



The Influence of a Mandate for Influenza Vaccination or Masking of Healthcare Personnel: Experience from a Large Urban Area

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Objectives

1. Discuss the background, rationale, and data describing influenza vaccination among healthcare personnel (HCP)
2. Discuss evaluation findings from Los Angeles County Department of Public Health (LAC DPH), health officer order mandating influenza vaccination among HCP




Background

- Influenza: 8th leading cause of death among US adults
 - ~56,979 deaths from Influenza and Pneumonia in 2013
- > 200,000 people are hospitalized from seasonal influenza-related complications annually
- Healthy People 2020 Goal: 90% coverage among HCP
- For 2015-16, ACIP recommended annual influenza vaccination for everyone 6 months and older with either LAIV or IIV

CDC, 2013-14 

Hospital-Onset (HO) Influenza

- Influenza Hospitalization Surveillance Network (FluSurv-NET) Data
 - Multicenter, national surveillance system
- 6,171 influenza-positive hospitalizations
 - 172 (2.8%) were defined as hospital-onset (>3 days after admit)
- HO Case Key Findings:
 - Greater length of stay
 - Greater proportion with ICU admission
 - Greater proportion requiring medical ventilation
 - Greater proportion dying or discharged to a LTCH compared with CO cases

Jhung M.A., et al. AJIC 2014 

Meta Analysis of Influenza Vaccination of Healthcare Personnel on Morbidity and Mortality Among Patients: Grading of Evidence

All-Cause Patient Mortality


Study or Subgroup	Intervention	Control	Total	Total Weight	M, Random, 95% CI	Year	Risk Ratio
Pattar 1997	450	450	900	11.5%	0.81 [0.42, 1.57]	1997	
Carson 2005	749	889	1638	28.2%	0.81 [0.42, 1.57]	2005	
Hayward 2006	1269	1323	2592	38.1%	0.71 [0.38, 1.31]	2006	
Lambert 2009	1732	1878	3610	24.1%	0.87 [0.46, 1.67]	2009	
Total (95% CI)	4210	4540	8750	100.0%	0.77 [0.46, 1.30]		↓29%

Intervention: Vaccination
Control: No vaccination
Test for overall effect: $Z = 3.80$ ($P < .0001$)
Test for heterogeneity: $I^2 = 0.00$, $\tau^2 = 0.00$, $\tau = 0.00$, $H = 0.3$ ($P = .94$), $I^2 = 0%$

Influenza-Like Illness in Patients


Study or Subgroup	Intervention	Control	Total	Total Weight	M, Random, 95% CI	Year	Risk Ratio
Pattar 1997	450	450	900	6.8%	0.61 [0.20, 1.83]	1997	
Hayward 2006	1269	1323	2592	51.2%	0.55 [0.28, 1.08]	2006	
Lambert 2009	1732	1878	3610	42.0%	0.68 [0.31, 1.50]	2009	
Total (95% CI)	3481	3651	7132	100.0%	0.58 [0.46, 0.73]		↓42%

Intervention: Vaccination
Control: No vaccination
Test for overall effect: $Z = 4.68$ ($P < .0001$)
Test for heterogeneity: $I^2 = 0.00$, $\tau^2 = 0.00$, $\tau = 0.00$, $H = 0.2$ ($P = .92$), $I^2 = 0%$

Ahmed F, et al. CID 2014 

HCP Vaccination Mandates Nationwide: A growing trend


- >300 facilities nationwide enforce mandatory HCP vaccination
- Scientific evidence indicates mandating vaccination increases HCP vaccination rates
- Professional societies support mandatory HCP vaccination:
 - Infectious Disease Society of America
 - Association of Professionals in Infection Control and Epidemiology
 - Society for Healthcare Epidemiology of America
 - American College of Physicians
 - American Hospital Association
 - American Public Health Association

IDSA, APIC, SHEA, ACP, AHA, APHA 

Supporting Rationale for Mandating Influenza Vaccination among HCP

- Unvaccinated HCP can transmit flu to other HCP and patients
 - Up to 25% of HCP are infected with flu each season
- HCP with influenza may shed virus 1 day prior to symptom onset
- 46% of HCP continue to work with influenza like symptoms
- Asymptomatic HCP can spread influenza unknowingly
- Effective in reducing absenteeism among HCP

Carman WF, et al. Lancet 2000




7

Our current approach for HCP vaccination is not working

- 2011-12 influenza season: 1 in 3 HCP not vaccinated
- LAC HCP vaccination rates in 2011-12: 22-97%
- CA Senate Bill 739 (2007)
 - Provided free influenza vaccination
 - Required written declination
 - Prompted public-reporting of HCP vaccination rates
- Evaluation of SB 739 showed little impact on % HCP who declined vaccination


MMWR 2012



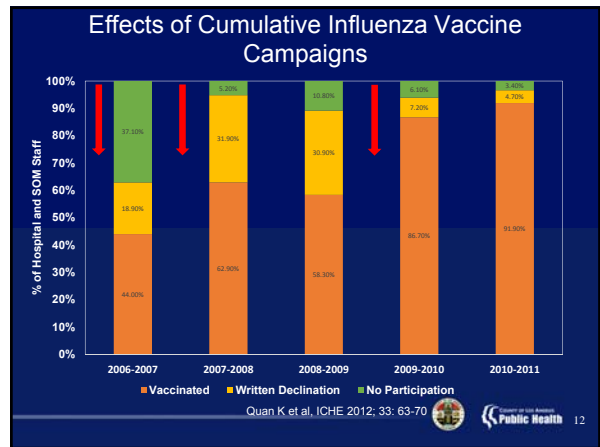
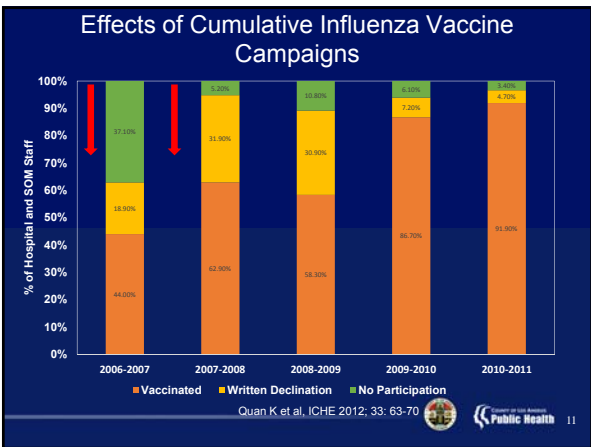
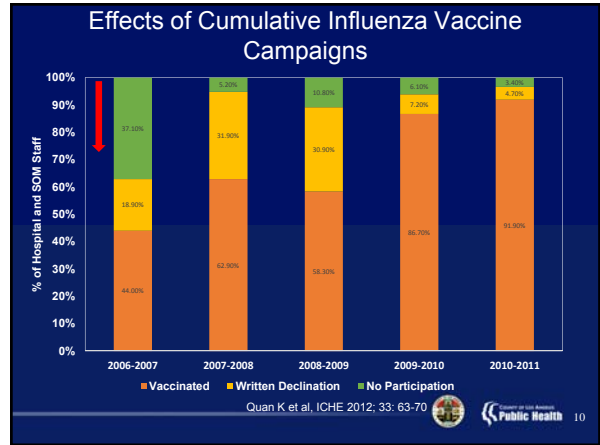
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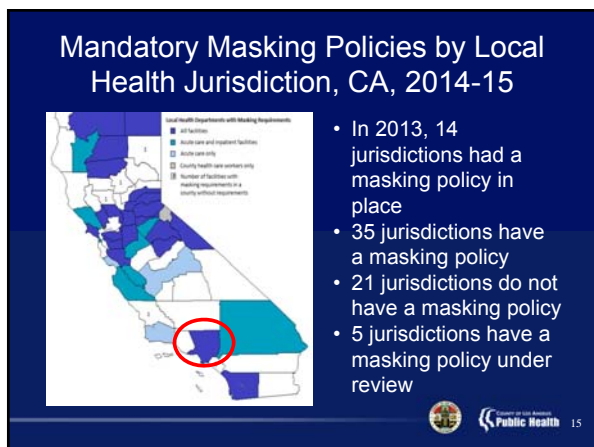
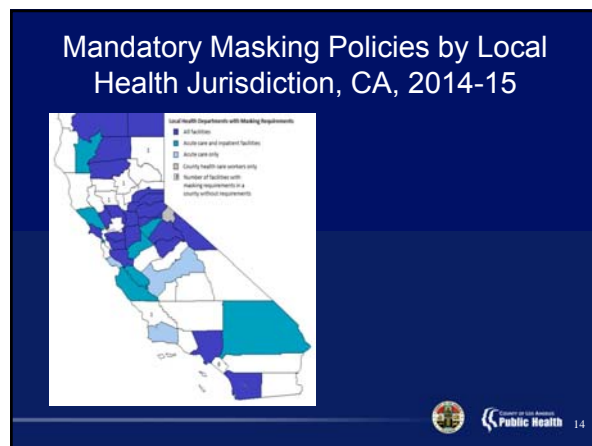
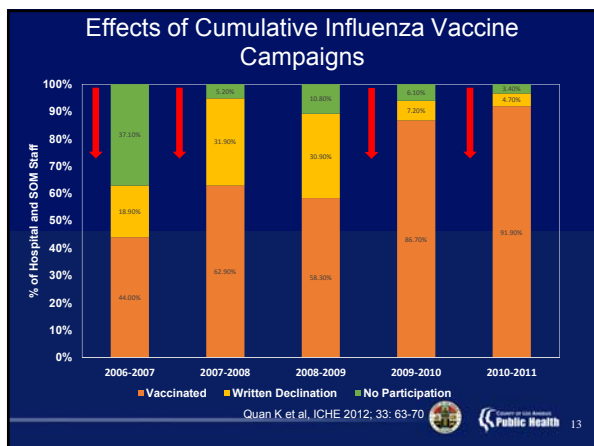
Infection Preventionist Request and Challenges

- IPs asked for the Department of Public Health to mandate healthcare personnel vaccination
- Vaccination impact on nurses and union push back
- Evaluate what might happen if you do this in your jurisdiction
- Address these opportunities and challenges in focus groups ahead of time



9





Health Officer Order

- October 2, 2013
- Under California Health and Safety Code § 120175
- Covers 99 acute care facilities in Los Angeles County
- ORDER:** Every licensed acute care hospital, skilled nursing facility, and intermediate care facility within the County of Los Angeles public health jurisdiction to implement a program under which healthcare personnel at such facility receive an annual influenza vaccination for the current season or wear a mask for the duration of the influenza season while in contact with patients or working in patient-care areas.

Who is covered?


- “Health care personnel” = all persons including paid and unpaid employees, contractors, students, and volunteers, who work in areas where patient care is provided in a licensed facility subject to this Order or who otherwise have direct contact with patients at such a facility.

How long does the order last?

- Applies each influenza season, unless rescinded
- November 1 of one year -March 31 of the following year
- Timeframe may change if surveillance data demonstrate that the influenza season is different from November 1 to March 31


Evaluation Study Objectives

1. To assess the impact of HCP vaccination rates
2. To evaluate the incidence of nosocomial infections
3. To determine employee absenteeism
4. To understand difficulty related to health officer order implantation, acceptance, and resistance among HCP




Methodology

- Inclusion criteria: 94 LAC acute care facilities (excluding Pasadena and Long Beach)
 - 2 seasons pre-order, 1 season post-order
- Data sources:
 - CDPH HCP vaccination
 - Direct laboratory influenza testing results
 - Survey data from Infection Preventionists
 - Absenteeism data from HR directors / staff on employee sick leave




Data Available for Analysis

Data Type	No. of Facilities
Healthcare Personnel Vaccination Proportions	94
Infection Preventionist Completed Survey	52
Laboratory Director Line Lists Tracking All Positive Influenza Test Results (>72 hours from admission)	40
Completed Absenteeism Forms	38



Characteristics of Los Angeles County Acute Care Facilities (N=94)


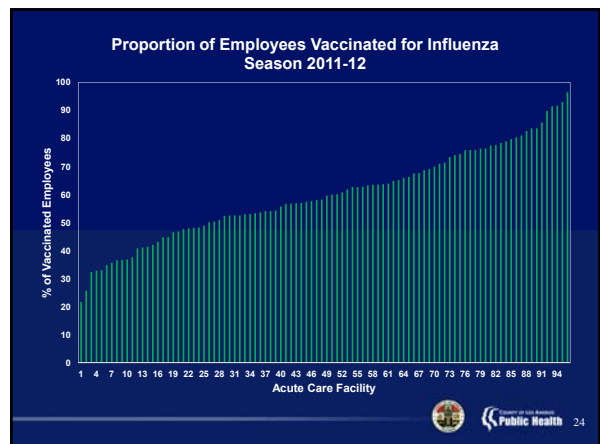
Variable	n	Range
Infection Preventionist Count (average)	2	1-12
Bed Capacity (average)	262	12-1260
Small (1-100 beds)	16	
Medium (101-350)	51	
Large (≥ 351)	27	
Residency Program (yes)	16	
Masking policy in place pre-order	31	

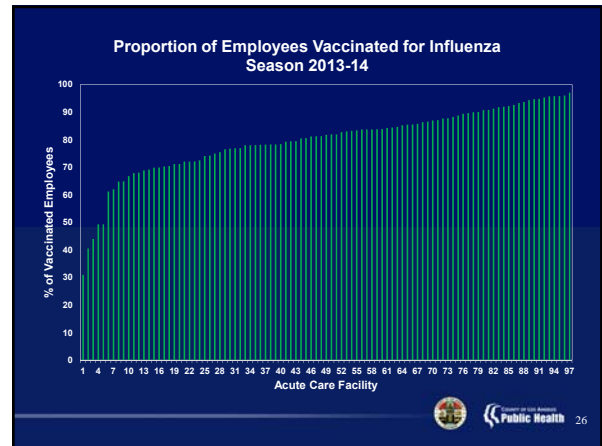
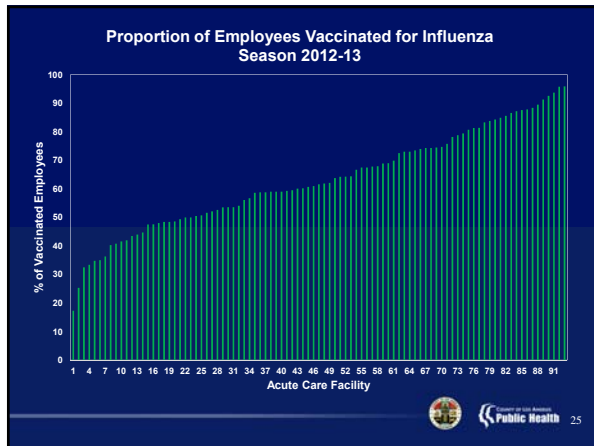


Healthcare Personnel Vaccination/ Masking Rates

Influenza Season	% of Employees Vaccinated	% of Employees who declined vaccination	% of Employees with an Unknown Vaccination Status
2011-2012 (n=97)	60	33	7
2012-2013 (n=94)	63	28	9
2013-2014 (n=97)	80	14	6

California Department of Public Health



Multivariate Associations with 2011-12 Employee Vaccination	
Variable	P value
IP Count	0.095
Prior Vaccination Policy Implemented	0.017
Multivariate Associations with 2012-13 Employee Vaccination	
Prior Vaccination Policy Implemented	0.018
Facility Size	0.068
Prior Vaccination Policy Implemented*Facility Size	0.027
Multivariate Associations with 2013-14 Employee Vaccination	
IP Count	0.013
Facility Size	0.044

Univariate Associations with the change in employee vaccination between seasons 2 and 3	
Variable	P value
Prior Vaccination Policy Implemented	0.011
2012-13 Employee Vaccination	<0.0001

- 2012-13 employee vaccination was the only significantly associated independent variable in the multivariate model

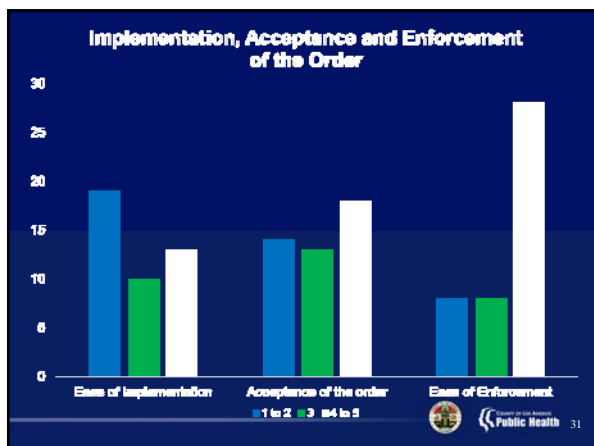
Increases in Nosocomial Influenza

Influenza Season	2011-12 Season 1	2012-13 Season 2	2013-14 Season 3
Number of Nosocomial Infections	7	33	39
% of Nosocomial Infections	1.3	2.6	4.4

Employee Absenteeism

Influenza Season	Average missed days per employee*
2011-2012	3.7
2012-2013	6.7
2013-2014	5.1

*Includes facilities with complete numerator and denominator data †(n=20)



Study Limitations

- All positive influenza test results were not reported by all labs that reported nosocomial infections
- Absenteeism reported differently across facilities
 - May include vacation time
 - May include employees without direct patient contact
- Limited participant responses and incomplete data
- Inherent variability between flu seasons creates challenges in analysis

32

Conclusions and Next Steps

- Health officer order increased vaccination rates
- In 2015-16, DPH is focusing prevention efforts on facilities with lower vaccination rates, smaller facilities, and those with fewer IPs
- DPH is continuing to monitor and measure HCP vaccination and implications
 - NHSN
 - Healthcare Outreach Unit nurses

33

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34

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35

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36