

Mandatory Influenza Vaccination and HIV Testing for Health Care Workers

Prof Marc Blockman
SA HIV Clinicians Society

April 2016

Conflict of interest: Lots

HPCSA ETHICAL RULES

Health care practitioners cannot be obliged to disclose their HIV status to an employer nor may any health care practitioner be unfairly discriminated against or dismissed as a result of his or her HIV status.

11.2 Health care practitioners are expected to be aware of the benefits of voluntary HIV testing and are encouraged to consider VCT. Where the health care practitioner tests positive for HIV, they should attend further counselling.

11.3 Restrictions that cannot be scientifically justified, should not be imposed on HIV positive health care practitioners.

11.4 Universal precautions should always be used when undertaking invasive procedures in order to minimise transmission from health practitioners to patients.

11.5 Patients should be made aware by health care practitioners that HIV infection can affect everybody including health care practitioners

THE VANCOUVER SUN

Hospitals should make flu shots mandatory for health-care workers, journal says

BY HELEN BRANSWELL*, THE CANADIAN PRESS OCTOBER 30, 2012

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STORY

PHOTOS (1)

TORONTO - The Canadian Medical Association Journal has added its voice to calls for mandatory flu shots for health-care workers.



Ron Davis, a Mississippi Department of Health employee, left, is given an intradermal shot of flu vaccine Wednesday, Oct. 17, 2012 in Jackson, Miss. The Canadian Medical Association Journal is adding its voice to calls for mandatory flu shots for health-care workers. The journal says hospital workers ought to be vaccinated to protect frail elderly patients whose immune systems are so weakened they don't get much protection from a flu shot themselves. THE CANADIAN PRESS/AP-Rogelio V. Solis

TORONTO - The Canadian Medical Association Journal has added its

THE VANCOUVER SUN

Flu vaccine protects the vulnerable

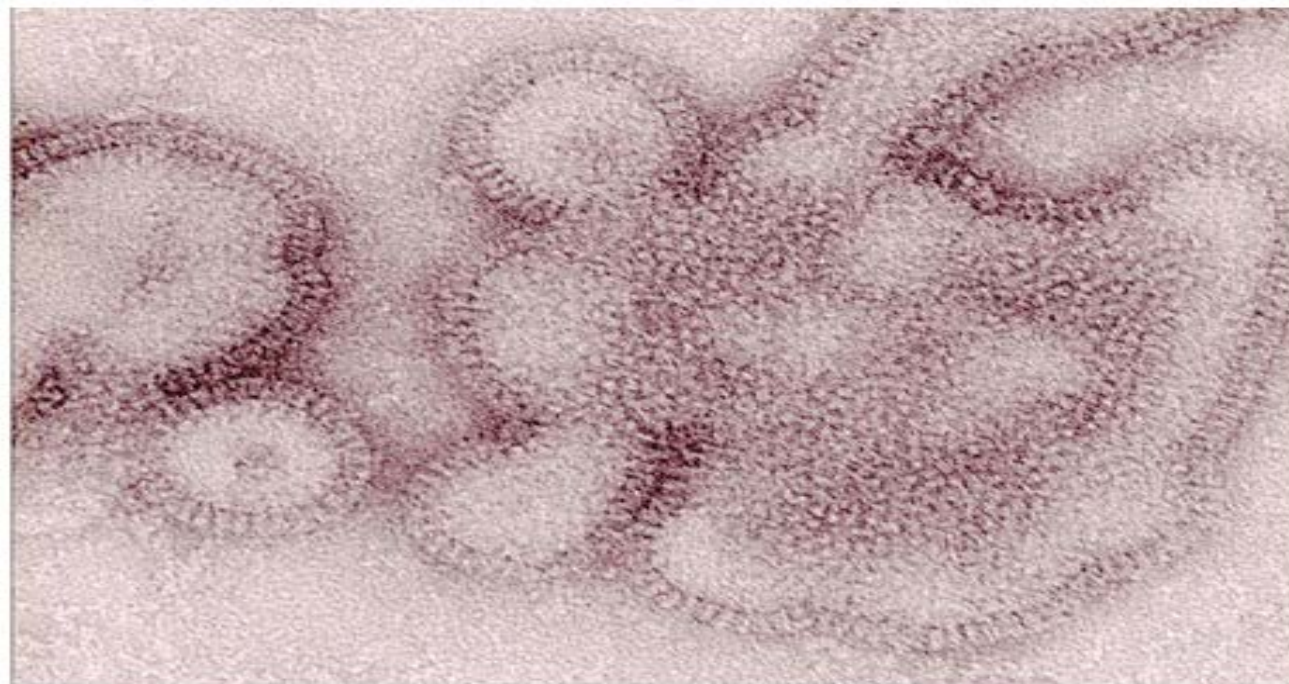
When health care workers get the shot it makes for better outcomes for their patients and long-term care residents

VANCOUVER SUN NOVEMBER 19, 2012

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STORY

PHOTOS (1)



Influenza will harm fewer patients if health care workers are vaccinated, letter writers argue.

Photograph by: Centers For Disease Control And Prevention, The Canadian Press , Vancouver Sun

EDITORIAL

“Health care workers must protect patients from influenza by taking the annual vaccine”

By Ken Flegel MDCM MSc, Editor, **Canadian Medical Association Journal**,
www.cmaj.ca

Disease burden SA

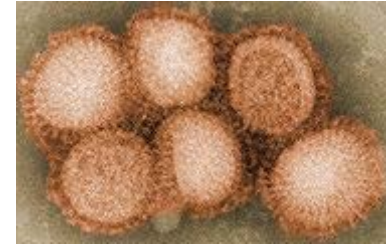
Highest in persons aged ≥ 65 years; ≤ 2 years, women who are pregnant or postpartum and persons of any age with underlying medical conditions.

Mean estimated annual number of seasonal influenza-associated deaths is about 9,093 (rate 21.6 per 100 000 person years) in individuals ≥ 5 years and 452 (8 per 100 000 person-years) in children < 5 years of age.

2010: 21,555 severe influenza cases in HIV-uninfected individuals and 13,876 in HIV-infected individuals.

2011: 29,892 severe influenza cases in HIV-uninfected individuals and 17,289 in HIV-infected individuals.

History of extensive influenza pandemics

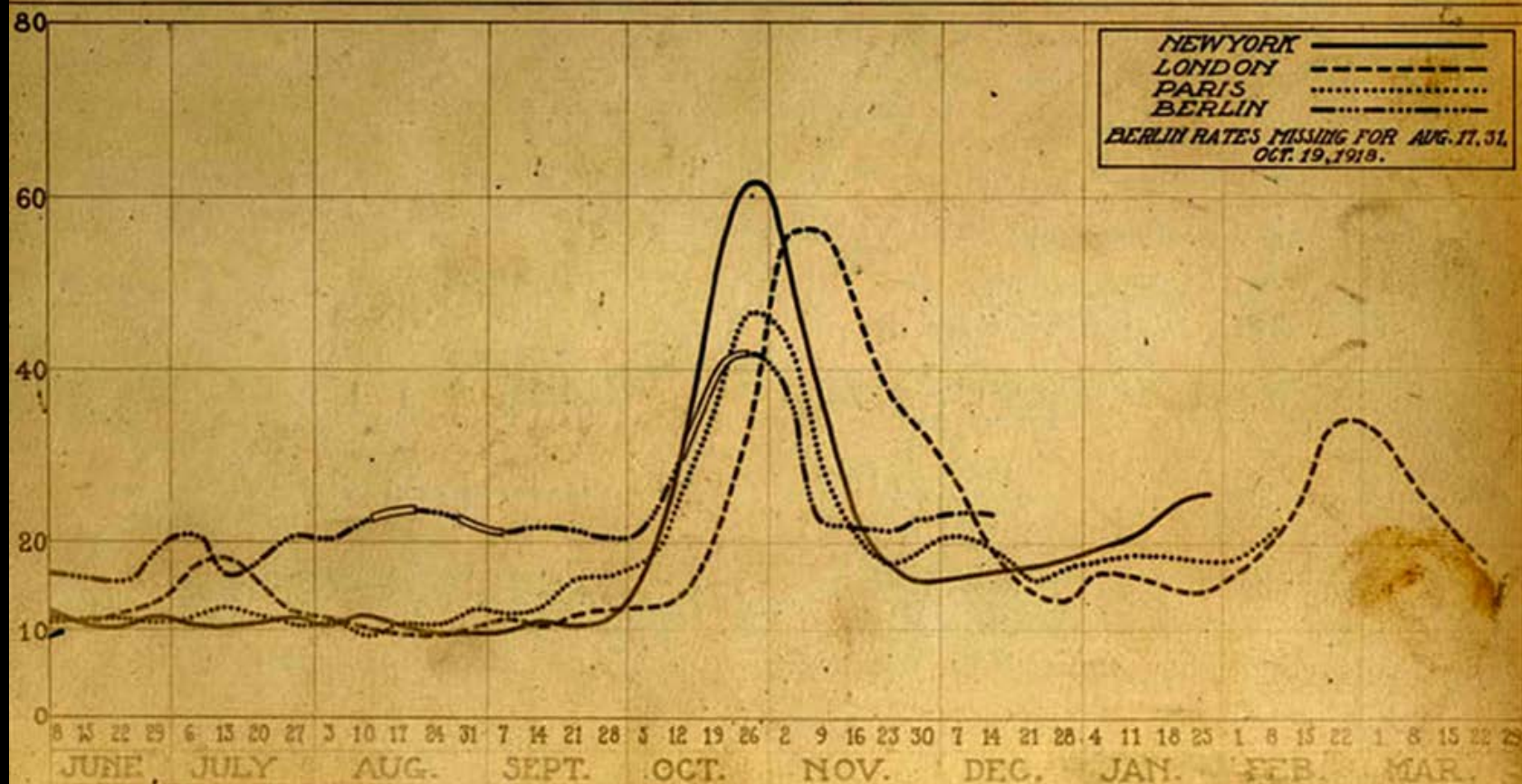


- Extensive pandemics during the Middle Ages.
- Medieval Latin: *influentia*, caused by the influence of the stars and heavenly bodies
- 1918-19. Spanish flu. May have originated in birds and pigs kept at a hospital camp in France. Killed 20 million +.
- 1957-58. Asian flu. 70,000+
- 1968-69. Hong Kong flu. 35,000
- 1970s - 90s. 110,000 hospitalized in US per year
- 2009 swine flu variants, lower than expected mortalities. Human avian influenza H5N1 separate concern.

INFLUENZA PANDEMIC

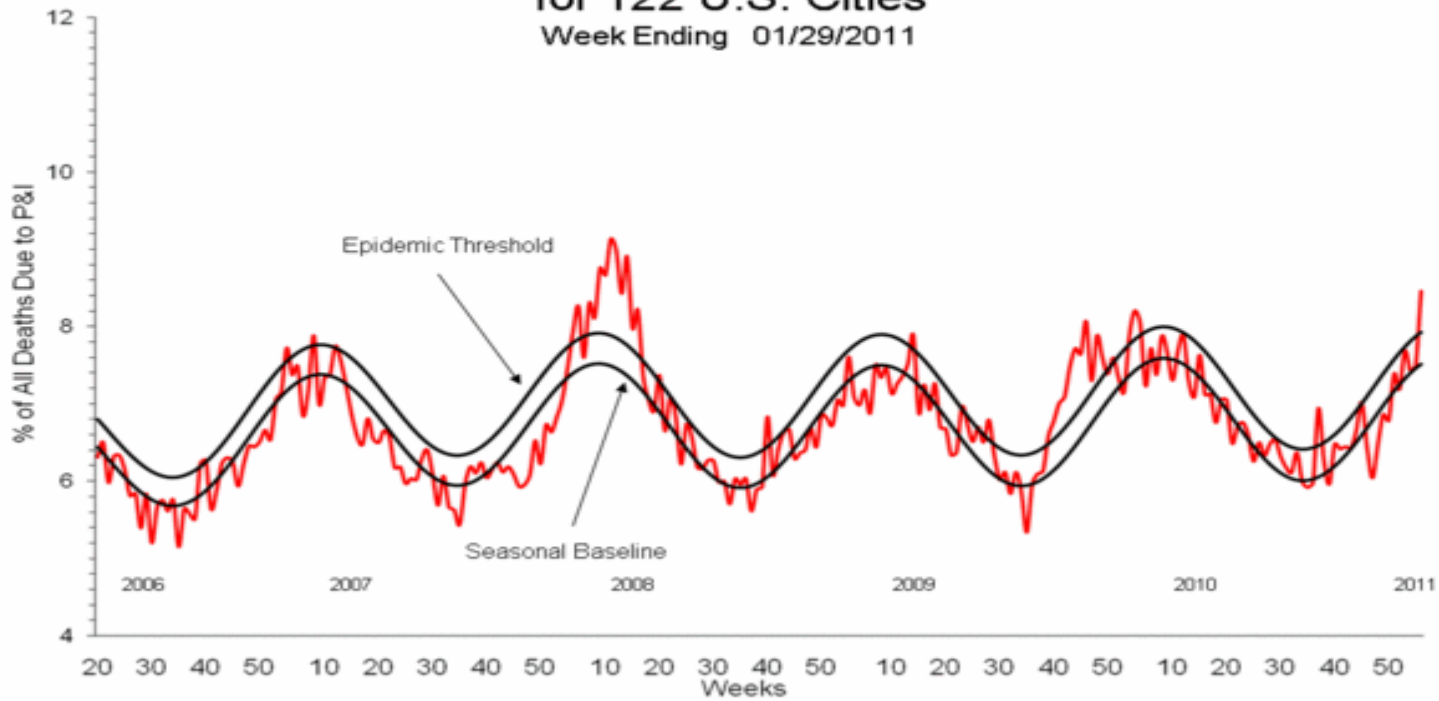
MORTALITY IN AMERICA AND EUROPE DURING 1918 AND 1919

DEATHS FROM ALL CAUSES EACH WEEK
EXPRESSED AS AN ANNUAL RATE PER 1000



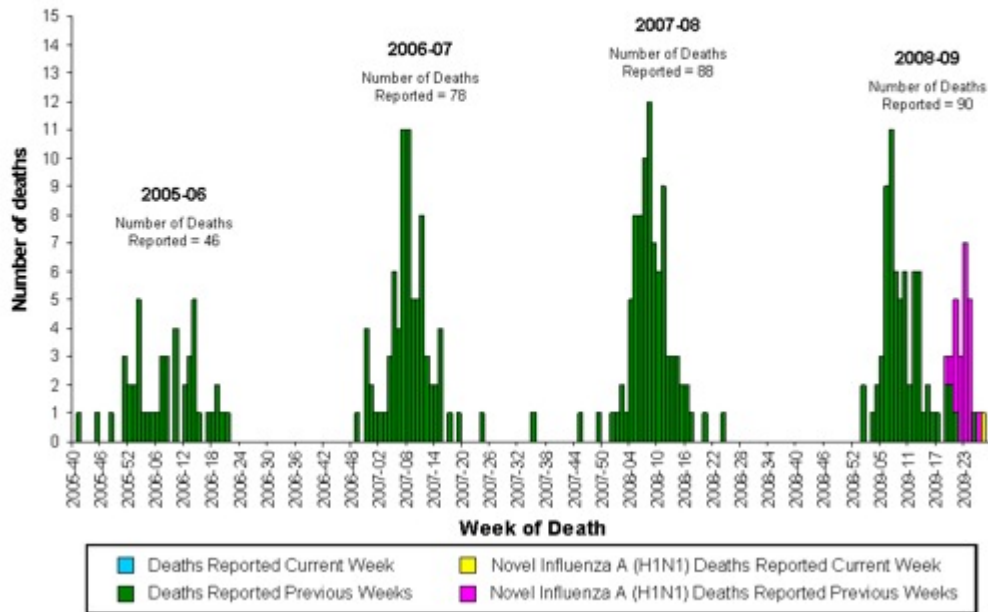
Pneumonia and Influenza Mortality for 122 U.S. Cities

Week Ending 01/29/2011

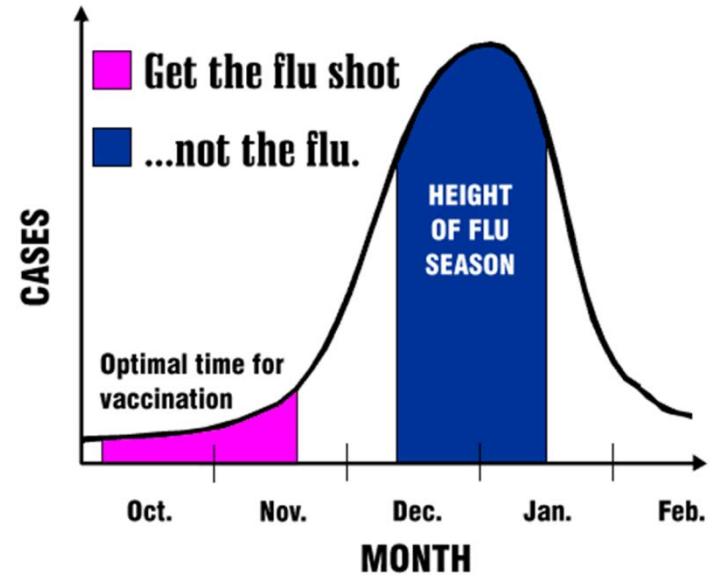


seasonality

Number of Influenza-Associated Pediatric Deaths by Week of Death: 2005-06 season to present



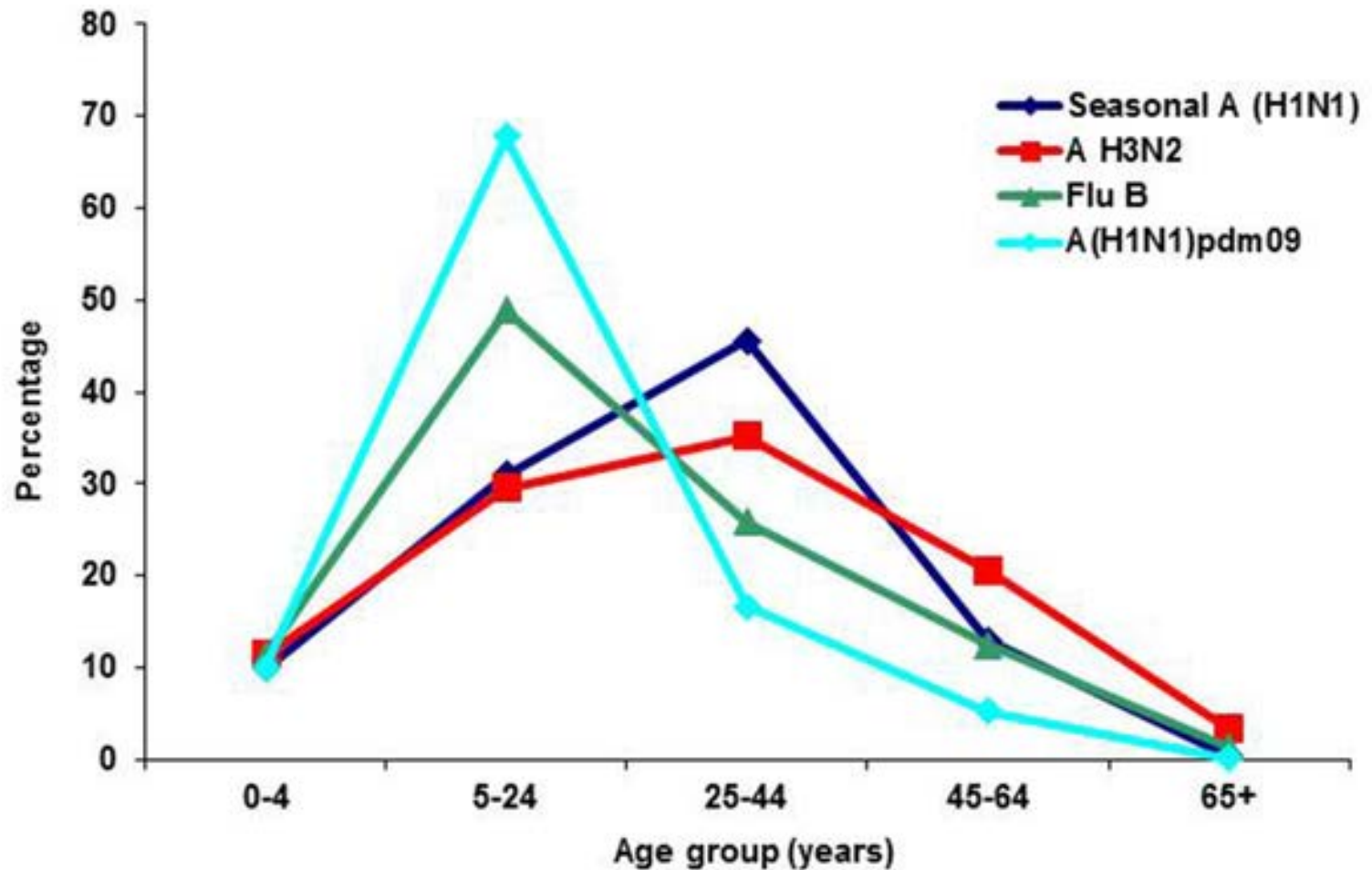
About one-third of pediatric deaths in 2009 were swine flu.



CDC

seasonality

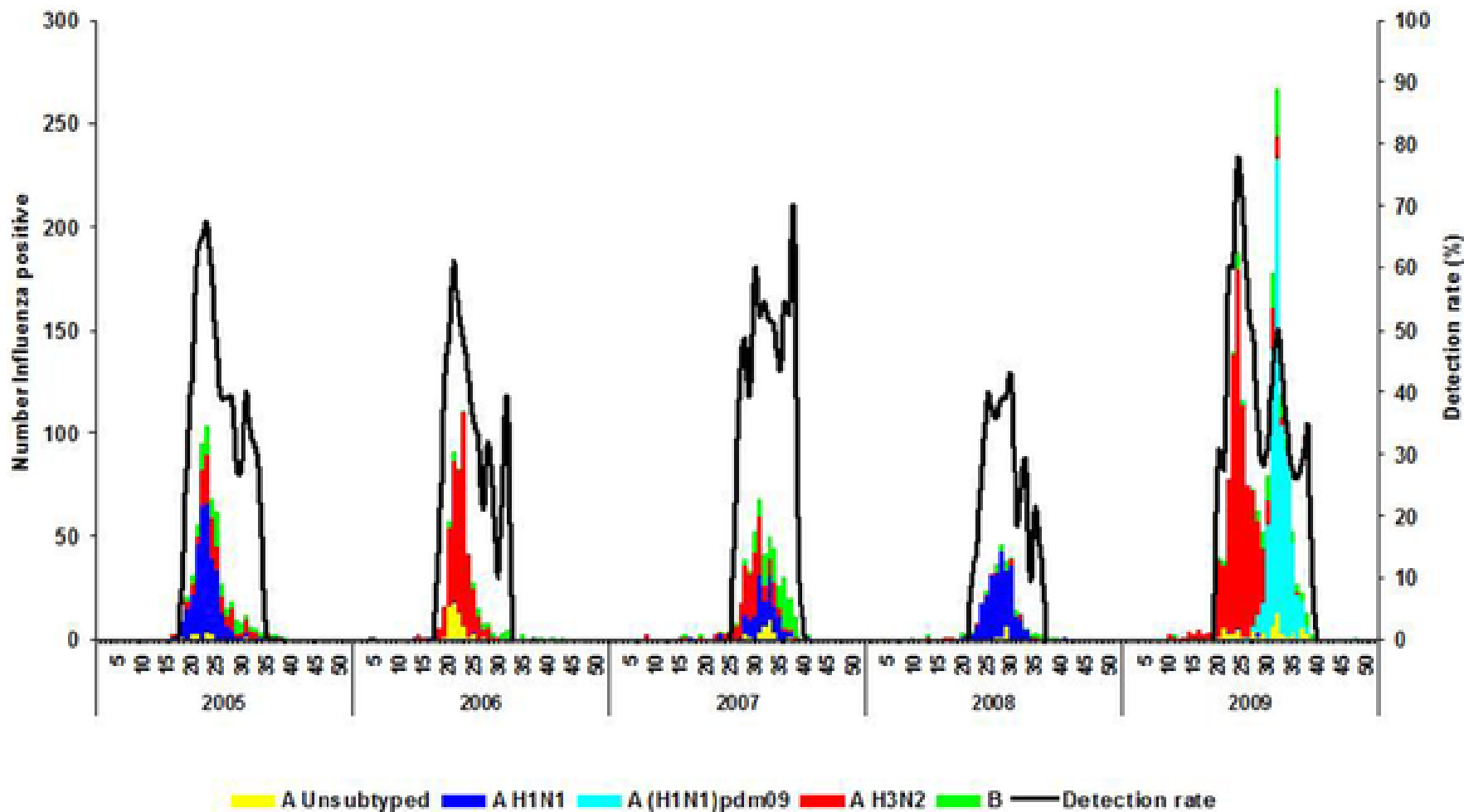
Percentage of influenza positives by age group and virus type, Viral Watch, South Africa; 2005–2009.



Where age was reported (N=3523), seasonal A(H1N1) accounted for N=774, A H3N2 (N=1591), B (N=456), A(H1N1)pdm09 N=702

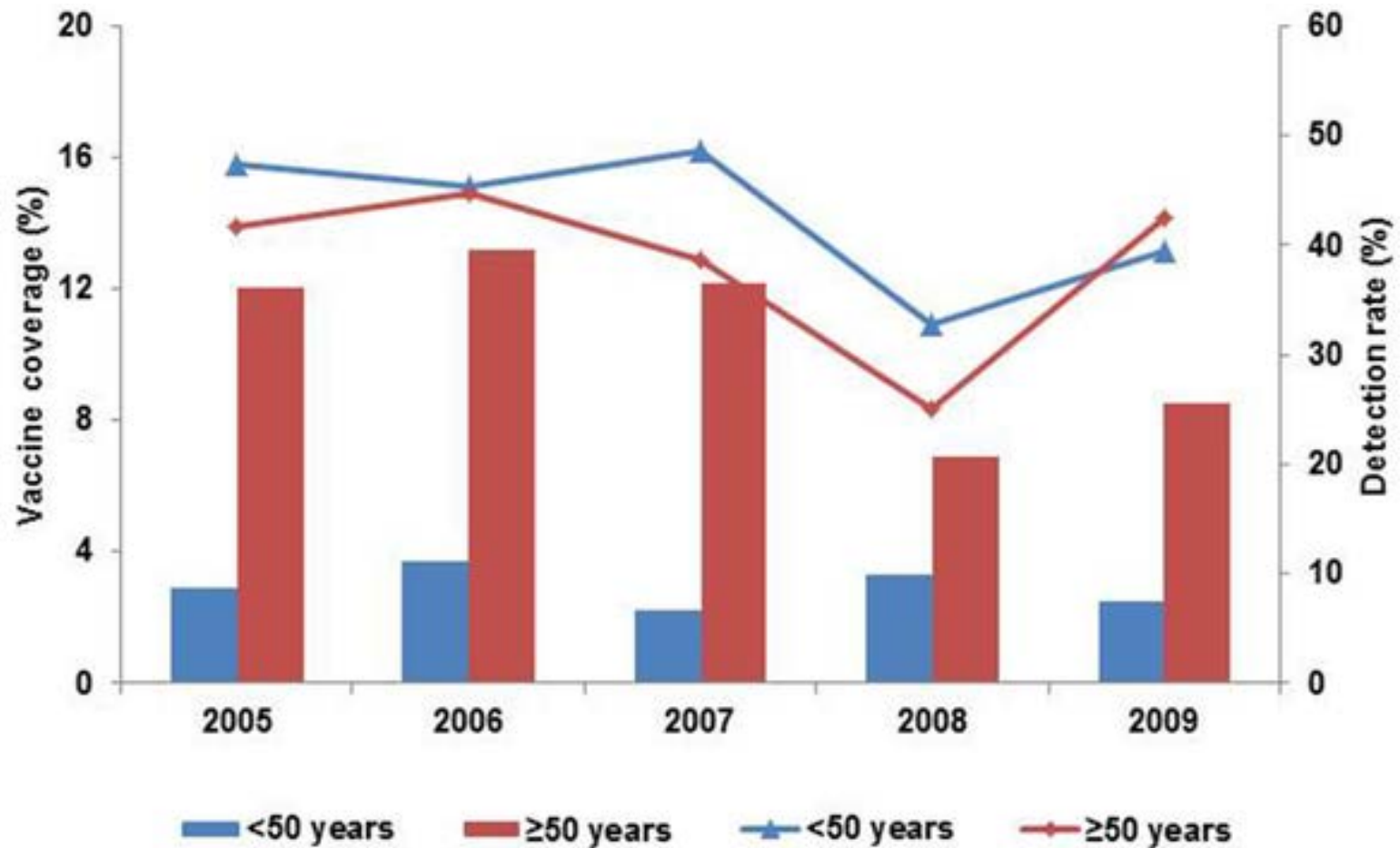
Ntshoe GM, McAnerney JM, Tempia S, Blumberg L, Moyes J, et al. (2014) Influenza Epidemiology and Vaccine Effectiveness among Patients with Influenza-Like Illness, Viral Watch Sentinel Sites, South Africa, 2005–2009. *PLoS ONE* 9(4): e94681. doi:10.1371/journal.pone.0094681
<http://journals.plos.org/plosone/article?id=info:doi/10.1371/journal.pone.0094681>

Number of influenza positives by virus type, subtype and detection rate by week and year, Viral Watch, South Africa, 2005–2009.



Ntshoe GM, McAnerney JM, Tempia S, Blumberg L, Moyes J, et al. (2014) Influenza Epidemiology and Vaccine Effectiveness among Patients with Influenza-Like Illness, Viral Watch Sentinel Sites, South Africa, 2005–2009. *PLoS ONE* 9(4): e94681. doi:10.1371/journal.pone.0094681
<http://journals.plos.org/plosone/article?id=info:doi/10.1371/journal.pone.0094681>

The vaccine coverage and detection rate during influenza by year and age group, Viral Watch, South Africa, 2005–2009.



Columns represents vaccine coverage; lines detection rate

Ntshoe GM, McAnerney JM, Tempia S, Blumberg L, Moyes J, et al. (2014) Influenza Epidemiology and Vaccine Effectiveness among Patients with Influenza-Like Illness, Viral Watch Sentinel Sites, South Africa, 2005–2009. *PLoS ONE* 9(4): e94681. doi:10.1371/journal.pone.0094681
<http://journals.plos.org/plosone/article?id=info:doi/10.1371/journal.pone.0094681>

Comparison of vaccine composition to circulating viruses, South Africa, 2005–2009.

Year	Vaccine composition	Circulating viruses
2005	A/New Caledonia/20/99(H1N1)-like virus	A/New Caledonia/20/99(H1N1)-like virus
	A/Wellington/1/2004(H3N2)-like virus	A/California/7/2004(H3N2)-like virus
	B/Shanghai/361/2002-like virus	B/Hong Kong/333/01-like virus
2006	A/New Caledonia/20/99(H1N1)-like virus	A/New Caledonia/20/99(H1N1)-like virus
	A/California/7/2004(H3N2)-like virus	A/Wisconsin/67/2005(H3N2)-like virus
	B/Malaysia/2506/2004-like virus	B/Malaysia/2506/2004-like virus
2007	A/New Caledonia/20/99(H1N1)-like virus	A/Solomon Islands/3/2006 (H1N1)-like virus
	A/Wisconsin/67/2005(H3N2)-like virus	A/Brisbane/10/2007 (H3N2)-like virus
	B/Malaysia/2506/2004-like virus	B/Malaysia/2506/2004-like virus
2008	A/Solomon Islands/3/2006 (H1N1)-like virus	A/Brisbane/59/2007 (H1N1)-like virus
	A/Brisbane/10/2007 (H3N2)-like virus	A/Brisbane/10/2007 (H3N2)-like virus
	B/Florida/4/2006-like virus	B/Florida/4/2006-like virus
2009	A/Brisbane/59/2007 (H1N1)-like virus	A/California/7/2009 (H1N1)-like virus
	A/Brisbane/10/2007 (H3N2)-like virus	A/Perth/16/2009 (H3N2)-like virus
	B/Florida/4/2006-like virus	B/Brisbane like-virus

Predominating circulating strains in bold.

Predominating B strains indicated.

doi:10.1371/journal.pone.0094681.t001

Ntshoe GM, McAnerney JM, Tempia S, Blumberg L, Moyes J, et al. (2014) Influenza Epidemiology and Vaccine Effectiveness among Patients with Influenza-Like Illness, Viral Watch Sentinel Sites, South Africa, 2005–2009. PLoS ONE 9(4): e94681. doi:10.1371/journal.pone.0094681
<http://journals.plos.org/plosone/article?id=info:doi/10.1371/journal.pone.0094681>

Vaccination coverage* and vaccine effectiveness by year, Viral Watch, South Africa: 2005–2009.

Year, season	Vaccination coverage				Age-adjusted VE (95% CI)
	Overall	Cases % (n/N)	Controls % (n/N)	Crude VE (95% CI)	
<i>Seasonal influenza</i>					
2005	4.1 (49/1199)	2.7 (15/558)	5.3 (34/641)	50.9 (9.8, 74.2)	48.6 (4.9, 73.2)
2006	5.1 (54/1055)	5.5 (26/476)	4.8 (28/579)	−13.1 (−96.5, 35.9)	−14.2 (−99.7, 34.8)
2007	4.2 (40/957)	3.6 (16/446)	4.7 (24/511)	24.5 (−43.9, 61.2)	12.0 (−70.4, 55.4)
2008	3.7 (32/858)	1.5 (4/261)	4.7 (28/597)	68.3 (15.1, 90.6)	67.4 (12.4, 90.3)
2009	3.4 (59/1737)	2.8 (20/716)	3.8 (39/1021)	27.6 (−24.2, 58.9)	29.6 (−21.5, 60.1)
<i>A(H1N1)pdm09</i>					
2009	3.6 (54/1496)	3.4 (16/464)	3.7 (38/1 032)	6.6 (−67.6, 49.7)	−6.4 (−93.5, 43.3)

Statistically significant values in bold.

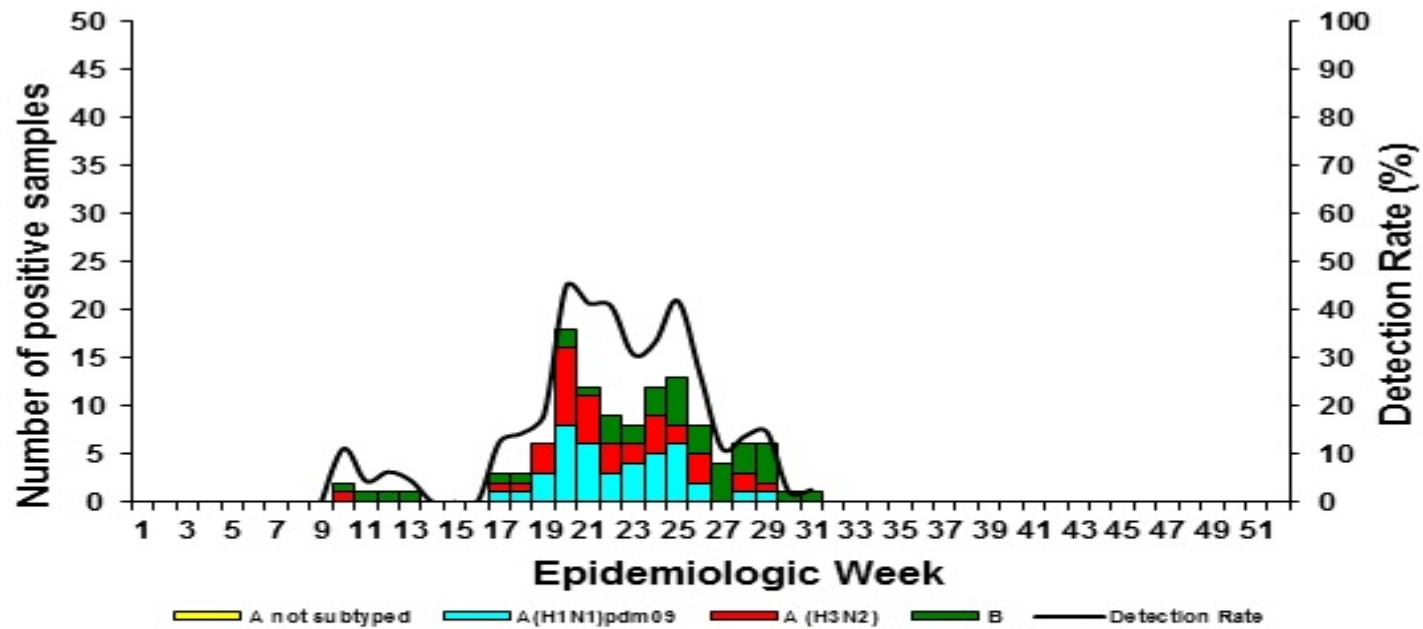
*The proportion of individuals who received at least one dose of influenza vaccine in the relevant period.

Age groups: <50 and ≥50 years.

doi:10.1371/journal.pone.0094681.t002

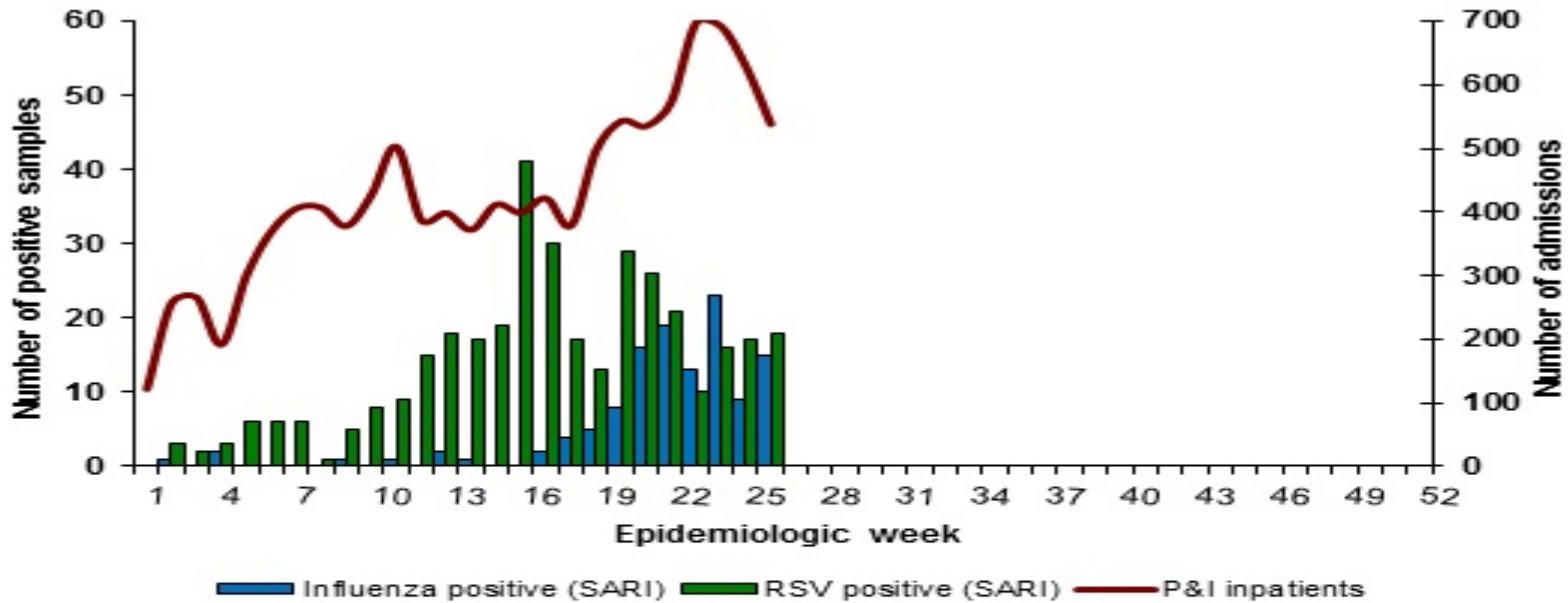
Ntshoe GM, McAnerney JM, Tempia S, Blumberg L, Moyes J, et al. (2014) Influenza Epidemiology and Vaccine Effectiveness among Patients with Influenza-Like Illness, Viral Watch Sentinel Sites, South Africa, 2005–2009. *PLoS ONE* 9(4): e94681. doi:10.1371/journal.pone.0094681
<http://journals.plos.org/plosone/article?id=info:doi/10.1371/journal.pone.0094681>

Number of positive samples by influenza types and subtypes and detection rate by week



Influenza surveillance report - South Africa
NCID 2015

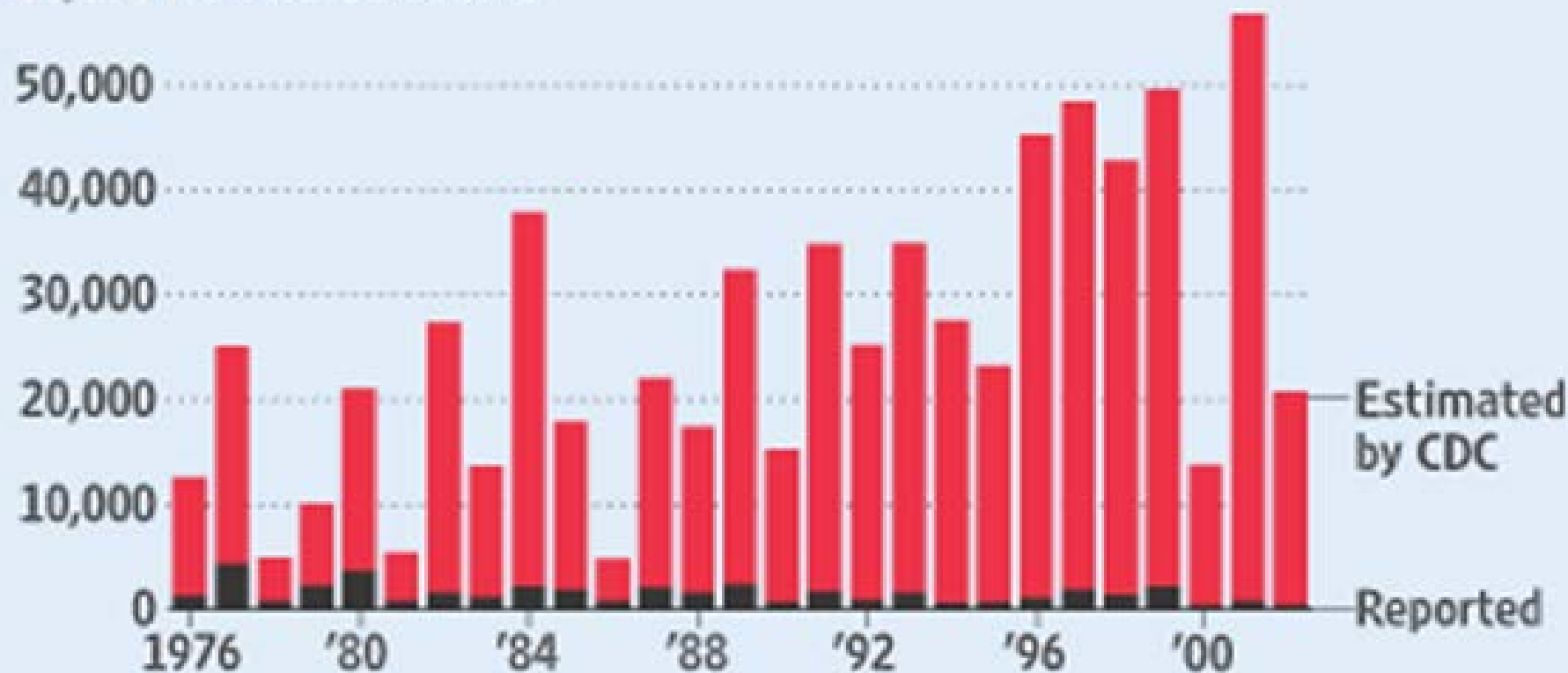
Number of private hospital admissions with a discharge diagnosis of pneumonia and influenza (P&I) and viral isolates



The Silent Killer

The CDC estimates that flu is involved in about 15 times more deaths each year than is recorded on death certificates.

60,000 flu-related deaths



Note: Yearly death totals are for flu seasons extending into the early part of the following year.
Source: Peter Doshi, Centers for Disease Control and Prevention

SA NCID Influenza recommendations 2016

- Pregnant women irrespective of stage of pregnancy, or postpartum
- Individuals (adults or children) who are at high risk for influenza and its complications because of underlying medical conditions and who are receiving regular medical care for conditions such as chronic pulmonary (including tuberculosis) and cardiac diseases, chronic renal diseases, diabetes mellitus and similar metabolic disorders, individuals who are immunosuppressed and individuals who are morbidly obese (body mass index ≥ 40 kg/m²)
- HIV-infected individuals
- Healthcare workers**
- Residents of old-age homes and chronic care and rehabilitation institutions
- Persons aged >65 years
- Children aged 6 months - 59 months
- Persons aged 6 months - ≤ 18 years on long-term aspirin therapy
- Adults and children who are family contacts of individuals at high risk of severe influenza
- Any persons wishing to minimise the risk of influenza acquisition, especially in workplace settings where large-scale absenteeism could cause significant economic losses**

HOWEVER:

Rates of influenza immunization among health care workers range between 2% and 60%, well below the 83% to 94% required for the whole population to be resistant to spread of an influenza.

HCW vaccination programmes?

Most of these programmes have achieved only small increases in vaccination rates, apart from employment-related mandatory vaccination.

Barriers to taking the annual vaccine

- fear of getting sick or getting the flu from it,
- belief that the person “does not get the flu”
- belief that the vaccine will not work,
- belief that the vaccine has not been proven to protect patients.

What does the data show?

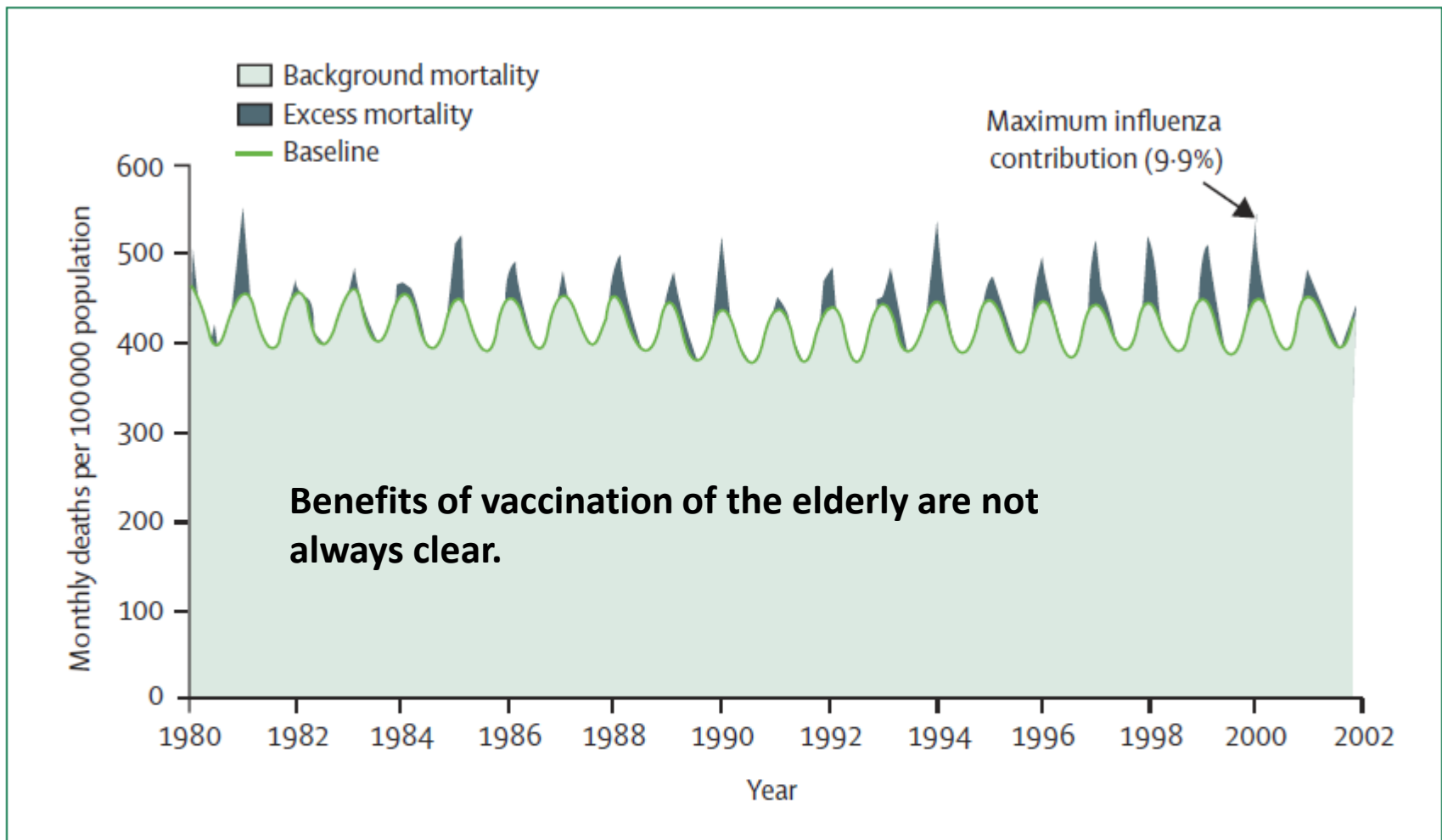


Figure 1: Monthly national all-cause mortality rates in all US elderly people aged 65 years or more, 1980–2001
 The total winter-seasonal fraction of mortality attributed to influenza in national excess mortality studies averaged 5%, and was always less than 10%. Based on data from Simonsen et al.⁶

Mortality benefits of influenza vaccination in elderly people: an ongoing controversy
 Lone Simonsen et al. *Lancet Infect Dis* 2007. 7:658–66

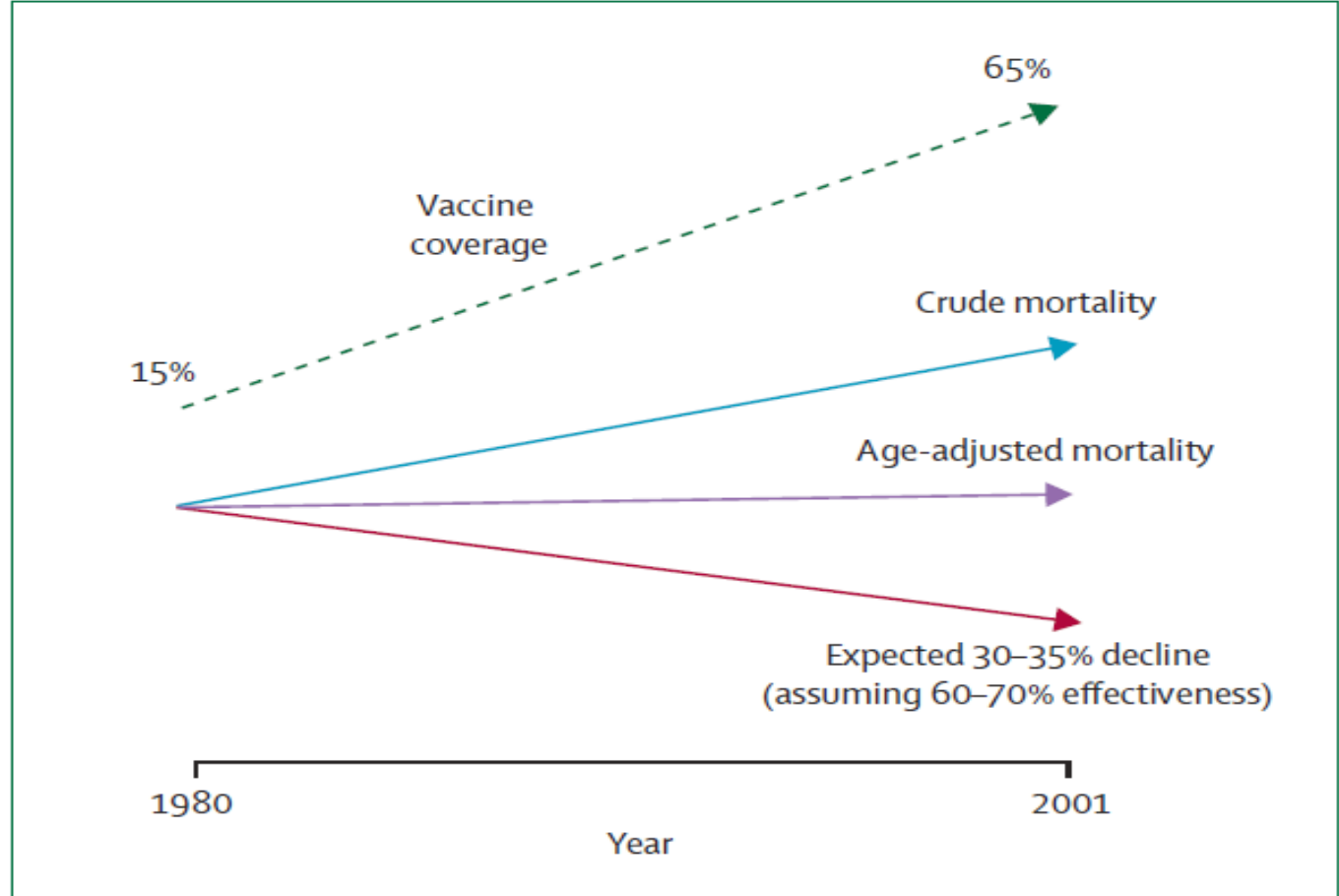


Figure 2: Crude and age-adjusted trends in vaccination and national excess pneumonia and influenza mortality in US elderly people aged 65 years or more

Data are for 13 influenza A (H3N2)-dominated seasons as vaccine coverage rose from about 15% to about 65% (dotted line). The point estimates of excess mortality trends (crude and age-adjusted, solid lines) are shown, as presented in Simonsen et al.⁶ The lower bound of the 95% CI for the trend is -18%, which excludes the expected decline of 30-35% (lower solid red line), assuming 60-70% effectiveness against influenza-related mortality. This study type is not powered to exclude the possibility of more limited mortality benefits.

Lancet Infect Dis. 2012 Jan;12(1):36-44.

Efficacy and effectiveness of influenza vaccines: a systematic review and meta-analysis.

We searched Medline for randomised controlled trials assessing a relative reduction in influenza risk of all circulating influenza viruses during individual seasons after vaccination (efficacy) and observational studies meeting inclusion criteria (effectiveness). ... estimated efficacy for trivalent inactivated vaccine (TIV) and live attenuated influenza vaccine (LAIV)...

Efficacy and effectiveness of influenza vaccines: a systematic review and meta-analysis..

VE: variable for seasonal influenza: 6 (35%) of 17 analyses in nine studies showed significant protection against medically attended influenza in the outpatient or inpatient setting.

Median monovalent pandemic H1N1 vaccine effectiveness in five observational studies was 69% (range 60-93).

Efficacy and effectiveness of influenza vaccines: a systematic review and meta-analysis.

INTERPRETATION:

- **Moderate** protection against virologically confirmed influenza.
- Protection greatly reduced or absent in some seasons.
- Evidence for protection in adults aged 65 years or older is lacking.
- Highest efficacy in young children (aged 6 months to 7 years).

New vaccines with improved clinical efficacy and effectiveness are needed to further reduce influenza-related morbidity and mortality.

Harms?

One RCT over three consecutive years :

Localized pain or swelling following influenza vaccination was rare < 1: 1000

No absences from work because of vaccine-adverse events in the study population

Guillain–Barré syndrome?

- 1976-77 swine flu vaccine. Data from the USA: 35,000,000 doses resulted in 354 cases of GBS. 28 cases resulted in death
- 1+ per 100,000
- recent vaccines have much lower risk if at all!



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Influenza vaccination for healthcare workers who work with the elderly

Roger E Thomas^{1,*}, Tom Jefferson², Toby J Database Title
Lasserson³

[The Cochrane Library](#)

Editorial Group: [Cochrane Acute
Respiratory Infections Group](#)

Published Online: 17 FEB 2010

Assessed as up-to-date: 27 SEP 2009

DOI: 10.1002/14651858.CD005187.pub3

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[Additional Information](#)

There is no evidence that only vaccinating healthcare workers prevents laboratory-proven influenza or its complications (lower respiratory tract infection, hospitalisation or death due to lower respiratory tract infection) in individuals aged 60 or over in LTCIs and thus no evidence to mandate compulsory vaccination of healthcare workers.



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There is no evidence that only vaccinating healthcare workers prevents laboratory-proven influenza or its complications (lower respiratory tract infection, hospitalisation or death due to lower respiratory tract infection) in individuals aged 60 or over in LTCIs and thus no evidence to mandate compulsory vaccination of healthcare workers.

Other interventions, such as hand-washing, masks, early detection of influenza with nasal swabs, antivirals, quarantine, restricting visitors and asking healthcare workers with an influenza-like illness not to attend work, might protect individuals over 60 in LTCIs. High-quality randomised controlled trials testing combinations of these interventions are needed

It would be a great shame if a lack of evidence that meets the Cochrane Collaboration's narrow evidentiary standard were to be interpreted as evidence of lack of effectiveness of influenza vaccination. In effect, the perfect would then have become the enemy of the good.

Dr. Paul van Buynder, Chief Medical Health Officer, Fraser Health Authority

Dr. Patty Daly CMHO, Vancouver Coastal Health Authority

Dr. Ronald Chapman CMHO, Northern Health Authority

Dr. Andrew Larder CMHO, Interior Health Authority

Dr. Richard Stanwick CMHO, Vancouver Island Health Authority

Dr. Bonnie Henry Head of Epidemiology Services, BCCDC

Dr. Eric Young Deputy Provincial Health Officer

Dr. Perry Kendall Provincial Health Officer

Some ethics

Compulsory vaccination may be regarded as ethically questionable because it violates a person's autonomy.

But in the case of influenza vaccination, the autonomy of health care workers comes into conflict with the best interests of the patient.

Practical arguments for and against mandatory vaccination for healthcare workers as a means to protect patients' health

Argument	FOR	AGAINST
Effectiveness	reason and existing data support some benefit for patients through HCW vaccination.	Solid evidence for patients' benefit is missing.
Necessity	Only mandatory vaccination can achieve high vaccination rates	Voluntary vaccine uptake rates among HCWs not be high enough It is questionable whether any increase by coercion would be worth the cost of conflict. Regardless of HCW vaccination, patients will continue to be exposed.
False sense of security	Vaccination does not devalue other preventive measures. HCWs should adhere to all appropriate preventive measures.	Over-stressing mandatory vaccination might create a false sense of security and divert focus from other important preventive measures,
Administration issues	Mandatory uptake facilitates a fair, simple and uniform policy of HCW vaccination.	Voluntary vaccination policies are closer to admin justice and autonomy principles
Cost	Educational programmes to promote voluntary vaccination are costly and have not worked. Simple mandatory policies cost less.	Resources for enforcement and debate may be better devoted to educational programmes.

Practical arguments for and against mandatory vaccination for healthcare workers as a means to protect patients' health...

Argument	FOR	AGAINST
Coercion	Rules in healthcare settings are common and need not to be seen as coercion.	<p>Enforcement and penalties may have a long-term detrimental effect on the employer–employee relationship.</p> <p>Have the right to expect that their opinion will be respected.</p> <p>Use of coercion in HCW vaccination might suggest that HCWs are reluctant to be vaccinated themselves and might thus strengthen the arguments of vaccine sceptics.</p>
Civil Liberties	HCWs have a specific mission and obligations towards the common good.	Compulsory vaccination violates civil liberties.
Potential Harms	Considerable side effects from vaccine are extremely rare.	Any harm from the vaccination is difficult to justify with mandatory policies and considerable insurance issues may emerge.

Ethical arguments for and against mandatory vaccination for healthcare workers as a means to protect patients' health

Argument	FOR	AGAINST
Autonomy	Autonomy should be respected, but restrictions of HCW autonomy might be accepted, if it is to prevent harm to patients.	Mandatory policies violate liberty and autonomy; no one should be forced to take medications.
Beneficence	If it is feasible to benefit colleagues and patients, with minimal inconvenience, then HCWs are obliged to comply.	<p>Ensuring patients' welfare is a duty for HCWs.</p> <p>It is questionable whether this implies the obligation to be vaccinated.</p> <p>The principle of beneficence should not be interpreted as doing good by harming persons, i.e. protecting patients by harming HCWs.</p> <p>If influenza vaccine virus strains do not match with the circulating strains, HCWs may suffer unjustified harm at no benefit to patients.</p>
Non-Maleficence	<p>The question of how much non-vaccinated HCWs harm patients is of little importance. Any means that would avoid harming patients should be considered.</p> <p>of note, the imperative primum non nocere (first do no harm) dates back to the Hippocratic collection.</p> <p>Any case of a patient contracting a vaccine preventable disease from a non-immune HCW would be unacceptable under this tradition.</p>	No solid evidence exists on whether non-vaccinated HCWs harm patients. Patients will continue to be exposed, regardless of HCW vaccination.

<p>Justice</p>	<p>It is unfair for patients who cannot be effectively vaccinated (such as infants, elderly people and those who are immunocompromised) to be treated by non-immune HCWs.</p> <p>Such patients can only be protected by cocoon strategies involving immune caregivers.</p> <p>Justice would further require that non-immune HCWs inform patients about their non-immunised status.</p>	<p>Voluntary vaccination policies are closer to the principle of subsidiarity than authoritarian mandates.</p>
<p>Professional Virtue</p>	<p>The imperative 'do no harm' is a fundamental virtue for health professionals. Instead of insisting on autonomy, HCWs should have their patients' health as their top priority.</p>	<p>Good ends cannot be achieved through evil means. It is immoral to enforce policies that may promote patients' health through subjecting HCWs to potential harm.</p>
<p>Adapted from: Galanakis E et al Euro Surveill. 2013;18(45):pii=20627.</p>		

Some Thoughts and Conclusions

Healthcare institutions have a duty to protect patients, avoid nosocomial spread of infection, keep working efficiently during outbreaks and meet the public's trust.

The higher the immunity rates among HCWs, the better it is for themselves, their patients, the public; and their families

There is a moral imperative for healthcare authorities to secure vaccination rates among HCWs that are as high as possible, by adopting the optimal policy.

If voluntary vaccine uptake has failed, mandatory policies should be considered, provided that benefits outweigh harm for HCWs, patients' welfare is enhanced, and fair rules and exemptions are defined.

What the optimal policy is may vary among countries and facilities: a 'one-fits-all' strategy may not suffice.

- due to “the benefits accruing to the public directly and indirectly from the active and unwearied beneficence of the profession. . . Physicians are justly entitled to the utmost consideration and respect from the community”

1847 Code of Ethics of the American Medical
Association