

Making the Case for Mandatory Health Care Worker Influenza Immunization

Paul Carson MD, FACP

NDSU NORTH DAKOTA
STATE UNIVERSITY

SANFORD[™]
HEALTH

an inconvenient truth

A GLOBAL WARNING



"It doesn't matter whether you're a Republican or Democrat, liberal or conservative... your mind will be changed in a nanosecond."

- Roger Friedman, FOXNEWS.com

7 Inconvenient Truths About Influenza Immunization



Truth #1:

The General Population Does Poorly at Getting Immunized, and We HCW's Aren't Much Better

Why Don't We Get Immunized?

- 1) Inconvenient
- 2) Don't believe it works
- 3) "I don't get sick"
- 4) "I got the vaccine once, and it gave me the flu"
- 5) "Jenny McCarthy says it gives kids autism"
 - Concerns about thimerosal (mercury)
- 6) Fear of side effects (e.g. Guillan-Barre)
- 7) "Had the vaccine last year, don't need it again"
- 8) "I'd rather take my chances with the flu, which usually isn't that bad"
- 9) Needle phobic

CDC Recommendations

- 1981 CDC recommends all HCW's receive annual influenza immunization
- Clinics and Hospitals since then have put out massive efforts to educate and encourage HCW immunization
 - Influenza blitzes, “Drive-By Shootings”, Education etc.

Trends in Influenza Immunization Coverage In HCWs and Adults > 65 yo

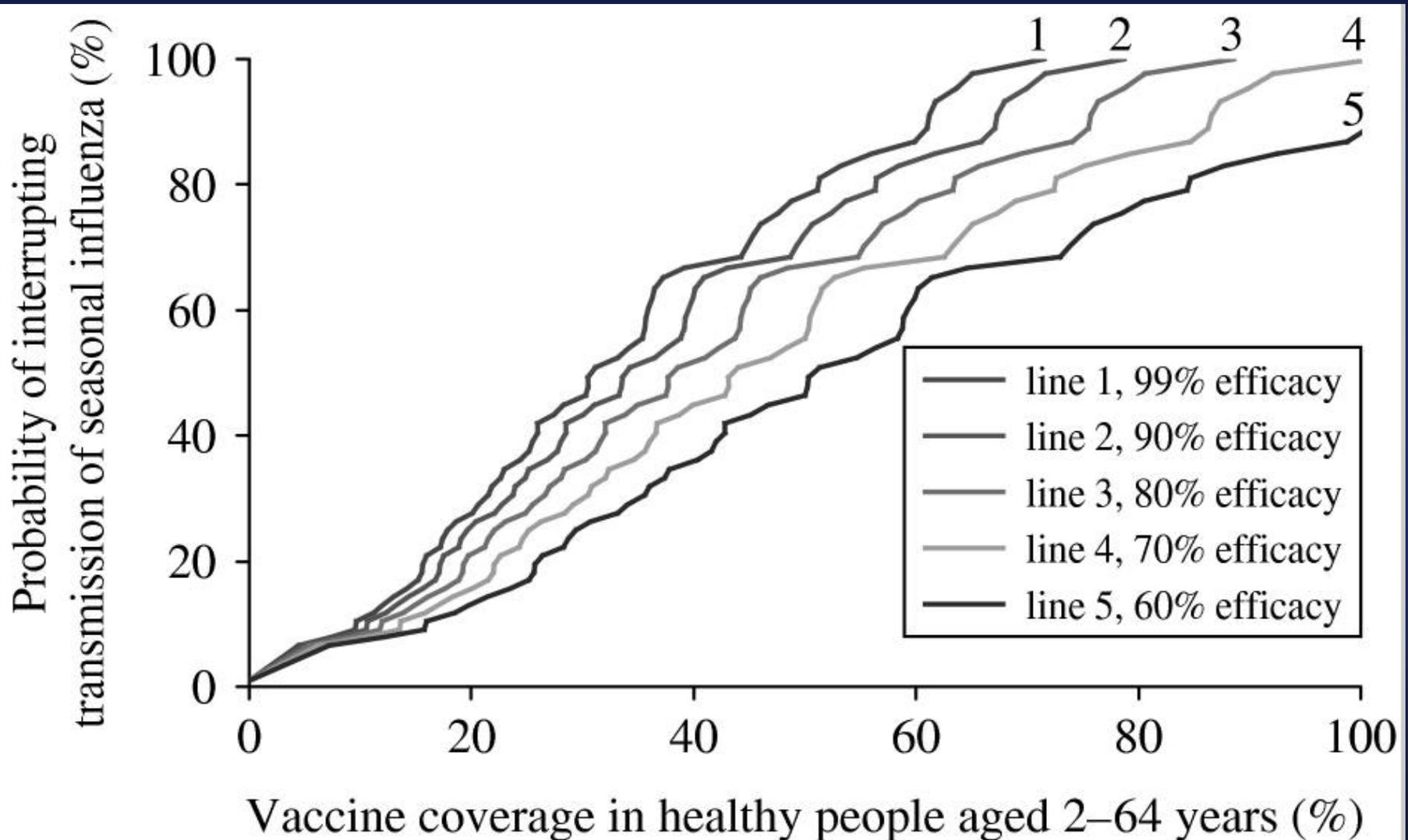


What You Need For “Herd Immunity”



~ 80-90% Immune

Mathematical Modeling of Percent Healthy People Needing Immunization to Disrupt Transmission



Relative Impact of Various Strategies on Health Care Worker Influenza Vaccination Coverage.

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

NOTE. NS, nonsignificant.

^a Rate from nonintervention arm of concurrent randomized trial of intervention.

Weinstein R A , Talbot T R Clin Infect Dis. 2009;49:773-779

Job Title	Percent Vaccinated 2007	Percent Vaccinated 2008	Percent Vaccinated 2009
MD	59%	58%	51%
EP MD's	55%	42%	50%
MPP's	70%	77%	84%
Patient Care Manager	71%	57%	67%
RN Inpatient	47%	63%	54%
LPN Inpatient	45%	48%	52%
RN Extended Schedule	71%	66%	62%
LPN Extended Schedule	50%	71%	44%
RN Ambulatory Lead	70%	78%	58%
RN Ambulatory	58%	70%	50%
LPN Ambulatory	61%	81%	54%
CNA	38%	44%	34%
NP	63%	64%	51%
PA	65%	72%	58%
RT	38%	43%	47%
OT	44%	47%	54%
Speech	55%	76%	64%
Clinical Dietician	72%	32%	54%
CRNA	56%	49%	45%
Receptionists	57%	75%	53%
Rad Techs	64%	63%	51%
MCHS	62%	60%	55%

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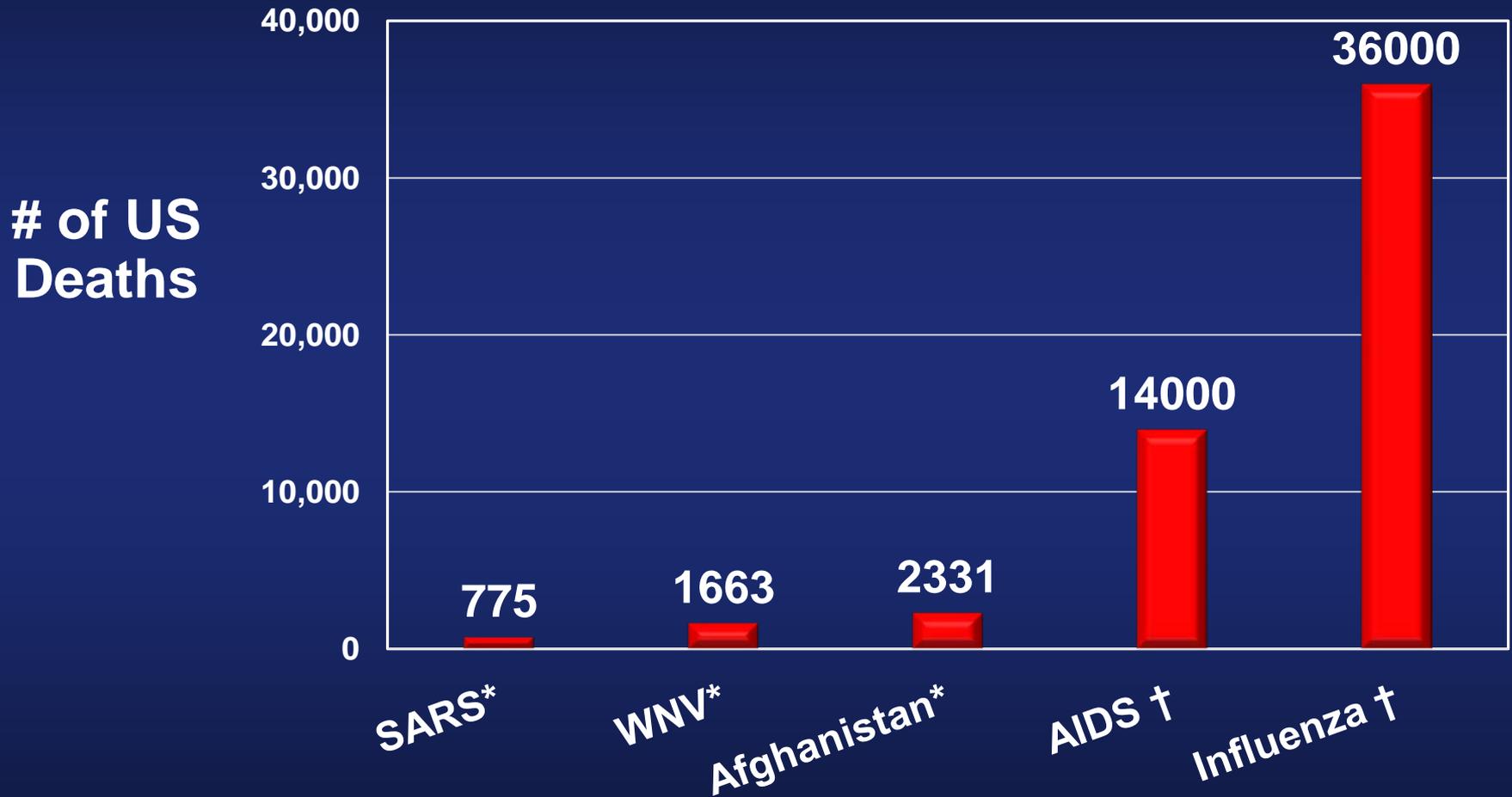
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Truth #2:

Influenza is a Killer Virus

Influenza In Perspective



* Entire epidemic

† Annual

Influenza Mortality

- Annual mortality ~ same as breast cancer
- Related to 1/20 deaths among Americans older than 65
- 1/10,000 Americans will die this winter from influenza
- Estimated direct costs to health care system annually in U.S. - \$3-5 billion
- Disproportionately affects elderly, very young, and those with chronic diseases (exactly those people we hang out with all day)

Case of Pregnant Mother in ICU

- 23 yr old mother of 1, 38th week of pregnancy
- Admitted to Sanford, Oct. 2009 with rapidly progressive severe pneumonia
- Only test positive was for H1N1 influenza
- Intubated and developed severe ARDS
- Near maximal ventilatory and vasopressor support
- Baby taken early by C-section in hopes of saving mother's life
- On ventilator ~ 10 days

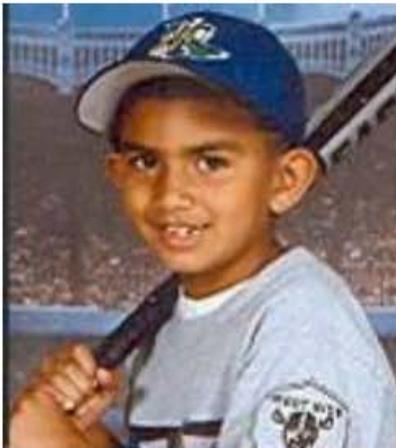


Barry, a veteran fire-fighter, died at age 44 yrs from influenza

Why do we immunize against influenza?



Breanne, died at age 15 mos from influenza complications



Lucio, died at age 8 yrs from influenza complications



Alana, died at age 5½ yrs from influenza



Amanda, died at age 4½ yrs from influenza

Courtesy of Families Fighting Flu

Truth #3:

HCW's Frequently Get Influenza
and Spread it to Their Patients

Influenza in HCW's

- Cross sectional study of housestaff
- 37% reported ILI during an 8 month period
- 9% had more than 1 illness
- Illness duration averaged 7 days
- Missed work averaged 0.7 days
- ILI was common in healthy resident physicians, and most continued to work most of the days of their sx's

HCW Compliance in a NICU

- U.S. NICU study found staff immunization rates of 15-20%
- 76% of employees who reported flu-like symptoms during study period continued to care for patients

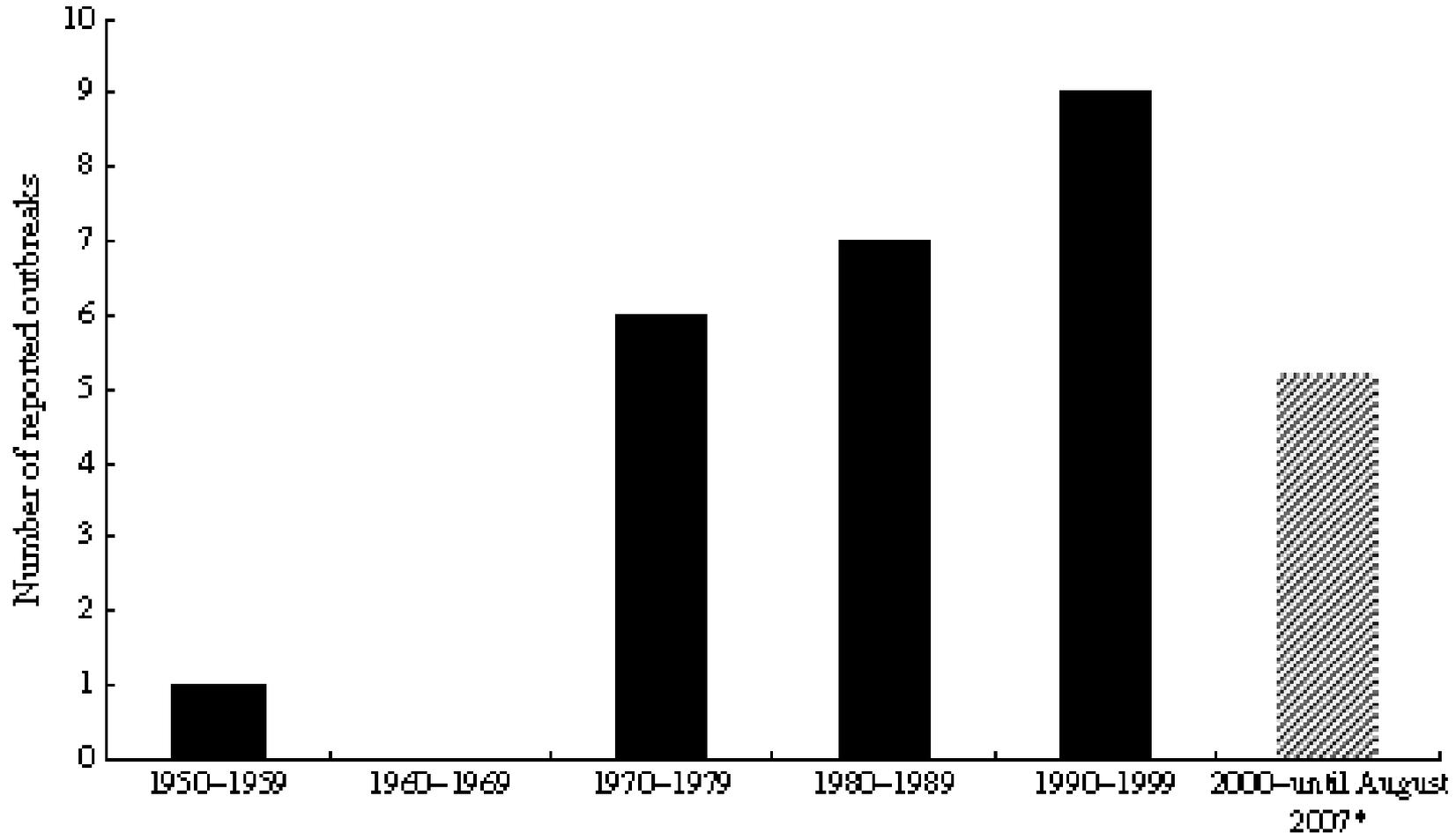
HCW's and Influenza

- Numerous reports in medical literature of outbreaks of influenza in hospital settings presumed due to spread from HCW's
 - Examples
 - McMaster Univ NICU outbreak
 - Memorial Sloan-Kettering BM Tx Unit
 - Pediatric ward outbreak 2009

Risk of Nosocomial Influenza in Lyon France 2004-2007

- Daily observation for ILI in 36 short stay units of 1100 bed Univ Hospital
- 64 cases of HA-ILI during observation period
- Assessed risk per exposure to others with ILI
- Relative Risk
 - Exposure to another patient - 4.8
 - Exposure to a HCW - 12.3

Number of Nosocomial Influenza Outbreaks Reported by Decade



Influenza in HCW's

- Serosurvey of HCW's in Baltimore Hospital system
- After mild season, 23% of workers showed laboratory evidence of having had infection
 - 59% could not recall any influenza like illness
 - 28% could not recall any respiratory illness
- Asymptomatic or minimally symptomatic infection is common!

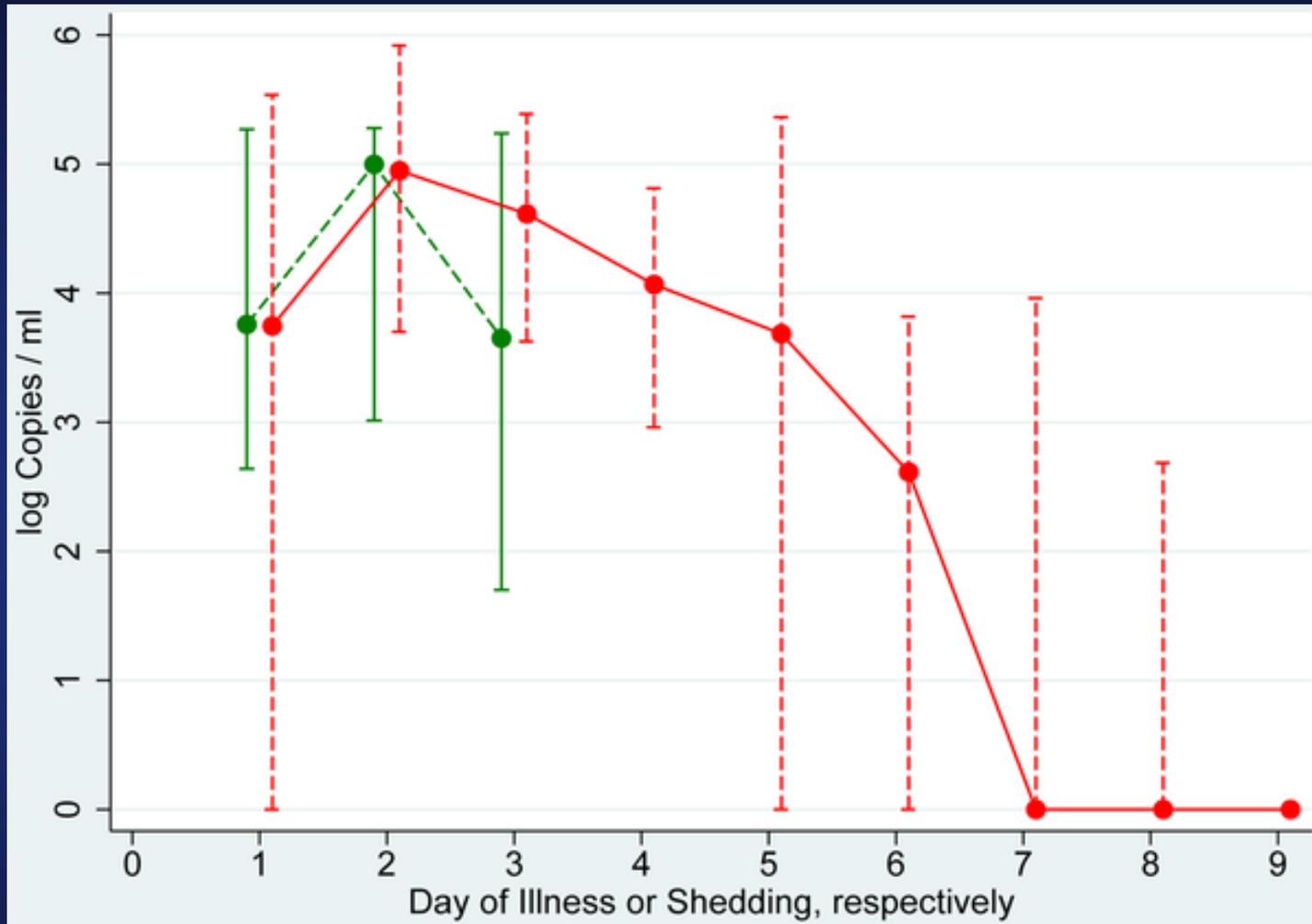
Asymptomatic Infection with Influenza

- German study of 122 patients with newly diagnosed influenza
- Followed them and all household contacts daily with RT-PCR and viral cultures, minimum 8 days

FINDINGS:

- 21% of adults acquired infection by culture or PCR, and **never developed symptoms**
- 30% of secondary cases had **high viral loads on the day prior** to the first day of symptoms

Median Influenza Viral Load in 6 Asymptomatic Household Contacts



Suess T, Remschmidt C, Schink SB, Schweiger B, et al. (2012) Comparison of Shedding Characteristics of Seasonal Influenza Virus (Sub)Types and Influenza A(H1N1)pdm09; Germany, 2007–2011. PLoS ONE 7(12): e51653. doi:10.1371/journal.pone.0051653
<http://www.plosone.org/article/info:doi/10.1371/journal.pone.0051653>

Truth #4:

HCW Influenza Immunization
Protects Both Worker and Patient

Meta-Analysis of TIV Vaccine Efficacy in Adults 18-64

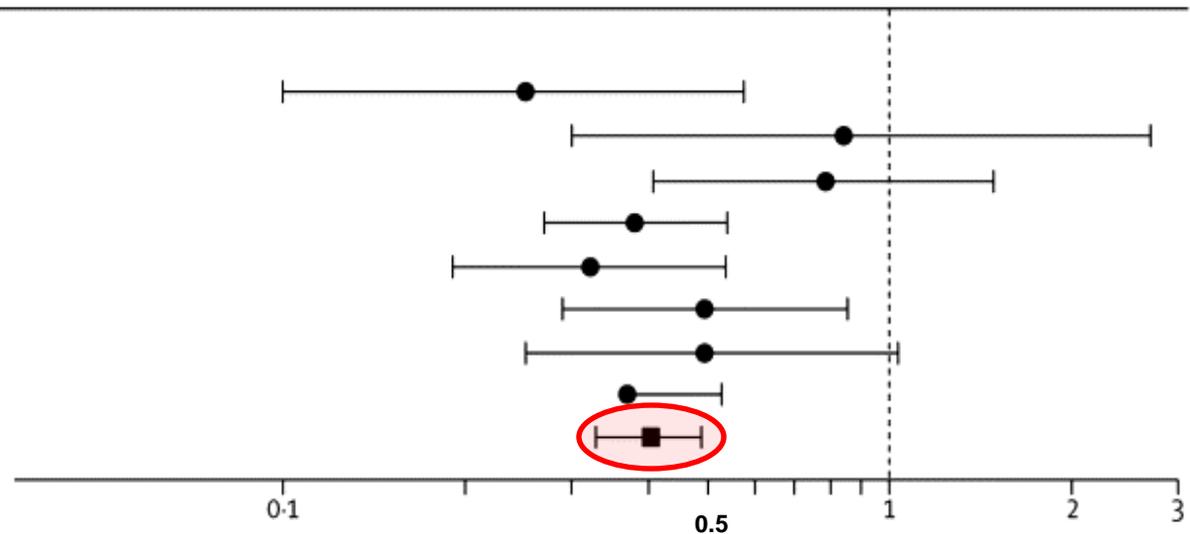
Figure 5: Efficacy of influenza vaccine in healthy adults

59% reduction in PCR confirmed, symptomatic influenza infection (95%CI 51-67%)

Treatment group (n/N) Control group (n/N)

A

	Treatment group (n/N)	Control group (n/N)
Ohmit (2006) ²⁴	10/522	16/206
Ohmit (2008) ²⁵	13/867	6/338
Beran (2009) ²⁶	28/4137	18/2066
Beran (2009) ²⁷	63/5103	82/2549
Monto (2009) ²⁸	28/813	35/325
Jackson (2010) ²¹	19/1706	38/1725
Jackson (2010) ²¹	11/2011	22/2043
Frey (2010) ²⁹	49/3638	140/3843
Pooled	221/18 797	357/13 095



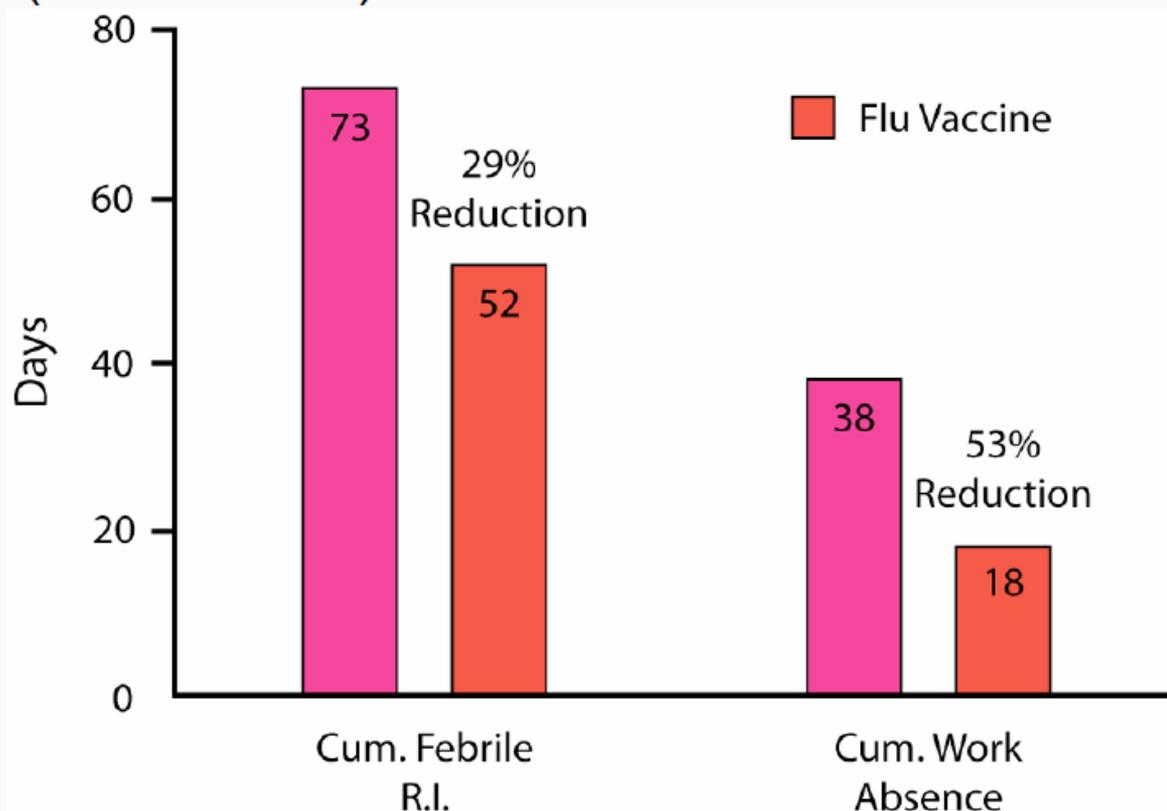
Osterholm Lancet ID 2012;12:36

Influenza Vaccination in Healthy Workers

- 50-80% reduction in laboratory confirmed influenza
- 25% reduction in URI's
- 44% fewer doctor visits
- 43% fewer sick days off
- Employers save in absenteeism ~\$2.58 for every dollar spent on influenza immunization programs

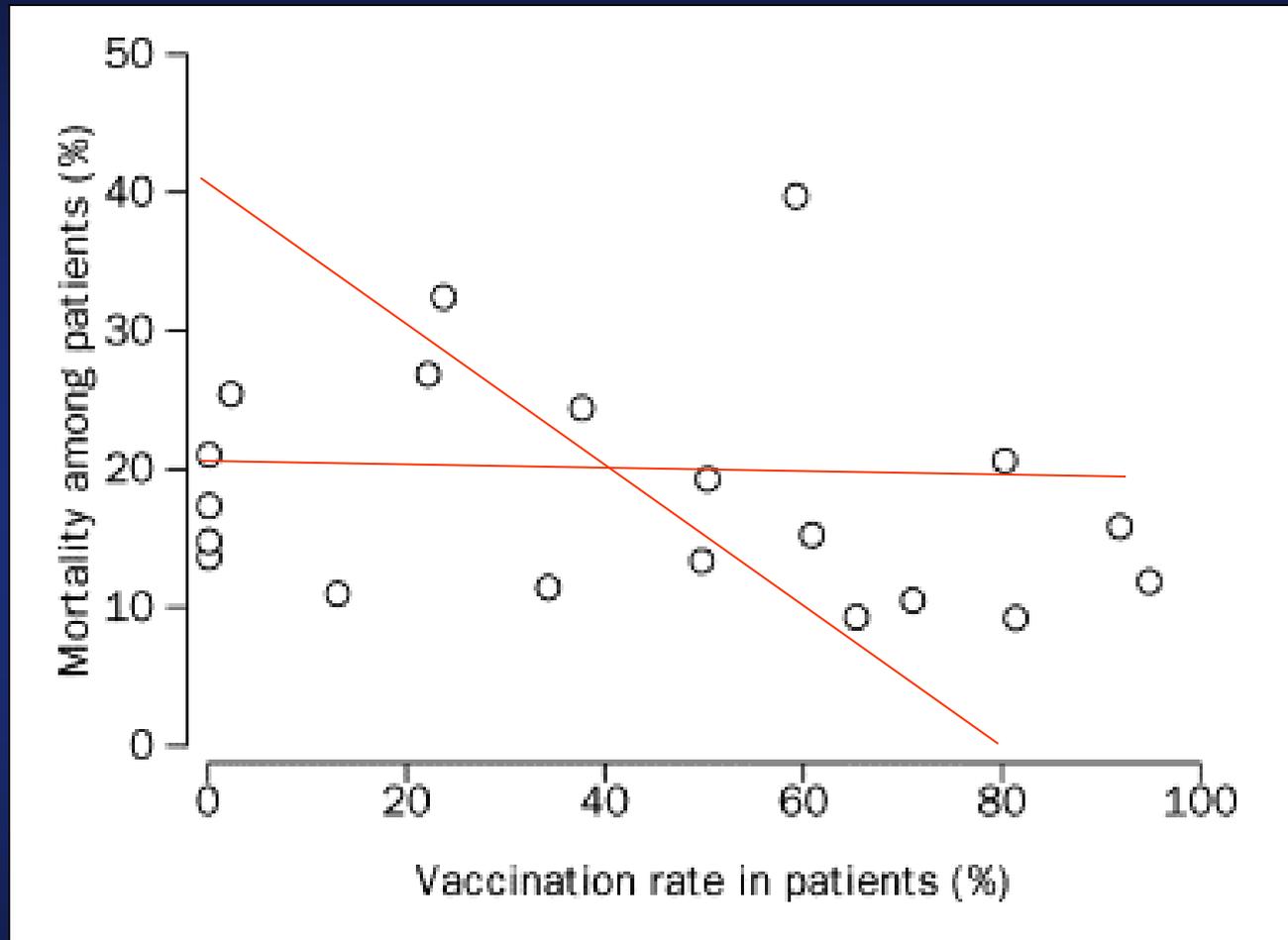
Effect of Flu Vaccine in Hospital Staff

- 264 Johns Hopkins Medical Institutions staff, 364 person-winters (1994–1997)



Difference ~ 11 days/100 vaccinees
Adapted by CTLT from Wilds, Steinhoff et al.
JAMA 1999;281:908

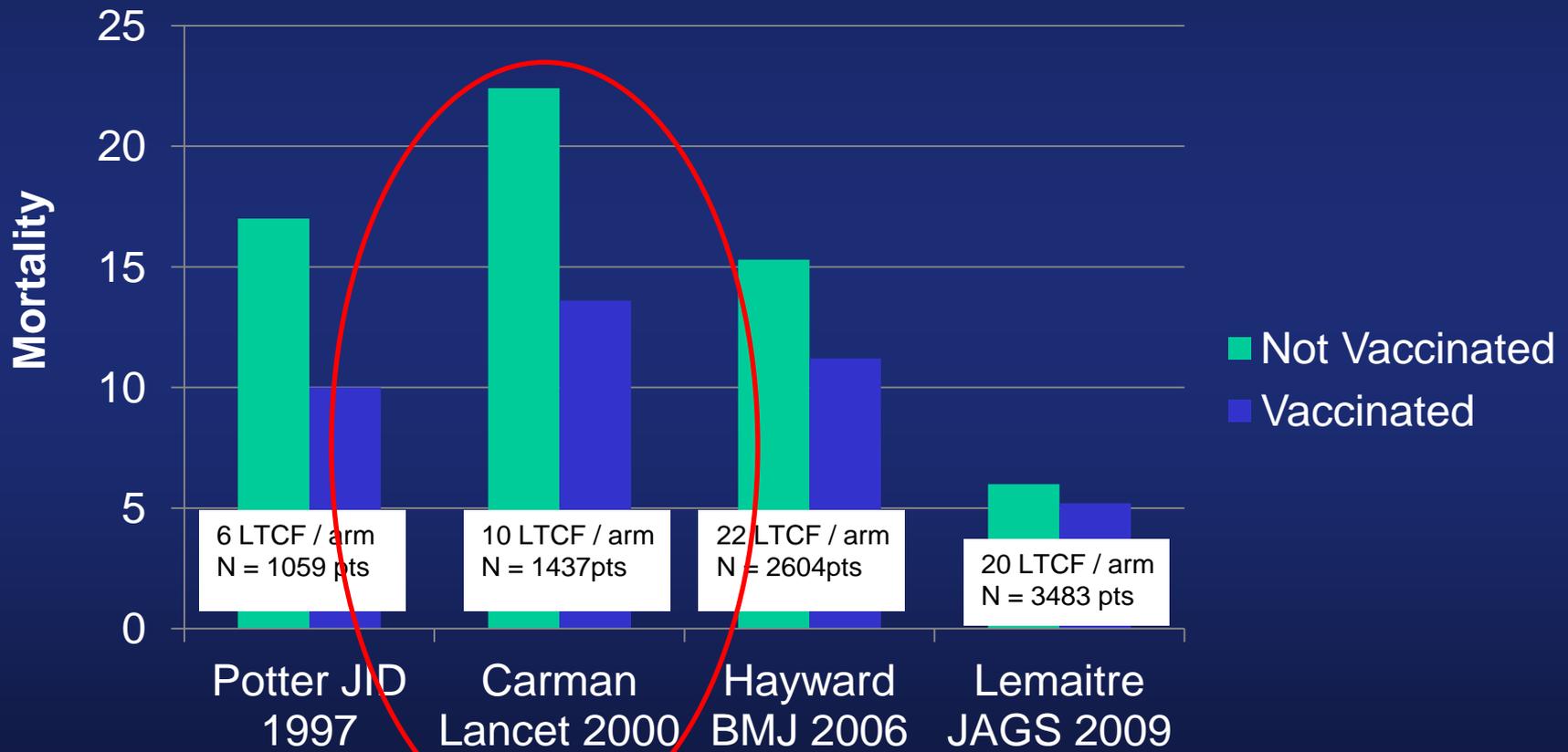
Scottish Nursing Home Study



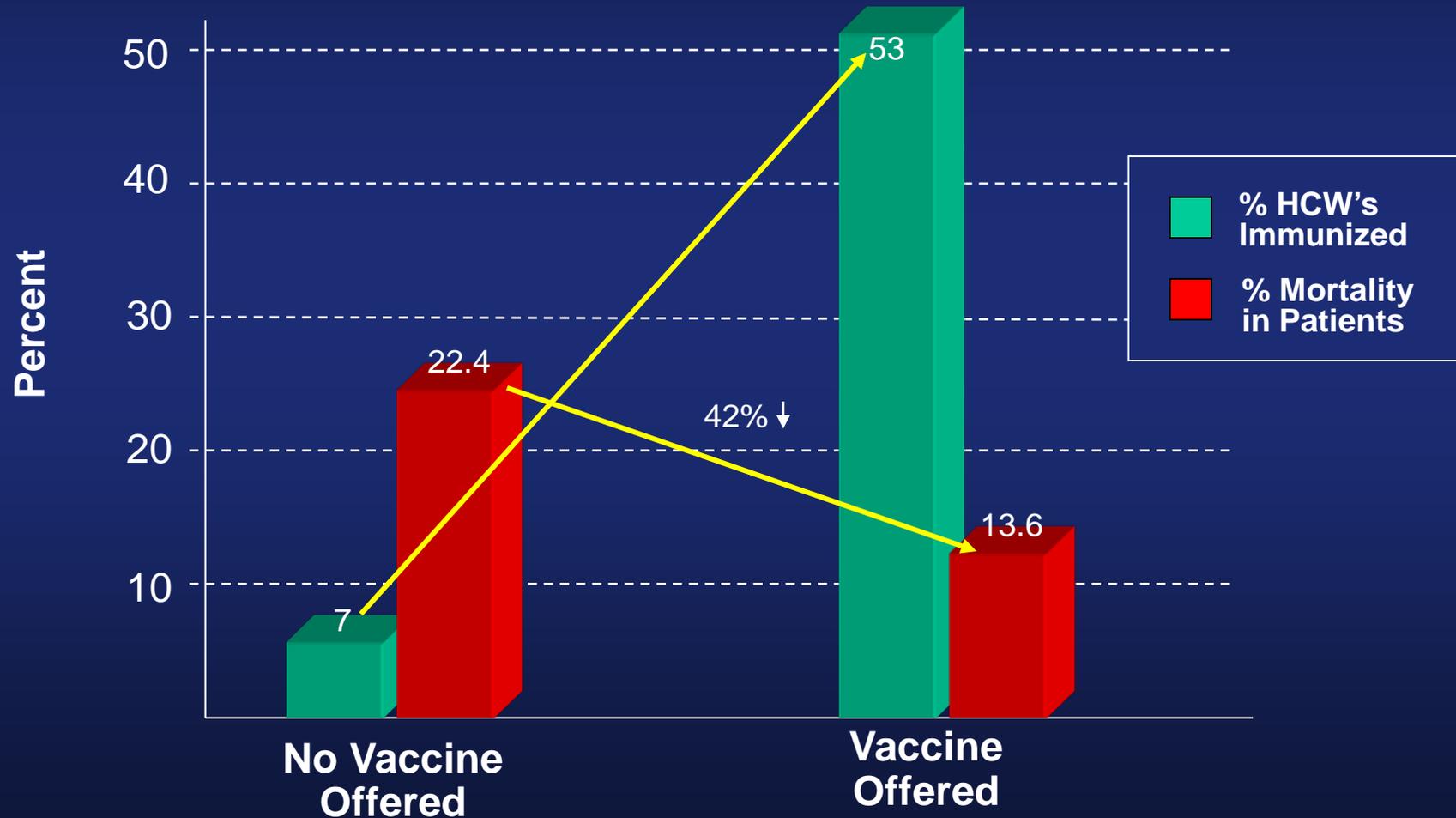
Carman WF. Lancet 2000.

What Effect Does
Immunizing HCWs Have
on Patient Outcomes?

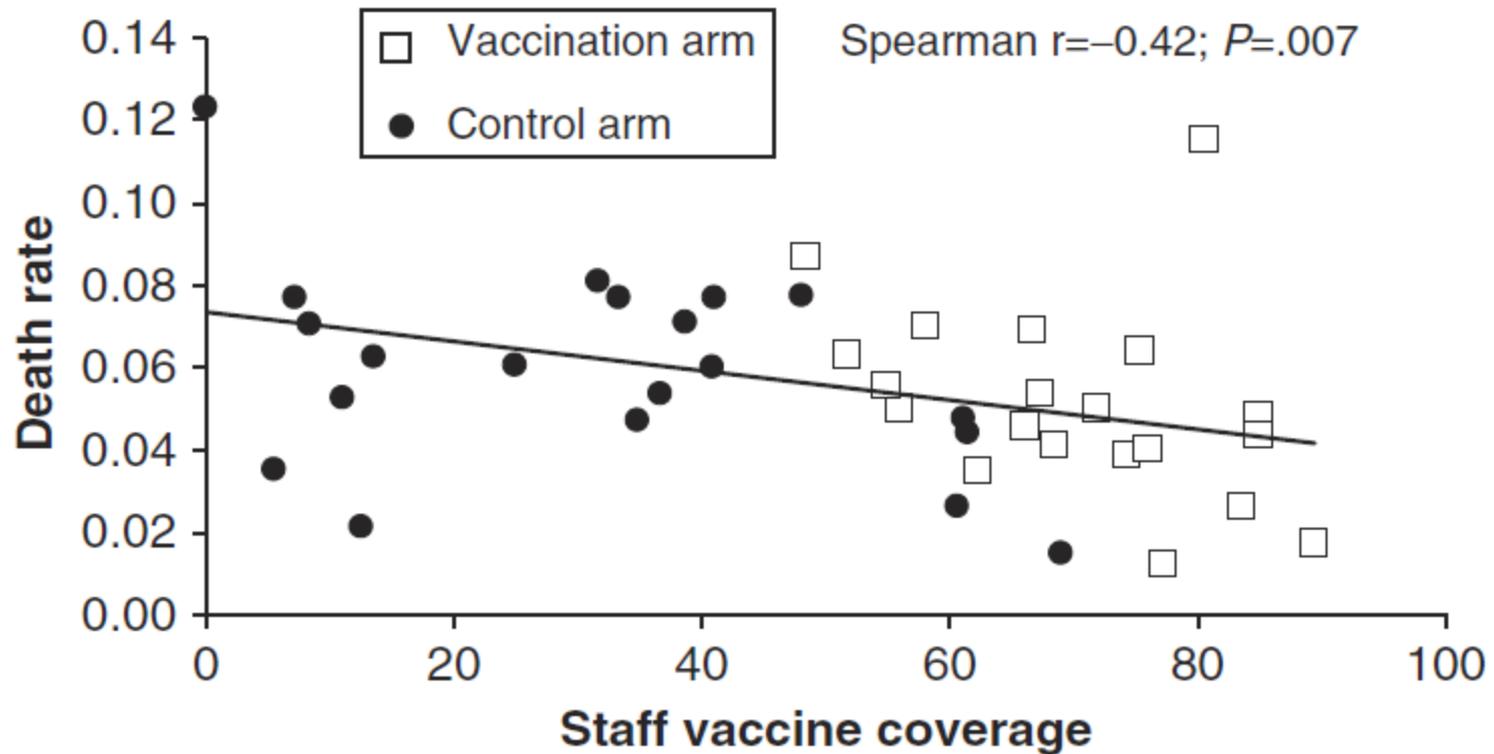
Impact of HCW Vaccination on Patient Mortality



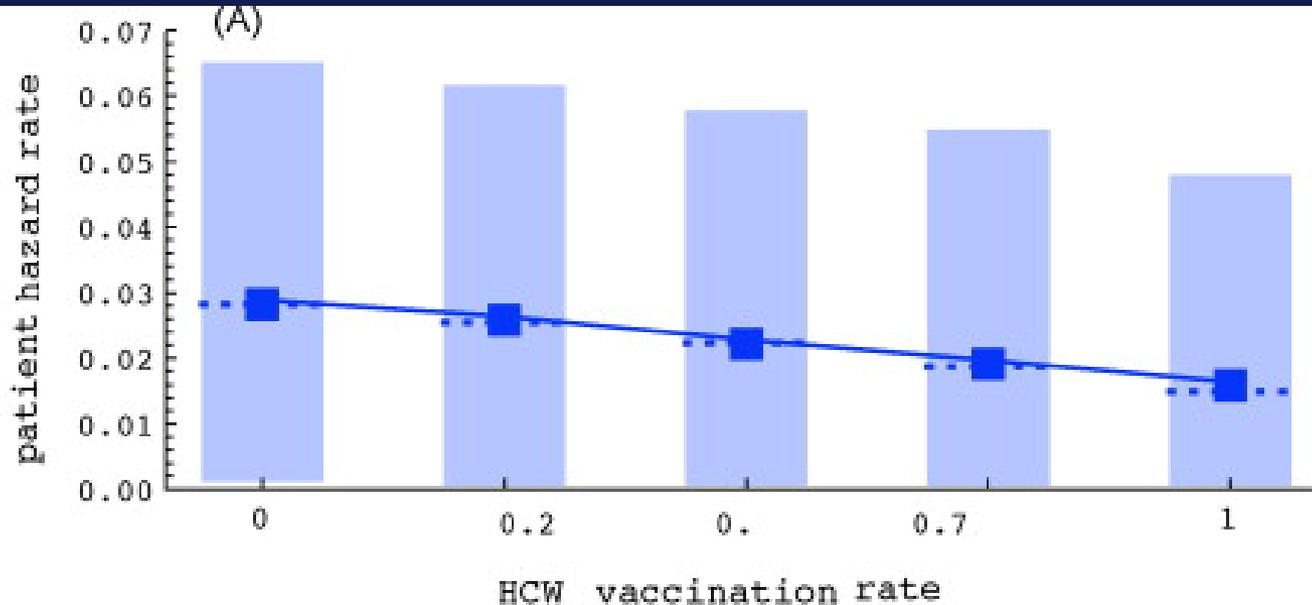
HCW Immunization Rates and Patient Mortality in Scottish NH's



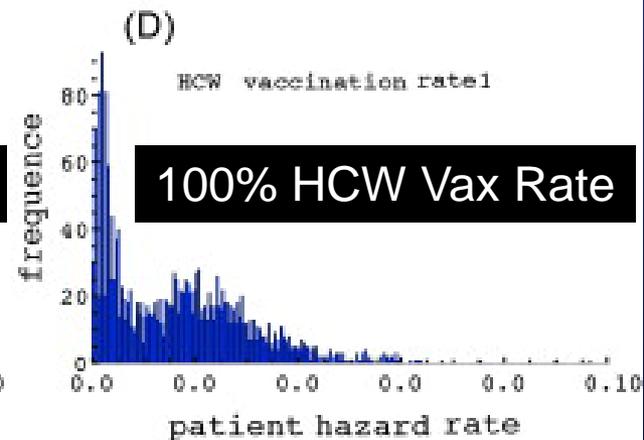
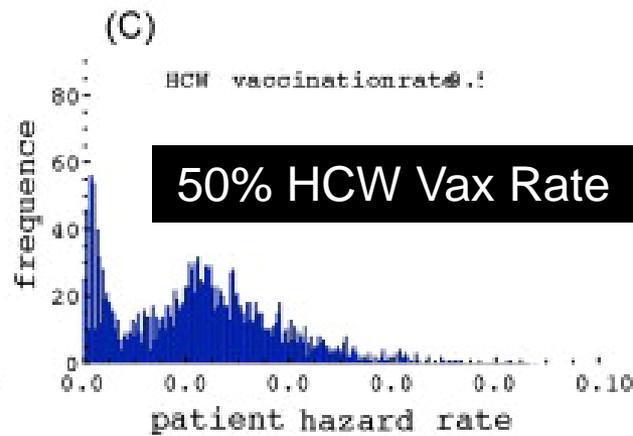
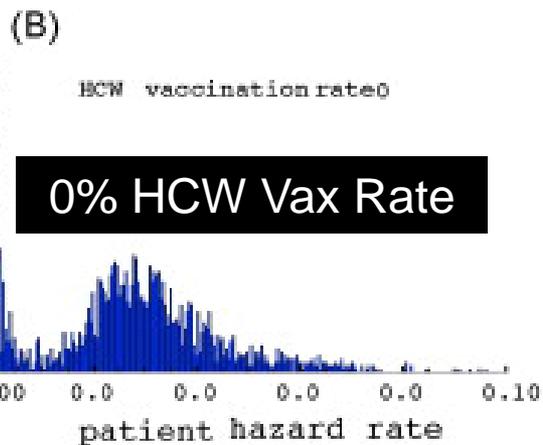
Significantly Lowered All Cause Mortality Correlated with Higher HCP Vaccination Rates in RCT of 40 NHs



Acute Care Model



Vaccination of 100% HCWs reduced pt risk by 43%



Effect of HCW Influenza Immunization on Nosocomial Influenza Rates

Observational
study at the Univ
of Virginia over 13
seasons

Salgado. ICHE 2004

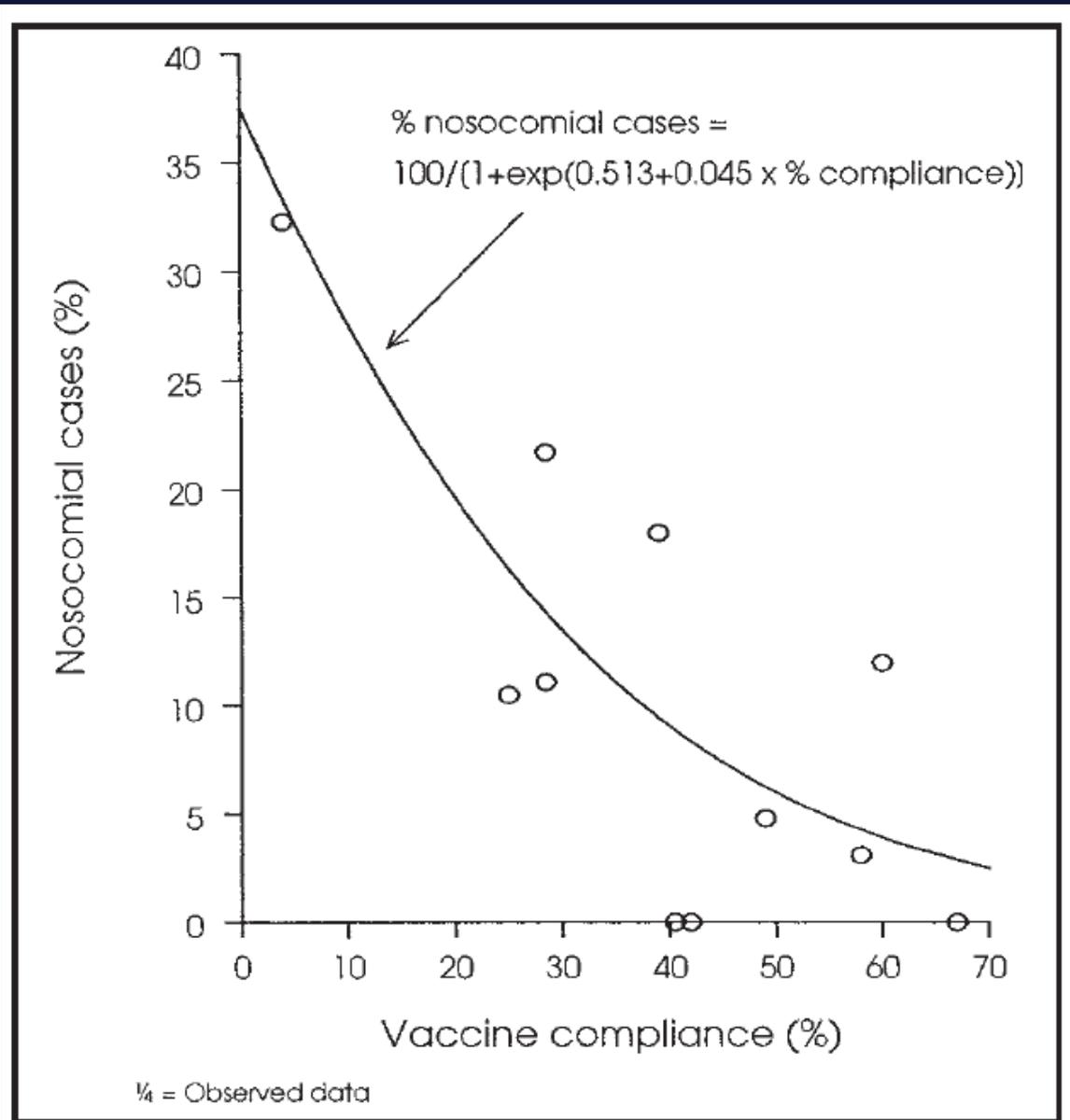


FIGURE 4. Estimated logistic regression model of the predicted proportion of influenza cases that were nosocomial among patients based on health-care worker vaccine compliance.

Truth #5:

Influenza Immunization is Safe

Influenza Vaccine Side Effects

- 100s of millions of doses given in U.S. for over 50 years
- Up to 2/3 may have pain at injection site
 - typically < 2 days
- Fever, muscle aches, fatigue occasionally in young children. No difference c/w placebo in adults
- Egg allergy reactions – rare
- Rare reports of red eyes, hoarseness, cough that usu resolves within 1-2 days

Influenza Vaccine and Guillain-Barre' Syndrome

- Background is 1-2 / 100,000 people / yr develop GBS
- 1976 Swine Flu vaccine – 2-3/100,000
- Since then, numerous studies show no association
 - 2 studies identified ~1 additional GBS case per million vaccinees
 - By contrast, 750 per million adults are hospitalized with seasonal influenza per year
 - Of note: Patients with prior non-vaccine associated GBS have a higher risk of recurrence from influenza than from the vaccine

What About Thimerosal?

- Mercury preservative put in the multi-dose vaccine vials
- No vaccines for children under 6 contain thimerosal
- Amounts of mercury in thimerosal containing vaccines fall well below all accepted standards for mercury exposure
- Long track record of safety and efficacy
- Several recent well designed, large studies have shown no association with autism, ADD, or neurodevelopmental diseases and thimerosal
- Study of 2000 pregnant women demonstrated no adverse fetal effects associated with influenza vaccine

Amount of Mercury in Thimerosal Preservative

- One oz of swordfish - 28 mcg
- One oz of red snapper - 17 mcg
- One can of Tuna - 29 mcg

- One dose of influenza vaccine - < 1 mcg

Methyl-Mercury vs Ethyl-Mercury

Truth #6:

Mandatory immunization for HCW's is now recommended by the IDSA, ACP, SHEA, National Patient Safety Foundation, Dept. of Defense, AAP, National Foundation for Infectious Diseases, and is being considered by some state legislatures

- Dozens of major health care systems and 100's of hospitals have now adopted this policy (e.g. Virginia Mason, BJC, HCA, and locally... Altru, Medcenter 1, Sanford Health)

Consumer Organizations Now Scrutinizing HC Systems on Their Performance



September 2, 2010

**Report Finds That Only Half of California Hospital Workers Got Flu Vaccine
Consumers Union Releases Analysis Based on Data Obtained From the
Department of Public Health Through Public Records Act Request**

Truth #7:

Mandating HCW Immunization Works

Efficacy of Mandates

- Virginia Mason in Seattle went from 56% to 96% immunization rate after mandate in 2005
- BJC HealthCare in St. Louis achieved 98.4% immunization of 26,000 employees in 2008
 - 1.3% medical exemption
 - 0.3% had religious exemption

The Sanford Experience - Issues

- All workers or just those with direct patient exposure?
- How to implement medical exemptions?
- How to implement religious exemptions?
- Is a philosophical objection the same thing as a religious exemption?
- What to do with HCWs who meet an exemption or refuse without an accepted exemption?

Why Not Mandate?

- Contrary to personal autonomy
- Coercion could affect morale
- Vaccine is not without personal risk
- Legal question of authority to mandate

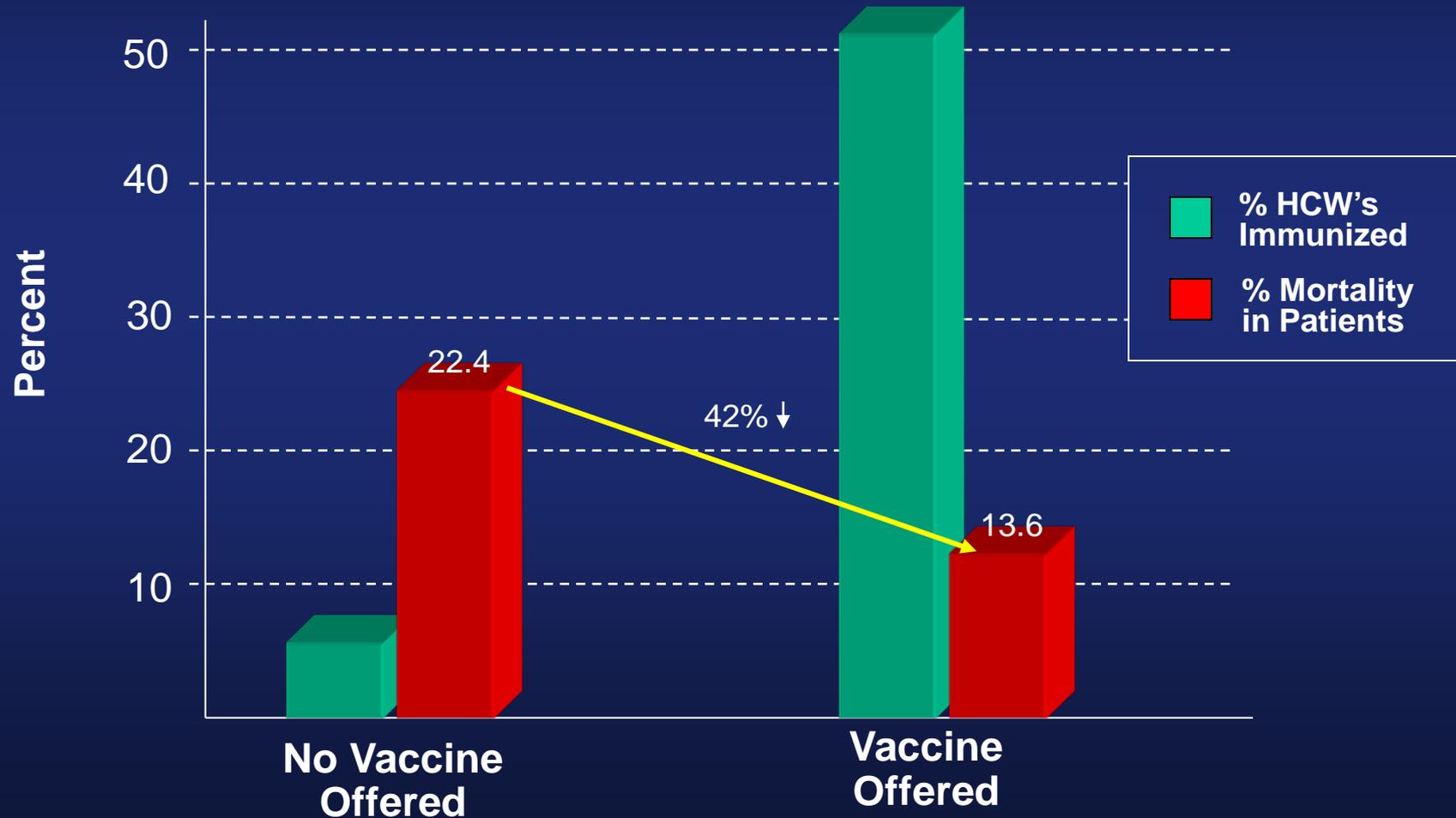
Legality of Mandates

- Longstanding precedent for government mandates
 - Jacobson v Massachusetts, 1905, smallpox
 - School entry mandates for immunization
- Employer precedent
 - Doctrine of “employment at will”
 - Exception is collective bargaining agreements

Personal Risk

- Risk from influenza vaccine is very small
- HCW's assume certain degree of risk in the care of patients
 - exposure to contagious diseases
 - needlestick injuries and exposure to blood-borne pathogens
 - airborne pathogens like TB, Varicella, Pertussis
 - radiation exposure

HCW Immunization Rates and Patient Mortality in Scottish NH's



Why Don't We Get Immunized?

- 1) Inconvenient
- 2) Don't believe it works
- 3) "I don't get sick"
- 4) "I got the vaccine once, and it gave me the flu"
- 5) "Jenny McCarthy says it gives kids autism"
- Concerns about thimerosal (mercury)
- 6) Fear of side effects (e.g. Guillain-Barre')
- 7) "Had the vaccine last year, don't need it again"
- 8) "I'd rather take my chances with the flu, which usually isn't that bad"
- 9) Needle phobic

“The Patient Comes First”



The next time the pregnant woman who spent 2 weeks in our ICU and nearly lost her baby and her life, comes to our hospital or clinic for care, and asks if we have been immunized, which of those excuses for not getting immunized will sound reasonable to her?

“The only purpose for which power can be rightfully exercised over any member of a civilized community, against his will, is to prevent harm to others”

John Stuart Mill
British Philosopher

Type your question in the chat window to the right

After the presentation, questions may be sent to:

Molly Howell

mahowell@nd.gov

Abbi Pierce

apierce@nd.gov

Amy Schwartz

amschwartz@nd.gov

Mary Woinarowicz

mary.woinarowicz@nd.gov

Miranda Baumgartner

mlbaumgartner@nd.gov

Rahel Gemmeda

rgemmeda@nd.gov

Immunization Program : 701.328.3386 or toll-free 800.472.2180

Post- Test

- Post-test
- Nurses interested in continuing education credit, visit <http://www.ndhealth.gov/disease/post/default.aspx?PostID=62>
- Successfully complete the four-question posttest to receive your certificate
- Credit for this session available until Tuesday, November 11, 2014
- This presentation will be posted to our website: www.ndhealth.gov/immunize