

Vaccination of healthcare workers to protect patients
What is the scientific evidence ?

Annual meeting SSMI, SSI, SSHH, SSPTC, CISI

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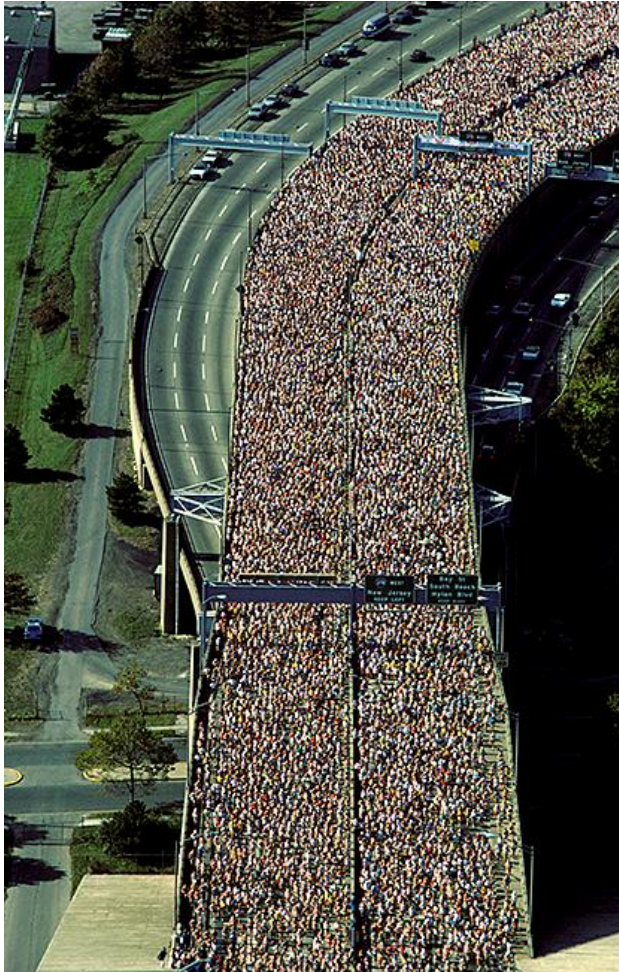
CHUV - Lausanne



Basic immunization of health-care workers (HCW)

	Highly effective in preventing :			
	Disease in HCW	Transmission to foetus	Post-exposure furlough	Transmission to contacts *
Hepatitis B	X			X
Measles – Mumps – Rubella	X	X	X	X
Varicella- zoster	X	X	X	X
Diphtheria – Pertussis – Tetanus	X			

* Including patients



HCW queuing up for
MMR vaccine at CHUV



HCW vaccinated against
influenza at CHUV

What is so special with influenza vaccine in HCW ?

- § Influenza perceived as non severe
- § Not the most effective vaccine
 - ü 70 – 90% protection in healthy individuals
 - ü Depends on the antigenic match with the circulating virus
- § Need for yearly shots
 - ü Logistically demanding
 - ü Lower acceptance
- § Influenza is epidemic (or even pandemic)
 - " Multiple possible sources of nosocomial transmission
 - " protection of contacts less obvious than with sporadic diseases

Burden of nosocomial influenza

Salgado SD et al, Lancet Infect Dis 2002

§ May cause explosive outbreaks

- ü Attack rates up to 50%

- ü Mortality 16% in acute care (\leq 60% in ICU or transplant units)

§ Pneumonia and death are common in immunocompromized patients

§ Responsible for excess absenteeism of HCW and disruption of services

- ü Staff shortage in 35% of hospitals in the US

Poland GA et al, Vaccine 2005

- ü Common cause of ward closure

Hansen S et al, J Hospit Infect 2007

Vaccination of high-risk patients is not enough

§ Patients at risk because of an acute condition:
most often not vaccinated before admission

§ Immunocompromized patients:
response to vaccine weak or absent

§ Elderly patients:
vaccination recommended > 65 years but

- ü *vaccine uptake only ~60%*
- ü *weaker response due to immunosenescence*
- ü *debate on the expected benefit*

" **There is a need to prevent patients' exposure**

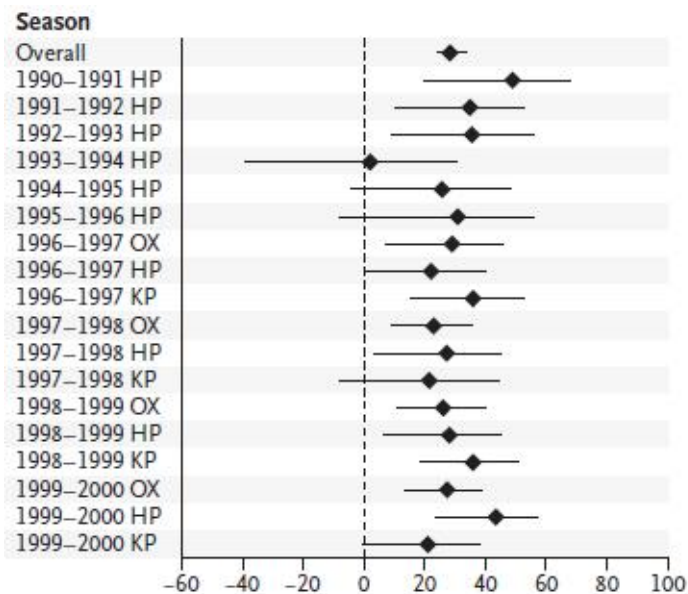
Influenza vaccine in elderly people

§ Effectiveness against flu (*Cochrane review*)¹

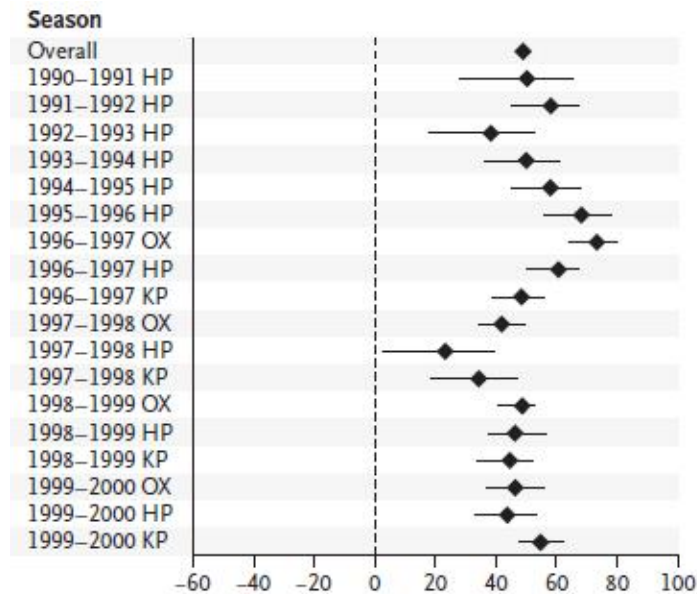
ü 23% against influenza-like illness

ü Non-significant against laboratory-proven influenza

§ Effectiveness (%) against complications ^{1,2}



Hospitalization



All-cause mortality

¹ Jefferson T et al, *Lancet* 2005; ² Nichol KL et al, *N Engl J Med* 2007

Influenza vaccine in elderly people (II)

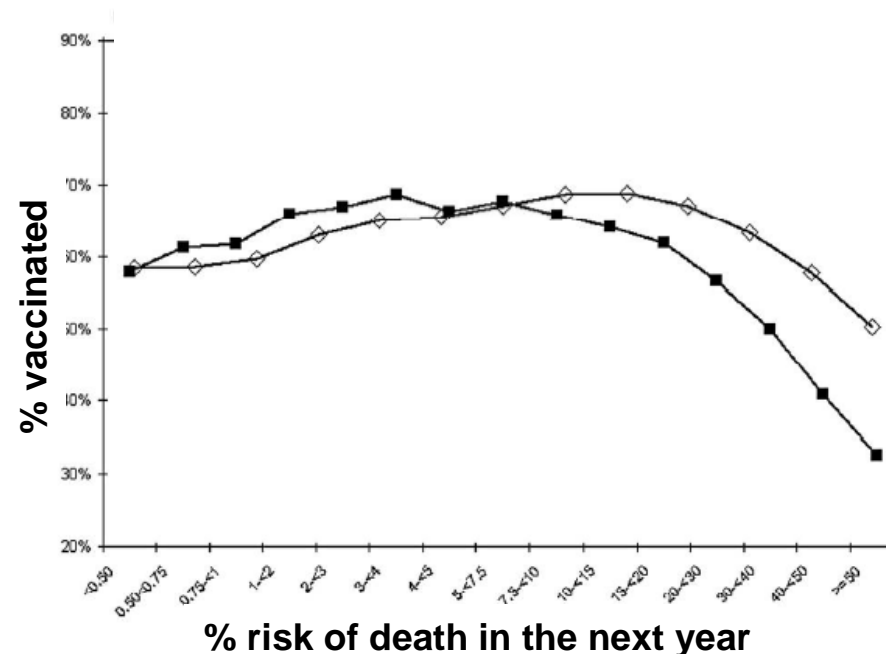
§ Cave: possible confounding by indication

ü Those very frail

- are more likely to die / suffer from complications
- may be less likely to receive vaccine

ü " overestimation of the benefit of the vaccine ?

Cf. vaccine coverage as a function of risk of death:



*Baxter R et al,
J Infect Dis 2010*

Rationale for vaccinating HCW

§ Protection of HCW

- ü *More exposed to influenza than the general population*
- ü *Vaccine is safe (especially safer than influenza!)*

§ Reduction of absenteeism

- ü *Prevents disruption of health-care services*

§ Protection of patients

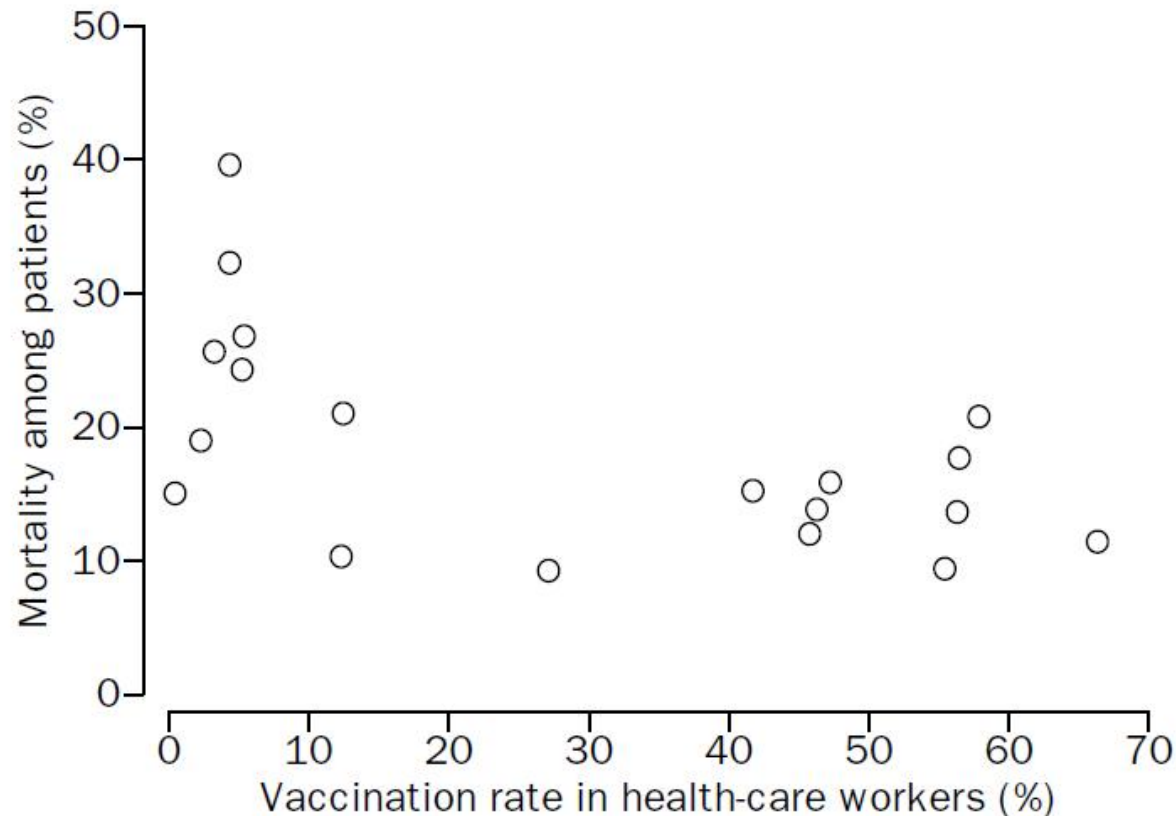
What is the evidence in health-care facilities?

- ü *~25% HCW get infected during flu epidemics
(~half of them without symptoms)*
- ü *Presenteeism (working while symptomatic) is frequent*
- ü *HCW are frequent sources of transmission*
- ü *Less susceptible persons means lower risk for epidemics
(herd immunity)*
- ü *Vaccines reduces transmission to household contacts*

Vaccination of HCW

Some evidence in long-term care

- § E.g. cluster randomized trial in 20 hospitals
Carman WF et al, Lancet 2000



Some evidence in long-term care (II)

§ Benefit for residents from staff vaccination *(summary of cluster randomized trials)*

- ü 86% prevention of influenza-like illnesses when HCW and residents were vaccinated
(no significant protection if residents were not vaccinated)
- ü 40% reduction of death from pneumonia and from any cause

§ Cautionary notes

- ü Vaccine coverage remained low even in intervention homes
(~50% of staff, versus ~5% in control homes)
- ü Benefit varied over the years

Carman WF et al, Lancet 2000

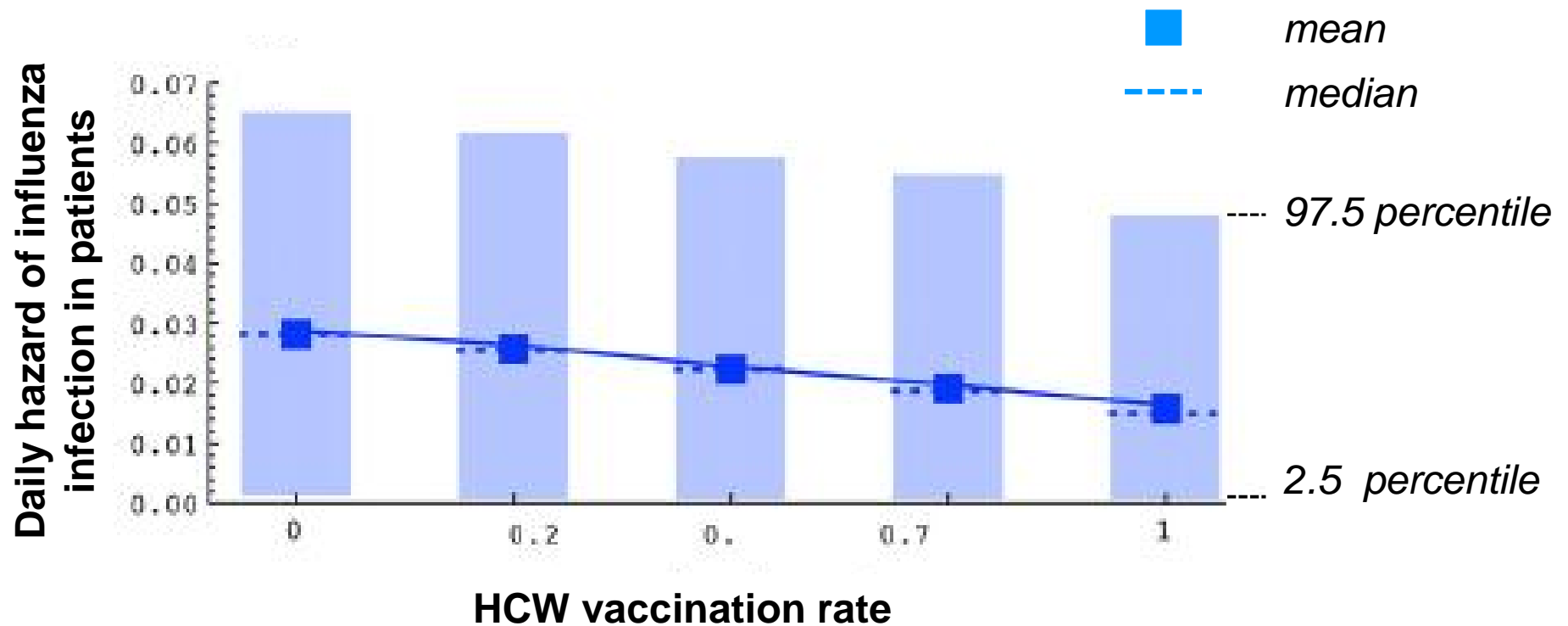
Hayward AC et al, BMJ 2006

Thomas RE et al, Lancet Infect Dis 2006

Vaccination of HCW

Scarce data in acute care

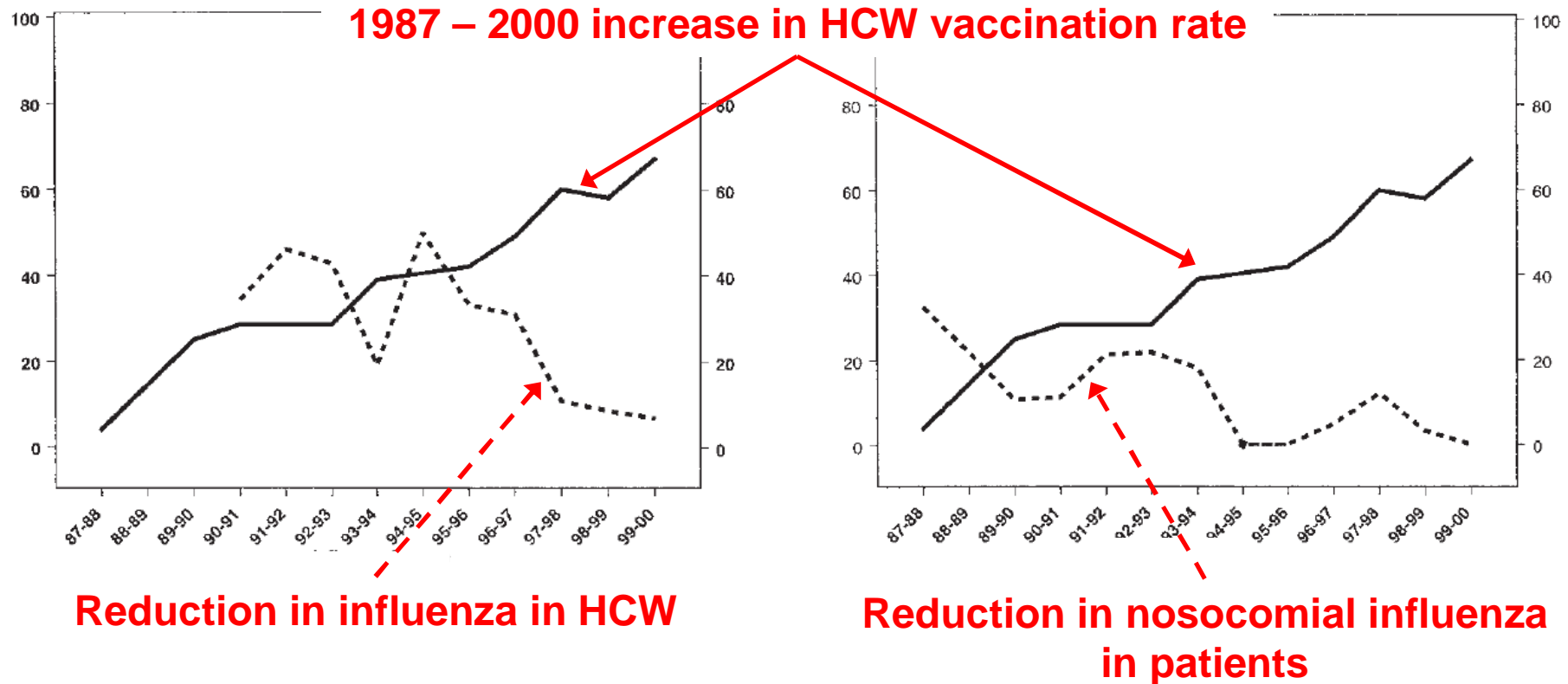
§ Mathematical models suggest a similar or higher impact than in long-term care facilities



Vaccination of HCW

Scarce data in acute care (II)

- § Only one observational, monocentric study
CD Salgado et al, Infect Contr Hospit Epidemiol 2004



Conclusions

- § There is a need to protect patients from healthcare-associated influenza
- § Healthcare workers contribute much to transmission of influenza
- § Influenza vaccine effectively prevents influenza in healthcare workers
- § Therefore, vaccination of healthcare workers must be fostered to reduce transmission of influenza to patients

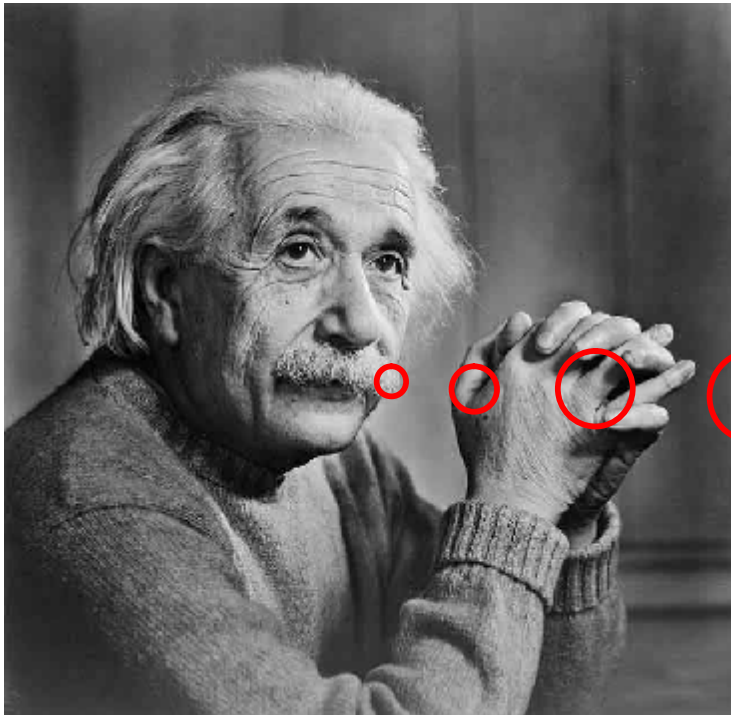
Conclusions (II)

- § Trials have shown that vaccination of personnel saves lives in long-term care facilities
- § There are very few data in acute care hospitals
- § We should not wait for randomized trials in this setting:
 - ü Methodologically challenging
 - ü Ethically problematic given the current knowledge
 - ü Even a partial efficacy is worth our efforts
- § As we are far from a complete herd immunity,
every additional healthcare worker vaccinated provides additional protection!

Influenza vaccination of HCW

What does science say ?

the scientist



*Only two things
are infinite: the
universe and
human stupidity.
And I'm not sure
about the
former...*

Albert Einstein, 1879 – 1955

Influenza vaccination of HCW

What does ~~science~~ say ?

~~the scientist~~
the philosopher

*Get them
vaccinated,
it's logical !*

*Is it
ethical?*



Raphael, *L'école d'Athènes*, 1512