

## **RATIONALE FOR MANDATED INFLUENZA IMMUNIZATION FOR HEALTHCARE PERSONNEL IN LONG BEACH (2021-2022)**

### **HEALTH OFFICER ORDER**

In 2013, the Long Beach City Health Officer issued a Health Officer Order mandating that all licensed acute care hospitals, intermediate care facilities, and skilled nursing facilities in Long Beach require their healthcare personnel (HCP) who have patient contact or work in patient-care areas receive an annual influenza immunization or wear a mask during the influenza season. This Order has been extended to include Emergency Medical Services (EMS) provider agencies. The Order remains in effect during each influenza season, unless rescinded.

### **SUPPORTING RATIONALE**

Flu in the workplace can lead to increased absences, lower productivity, and higher medical costs. In addition, nosocomial transmission from healthcare personnel to patients has been documented in a variety of acute care settings including neonatal intensive care units, pediatric and general medical wards, transplant units, oncology units, and emergency departments.<sup>1</sup>

Influenza vaccination is effective in reducing influenza, and mandatory vaccination programs in healthcare settings have demonstrated increased influenza vaccination rates. Thus, mandatory vaccination policies in healthcare facilities can lead to decreased illness and absenteeism among personnel and would logically lead to decreased morbidity and mortality among patients.

### **INFLUENZA IN HEALTHCARE SETTINGS**

Unvaccinated personnel can transmit the flu to other personnel, which can lead to decreased productivity and increased absenteeism. Healthcare personnel can also transmit influenza to patients.

- Studies suggest that up to 25% of healthcare personnel are infected with influenza each season.<sup>2,3</sup>
- Healthcare personnel may be more likely to work when ill than other professions, which increases the risk for flu transmission in healthcare facilities.
- As many as 1 in 2 infected people never show classic flu symptoms,<sup>4</sup> but can shed virus for 5-10 days. While viral shedding may be low among asymptomatic personnel, these personnel can nevertheless spread influenza unknowingly.
- Patient admissions and healthcare personnel absenteeism are typically higher during the flu season, which increases the impact of flu-related absenteeism on operations of these healthcare facilities.
- Influenza infection that is acquired during a hospital stay (nosocomial) leads to increased hospital days and mortality for inpatients.<sup>5</sup> In addition, nosocomial influenza cases tend to be more severe than community onset cases.<sup>6</sup> The CDC notes that higher staff vaccination levels have been associated with a lower risk of nosocomial flu cases and mortality.<sup>7</sup>

### **IMPACT OF INFLUENZA VACCINATION ON INFECTION, ILLNESS AND ABSENTEEISM**

When well-matched to the circulating flu strains, influenza vaccinations are effective in preventing illness and may lead to reductions in provider visits, complications, hospitalizations, and absenteeism in healthy adults under 65 years of age. Reduced absenteeism is especially beneficial for hospitals during the flu season, when bed-days and staff illness tend to be high.



- Two randomized control studies have shown reductions in influenza illness among adults. In a season when the flu vaccine was well matched to circulating strains, influenza vaccination was found to be 88% effective in preventing influenza type A infection and 89% effective in preventing influenza type B infection in healthcare personnel.<sup>8</sup> In the second study, healthy working adults who were vaccinated against flu were found to have 34% fewer incidents of influenza-like illness (ILI), 42% fewer doctor visits, and 32% fewer sick days.<sup>9</sup>
- Results of research focused on absenteeism vary but several studies suggest that vaccination of healthcare personnel can reduce work absences.

A randomized, placebo-controlled double-blind study of the impact of vaccination on absenteeism in a children's hospital found that influenza vaccination was associated with a 28% reduction in absenteeism related to respiratory infections.<sup>10</sup> In another randomized double-blind controlled trial conducted over 3 consecutive years, vaccinated personnel had 29% fewer cumulative days of febrile respiratory illness and 53% fewer cumulative days of work absence than those in the control group. While the results were in the expected direction, neither difference was statistically significant. The authors note that the impact of vaccination on absenteeism may have been moderated by the fact that healthcare personnel may work when ill. Of note, no absences related to adverse vaccination events were reported among study subjects.<sup>8</sup>

## IMPACT OF INFLUENZA VACCINATION IN HEALTHCARE SETTINGS RELATIVE TO PATIENT PROTECTION

Research findings suggest that vaccinating healthcare personnel can reduce patient morbidity and mortality. Although a 2010 Cochrane review raised methodological questions regarding several studies, there is substantial evidence that vaccination in healthcare settings decreases influenza transmission from HCPs to patients, particularly in long-term care settings.<sup>11</sup>

### LONG-TERM CARE FACILITIES

Studies in long-term care settings, such as skilled nursing facilities, have shown that staff vaccination against influenza has been associated with reductions in all-cause mortality among patients,<sup>2,3</sup> influenza-like illness (ILI),<sup>12</sup> and hospitalizations with ILI.<sup>10</sup> In addition, one long-term care study suggested that although staff vaccination rates did not independently predict ILI outbreaks, high rates of vaccination among *both* staff and residents can substantially reduce the rate and impact of influenza outbreaks.<sup>13</sup>

### ACUTE CARE FACILITIES

Three published studies suggest a potential positive impact of healthcare personnel vaccination on patient outcomes in acute care settings. A study conducted in a tertiary care academic hospital in the United States suggested that there is a significant inverse association between HCP vaccination rates and the rate of nosocomial influenza among patients, suggesting that increasing rates may lower nosocomial infections.<sup>14</sup> A modeling study suggested that the relative effect of HCP vaccination is lower in hospitals than nursing homes, but that the absolute number of infections that can be prevented in the hospital is higher, because of higher hazard rates.<sup>15</sup> Further, a pragmatic cluster randomized controlled trial conducted in the Netherlands demonstrated that the intervention hospitals, where influenza vaccination was higher, had approximately half the rate of nosocomial influenza and/or pneumonia infection in hospital inpatients.<sup>16</sup>

### EMERGENCY MEDICAL SERVICES PROVIDERS

EMS healthcare personnel have frequent patient interactions, are at high risk for contracting the influenza virus, and can contribute to the spread of influenza infection within their communities. As a result, EMS providers are encouraged to receive the influenza immunization. However, studies have shown that vaccination rates among EMS providers remain low.



## IMPACTS OF MANDATORY VACCINATION POLICIES ON VACCINATION RATES

While flu vaccination rates among healthcare personnel have improved, they fall short of the Healthy People 2020 standard of 90%.<sup>17</sup> This leaves workers and patients, at higher risk for illness, complications and death. Mandatory vaccination seems to offer the best opportunity to significantly increase vaccination coverage among healthcare personnel.

- Nationally, an estimated 67% of healthcare personnel were vaccinated against influenza during the 2011-2012 flu season (prior to the Los Angeles County Health Officer Order). Vaccination coverage was highest among hospital-based healthcare personnel (76.9%), but approximately 1 in 4 hospital personnel remained unvaccinated.<sup>18</sup>
- Mandatory vaccination policies at acute care hospitals have been proven to increase immunization rates among healthcare personnel. At the national level, in the 2011-2012 flu season, coverage for healthcare personnel working in hospitals that required influenza vaccination was 95.2%, compared to 68.2% for personnel working in hospitals that did not require vaccination.<sup>18</sup> During the 2019-2020 flu season, the highest HCP influenza vaccination coverage levels continued to be in settings with employer vaccination requirements, with a 94.4% coverage level.<sup>19</sup>
- In a review of hospital policies and state laws regarding healthcare personnel vaccination, increased healthcare personnel vaccination rates were significantly associated with mandated vaccination policies that included: termination or other repercussions for non-compliance, including masking or reassignment. State laws, like California's, which require hospitals to offer vaccine to employees at no cost, educate employees, and/or require staff to be vaccinated or sign a declination, were not associated with higher vaccination rates among personnel.<sup>20</sup>
- While vaccination is the most effective method to prevent influenza, masking may help prevent its spread between patients and personnel. Although studies have not been done to assess whether mask wearing by healthcare personnel prevents the transmission of influenza to patients, masking has been shown to reduce the exhalation of influenza virus from breathing and coughing.<sup>21</sup> In addition, studies provide substantial evidence that masks can prevent the transmission of respiratory disease agents between patients and healthcare workers. Thus, requiring unvaccinated workers to wear a mask while in contact with patients is a reasonable step that can prevent flu transmission, based upon available data.
- Mandatory vaccination policies have been instituted by hospitals, the Department of Defense, and municipalities. In addition, a California law, Cal-OSHA, and The Joint Commission require facilities to offer flu vaccinations at no charge to personnel as part of infection control programs.

## QUESTIONS

**Long Beach Communicable Disease Control Program:** 562.570.4302

## REFERENCES

1. Talbot T, Bradley S, Cosgrove S, et al. SHEA Position Paper: Influenza vaccination of healthcare workers and vaccine allocation for healthcare workers during vaccine shortages, 2005. Available at <http://www.hopkins-ccpar.org/sns/resources/edhsu2.web.pdf>. Accessed August 28, 2013.
2. Carman WF, Elder AG, Wallace LA, et al. (2000) Effects of influenza vaccination of health-care workers on mortality of elderly people in long-term care: a randomised controlled trial. *Lancet*, 8,355(9198):93-7.
3. Potter J, Stott DJ, Roberts MA, et al. (1997) Influenza vaccination of health care workers in long-term care hospitals reduces the mortality of elderly patients. *J Infect Dis.*,175(1):1-6.
4. Stott DJ, Kerr G, Carman WF. (2002) Nosocomial transmission of influenza. *Occup Med (Lond)*, 52(5):249-53.
5. Van Voris LP, Belshe RG, Shaffer JL. (1982) Nosocomial influenza B virus infection in the elderly. *Ann Intern Med*, 96:153-158.
6. Jhung MA, D'Mello T, Pérez A, et al. Hospital-onset influenza hospitalizations—United States, 2010– 2011. *Am J Infect Control*. Janv 2014;42(1):7-11



7. CDC. Influenza Vaccination Information for Health Care Workers. Available at <http://www.cdc.gov/flu/healthcareworkers.htm>. Accessed August 29, 2013.
8. Wilde JA, McMillan JA, Serwint J, et al. (1999) Effectiveness of influenza vaccine in health care professionals: a randomized trial. *JAMA*, 281:908-13.
9. Bridges CB, Thompson WW, Meltzer MI, et al. (2000) Effectiveness and cost-benefit of influenza vaccination of healthy working adults: A randomized controlled trial. *JAMA*, 284:1655-63.
10. Saxen H, and Virtanen M. (1999) Randomized, placebo-controlled double blind study on the efficacy of influenza immunization on absenteeism of health care workers. *Pediatr Infect Dis J*, 18:779-83.
11. Thomas RE, Jeffrson T, and Lasserson TJ. (2010) Influenza vaccination for healthcare workers who work with the elderly. *Cochrane Database Syst Rev*
12. Hayward A, Harling R, Wetten S et al. (2006) Effectiveness of an Influenza Vaccine Programme for Care Home Staff to Prevent Death, Morbidity, and Health Service Use among Residents; Cluster Randomised Controlled Trial. *BMJ*,333:1241.
13. Shugarman L, Hales C, Setodji C et al. (2006) The Influence of Staff and Resident Immunization Rates on Influenza-like Illness Outbreaks in Nursing Homes. *Journal of the American Medical Directors Association*, 7(9); 562-567.
14. Salgado CD, Giannetta ET, Hayden FG, et al. (2004) Preventing nosocomial influenza by improving the vaccine acceptance rate of clinicians. *Infect Control Hosp Epidemiol*, 25:923-8
15. van den Dool C, Bonten MJ, Hak E, et al. (2009) Modeling the effects of influenza vaccination of health care workers in hospital departments. *Vaccine*, 27(44):6261-7.
16. Riphagen-Dalhuisen J, Burgerhof JG, Frijstein G, et al. Hospital-based cluster randomised controlled trial to assess effects of a multi-faceted programme on influenza vaccine coverage among hospital healthcare workers and nosocomial influenza in the Netherlands, 2009 to 2011. *Euro Surveill*. 2013;18(26) Available at <http://www.eurosurveillance.org/ViewArticle.aspx?ArticleId=20512> Accessed September 4, 2013.
17. U.S. Department of Health and Human Services. Office of Disease Prevention and Health Promotion. Healthy People 2010. Washington DC. Available at <http://www.healthypeople.gov/2020/topicsobjectives2020/objectiveslist.aspx?topicId=23>. Accessed August 28, 2013.
18. CDC. Influenza Vaccination Coverage Among Healthcare Personnel- 2011-12 Influenza Season- United States. *MMWR*. September 28, 2012 / 61(38):753-757.
19. CDC. Influenza Vaccination Coverage Among Healthcare Personnel- 2014-15 Influenza Season- United States. *MMWR*. September 18, 2015 / 64(36):993-999.
20. Zimmerman RK, Lin CK, Raymund M, et al. (2013) Hospital Policies, State Laws, and Healthcare Worker Influenza Vaccination Rates. *Infect Control Hosp Epidemiol*,34(8):854-7
21. Milton DK, Fabian MP, Cowling BJ, Grantham ML, McDevitt JJ (2013) Influenza virus aerosols in human exhaled breath: particle size, culturability, and effect of surgical masks. *PLoS Pathog* 9: e1003205

