reporting System (PA-PSRS) shows that influenzalike illness rates of infection have remained at 0.00 to 0.01 per 1,000 resident-days over the 2010 to 2012 reporting periods. LRTIs, including pneumonia, have shown a slight decrease in infection rate from 0.44 in 2010 to 0.42 in 2012. See Table 1.

Influenza vaccination has been shown to reduce the risk of influenza and absenteeism in vaccinated adults. Vaccination of both residents and their contacts (e.g., visitors, clinicians) is the foundation of efforts to prevent influenza transmission. Healthcare worker vaccination in particular has been shown to reduce the risk of respiratory illness and death in nursing home residents.

A previous Pennsylvania Patient Safety Advisory article, “Increasing Influenza and Pneumonia Vaccination Rates in Long-Term Care,” reported that in 2007, influenza and pneumococcal vaccination rates for Pennsylvania nursing home residents were 3% below the “all-state average.” The influenza vaccination rate in Pennsylvania in 2007 was 85.9%. Nursing homes in the commonwealth improved on this rate in 2008 and 2009, achieving influenza vaccination rates of 87.3% and 88.1%, respectively. The pneumococcal vaccination rate in Pennsylvania in 2007 was 83.6%. Nursing homes in the commonwealth improved on this rate in 2008 and 2009, achieving pneumococcal vaccination rates of 86.5% and 86.1%, respectively. However, due to concurrent improvement in nursing homes across the country, the available 2009 vaccination data from the US Department of Health and Human Services’ (HHS) Agency for Healthcare Research and Quality shows that performance ratings of Pennsylvania nursing homes remained 3.0% below the all-state average of 91.1% for influenza vaccinations and 2.5% below the all-state average of 88.6% for pneumococcal vaccination.

HEALTHCARE WORKER VACCINATION TRENDS
The overall national healthcare worker influenza vaccination rates have steadily increased over the last decade. Until the 2009-2010 season, less than 50% of US healthcare workers were vaccinated against influenza. A Centers for Disease Control and Prevention (CDC) Internet panel survey of 1,944 self-selected healthcare workers in April 2013 found that 72.0% of all US healthcare workers reported that they had received an influenza vaccination for the 2012-2013 season. For the same season, 83.1% of healthcare workers in US hospitals received an influenza vaccination, whereas vaccination coverage was only 58.9% for healthcare workers in US long-term care facilities. Among all occupational settings surveyed, vaccination was lowest among healthcare workers at US long-term care facilities in the 2011-2012 and 2012-2013 seasons. See Table 2.

A report from the Pennsylvania Health Care Worker Flu Immunization Campaign shows that the rate of influenza vaccination in Pennsylvania nursing home healthcare workers is less than 60%, far below the Healthy People 2020 target of 90%. This disparity may be a factor in the lack of improvement in the rate of influenzalike illness reported to PA-PSRS from Pennsylvania nursing homes.
CDC reports 96.5% coverage among US healthcare workers who had an employer requirement for vaccination. In the absence of requirements, increased vaccination coverage was associated with employers offering vaccination on-site, free of charge, and on multiple days.

**FOCUS ON INFECTION PREVENTION**

**STRAIGHTEN FOR IMPROVING VACCINE UPTAKE**

Nursing homes may improve their staff and resident vaccination rates and decrease LRTIs in their residents by following risk reduction strategies outlined in the Advisory articles “Increasing Influenza and Pneumonia Vaccination Rates in Long-Term Care” and “Strategies to Improve Outcomes in Nursing Home Residents with Modifiable Risk Factors for Respiratory Tract Infections,” including strategies to increase vaccine availability and acceptance. The articles are available on the Authority’s website at http://patientsafetyauthority.org.

The Pennsylvania Department of Health brought together a voluntary association of experts—including the Hospital and Healthsystem Association of Pennsylvania (HAP), the Authority, the Pennsylvania Immunization Coalition, and Pennsylvania hospitals and health systems that have achieved nearly universal vaccination coverage—to brainstorm how best to improve vaccine uptake among healthcare workers in Pennsylvania. The task force held seminars in May and June 2013 to showcase best practices and resources for improving influenza vaccination among healthcare personnel and will be working with

### Table 1. Nursing Home Respiratory Tract Infection Pooled Mean Rates, as Reported to the Pennsylvania Patient Safety Authority, 2009 to 2012

<table>
<thead>
<tr>
<th>YEAR</th>
<th>LOWER RESPIRATORY TRACT INFECTIONS (I.E., PNEUMONIA, BRONCHITIS, TRACHEOBRONCHITIS)</th>
<th>INFLUENZALIKE ILLNESSES</th>
<th>OVERALL RESPIRATORY TRACT INFECTIONS*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No. of Nursing Homes Reporting</td>
<td>Pooled Infection Rate† (95% CI)</td>
<td>No. of Nursing Homes Reporting</td>
</tr>
<tr>
<td>2009‡</td>
<td>NA</td>
<td>0.45 (0.44 to 0.46)</td>
<td>NA</td>
</tr>
<tr>
<td>2010</td>
<td>484</td>
<td>0.44 (0.43 to 0.45)</td>
<td>42</td>
</tr>
<tr>
<td>2011</td>
<td>562</td>
<td>0.43 (0.42 to 0.44)</td>
<td>121</td>
</tr>
<tr>
<td>2012</td>
<td>492</td>
<td>0.42 (0.42 to 0.43)</td>
<td>65</td>
</tr>
</tbody>
</table>


* Individual nursing homes may have reported both influenzalike illnesses and lower respiratory tract infections.

† Rate calculation: number of infections ÷ number of resident-days x 1,000

‡ Infection data collection for nursing homes began in July 2009. As a result, rates given are based on six months of data collection, and the numbers of nursing homes are not given because they are not equally comparable with subsequent years.

### Table 2. Influenza Vaccination Coverage among US Healthcare Workers, by Work Setting, 2010-2011 to 2012-2013 Flu Seasons

<table>
<thead>
<tr>
<th>WORK SETTING*</th>
<th>2010-2011, %† (N)</th>
<th>2011-2012, %‡ (N)</th>
<th>2012-2013, %‡ (N)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall</td>
<td>64 (1,931)</td>
<td>67 (2,348)</td>
<td>72 (1,944)</td>
</tr>
<tr>
<td>Hospital</td>
<td>71 (617)</td>
<td>77 (1,187)</td>
<td>83 (961)</td>
</tr>
<tr>
<td>Long-term care facility</td>
<td>64 (220)</td>
<td>52 (455)</td>
<td>59 (427)</td>
</tr>
<tr>
<td>Ambulatory care/physician office</td>
<td>62 (658)</td>
<td>68 (747)</td>
<td>73 (636)</td>
</tr>
<tr>
<td>Other clinical setting</td>
<td>52 (436)</td>
<td>62 (277)</td>
<td>73 (237)</td>
</tr>
</tbody>
</table>


* Respondents were able to select more than one work setting.

† Weighted percent vaccinated

‡ Number of workers surveyed, by occupational setting and influenza season
healthcare facilities that are “considering or contemplating” making immunization mandatory within their facility to help them firm up their policy or develop program strategies. HAP has created a best-practices guide and toolkit that can be adapted to the long-term care setting. The toolkit is available at http://www.haponline.org/downloads/Universal_Flu_Immunization_Programs_for_Health_Care_Personnel-HAP_Quality_Best_Practice_Series_Sept2011.pdf.

Two of the priority goals noted in HHS’s National Action Plan to Prevent Health Care-Associated Infections: Road Map to Elimination are to (1) progress toward the Healthy People goal of having 90% of healthcare workers receive influenza vaccination by 2020, with 75% of healthcare workers in long-term care receiving influenza vaccination by 2015, and (2) achieve 85% vaccination coverage of eligible nursing home and skilled nursing facility residents for both influenza and pneumococcus within five years of the report’s publication in 2013.

NOTES


THE PENNSYLVANIA PATIENT SAFETY AUTHORITY AND ITS CONTRACTORS

The Pennsylvania Patient Safety Authority is an independent state agency created by Act 13 of 2002, the Medical Care Availability and Reduction of Error (Micare) Act. Consistent with Act 13, ECRI Institute, as contractor for the Authority, is issuing this publication to advise medical facilities of immediate changes that can be instituted to reduce Serious Events and Incidents. For more information about the Pennsylvania Patient Safety Authority, see the Authority’s website at http://www.patientsafetyauthority.org.

ECRI Institute, a nonprofit organization, dedicates itself to bringing the discipline of applied scientific research in healthcare to uncover the best approaches to improving patient care. As pioneers in this science for more than 40 years, ECRI Institute marries experience and independence with the objectivity of evidence-based research. More than 5,000 healthcare organizations worldwide rely on ECRI Institute’s expertise in patient safety improvement, risk and quality management, and healthcare processes, devices, procedures and drug technology.

The Institute for Safe Medication Practices (ISMP) is an independent, nonprofit organization dedicated solely to medication error prevention and safe medication use. ISMP provides recommendations for the safe use of medications to the healthcare community including healthcare professionals, government agencies, accrediting organizations, and consumers. ISMP’s efforts are built on a nonpunitive approach and systems-based solutions.