

Table 5b. Influenza vaccination of health care workers; impact in long term care facilities for the elderly

Is influenza vaccine versus no intervention in health care worker effective to prevent influenza morbidity and mortality in residents of long term care facilities for the elderly?				
		Rating	Adjustment to rating	
Quality Assessment	No of studies/starting rating		4 RCTs ^{1,2}	4
	Factors decreasing confidence	Limitation in study design	Very serious ³	-2
		Inconsistency	Serious ⁴	-1
		Indirectness	Serious ⁵	-1
		Imprecision	Serious ⁶	-1
		Publication bias	None serious	0
	Factors increasing confidence	Strength of association/ large effect	Not applicable	0
		Dose-response	Not applicable	0
		Antagonistic /mitigated bias and confounding	Not applicable	0
	Final numerical rating of quality of evidence			1 (numerical rating -1 but value cannot be <1)
Summary of Findings	Statement on quality of evidence		Our confidence in the estimate of effect of influenza vaccination of HCW on influenza and related outcomes in elderly living in long term care facilities is low.	
	Conclusion		HCW vaccination has no effect on laboratory-confirmed influenza among the elderly in long term care facilities (high influenza activity, pooled, cluster-adjusted OR of vaccinated and unvaccinated elderly: 0.87; 95% CI: 0.38 to 1.99, p=0.74). ⁷ There was also no significant effect on pneumonia risk shown from a combined estimate from one RCT (risk ratio of 0.71; 95% CI: 0.29 to 1.71) ⁸ and no significant effect on pneumonia-associated deaths in either vaccinated or unvaccinated elderly as indicated by a pooled and cluster-adjusted OR of 0.87 (95% CI: 0.47 to 1.64, p=0.67). ⁹ HCW vaccination during periods of high influenza activity significantly reduced non-specific outcomes such as ILI among the elderly in long term care facilities (pooled, cluster-adjusted RR 0.71, 95% CI 0.58 to 0.88, p=0.002) ¹⁰ and all-cause mortality (adjusted OR 0.68; 95% CI: 0.55 to 0.84, p=0.0004) but no significant effect was shown on deaths from ILI and on hospital admissions.	

NOTES

¹ RCTs by Carman et al. 2000, Hayward et al. 2006, Potter et al. 1997 and Lemaitre et al. 2009 included 7558 individuals and assessed the impact of HCW vaccination with any influenza vaccine on health outcomes and/or complications in individuals aged 60 years and older living in geriatric facilities. Outcomes were pooled by means of a meta-analysis as part of a Cochrane review (Thomas et al. 2010) that adjusted for clustering and categorized into specific and non-specific health outcomes among the elderly. Specific effects of HCW vaccination included influenza incidence (pooled estimate from Carman et

al. 2000 and Potter et al. 1997), pneumonia (combined estimate from Potter et al. 1997), and death from pneumonia (pooled estimate from Potter et al. 1997 and Lemaitre et al. 2009).

Unspecific effects included ILI (pooled estimate from Hayward et al. 2006, Lemaitre et al. 2009 and Potter et al. 1997), GP consultation for ILI and deaths from ILI (Hayward et al. 2006), hospital admissions (pooled estimate from Hayward et al. 2006 and Lemaitre et al. 2009), and all-cause mortality (pooled estimate from Carman et al. 2000, Hayward et al. 2006, Potter et al. 1997 and Lemaitre et al. 2009).

² A relevant observational cohort study was identified that evaluated HCW vaccination effects and included 12741 individuals (Oshitani et al. 2000). A significant effect on ILI in residents was reported (VE of 61%; 95% CI 54 to 68). The study was subject to a number of bias including selection bias reflected in the lack of a definition of vaccine coverage rates and unclear ascertainment of vaccination status in HCW. Other bias were aroused from the comparability of the intervention facilities (elderly residents and elderly residents with severe health conditions were mixed), the lack of laboratory confirmation for influenza and the application of differential diagnostic criteria for ILI. Incomplete data were not addressed in this study and evidence was not included in the grading process.

³ Only one RCT had addressed both appropriate sequence generation and allocation concealment (Hayward et al. 2006). Although there was no selective reporting of evidence and incomplete data were mostly addressed, all four RCTs have a high risk of bias: there was no blinding or no information on blinding from the RCTs (neither participants nor study personnel), which would avoid potential effects of the intervention other than the study intervention. Selection bias may have affected the RCTs by Carman et al. 2000 and Potter et al. 1997 and statistical bias may result from low power. Incomplete data were not addressed in three out of four trials (Carman et al. 2000, Hayward et al. 2006, Potter et al. 1997) and performance bias can be assumed given the inadequate and variable provision of influenza vaccine to study participants.

⁴ Inconsistency/heterogeneity was a major concern across the 4 RCTs and pooling of existing data was not possible across all trials.

⁵ The non-specific outcomes, namely ILI and all-cause mortality, presented in most of the trials can be influenced by other pathogens. It has been shown that winter influenza contributes to a smaller percentage of all cause mortality in the elderly thus that findings presented on mortality and ILI are likely to be subject to residual confounding from pathogens other than influenza and differences in uptake of vaccine due to socio-economic conditions. Since there were no serological data from HCW in the majority of trials, it is unclear if the reduction in mortality and ILI is attributable to vaccination.

⁶ Wide CIs, low number of events observed.

⁷ Carman et al. 2000, Potter et al. 1997; also no effect if stratified by vaccinated and unvaccinated elderly.

⁸ Potter et al. 1997; also no effect if stratified by vaccinated and unvaccinated elderly.

⁹ Potter et al. 1997, Lemaitre et al. 2009; also no effect if stratified by vaccinated and unvaccinated elderly

¹⁰ Potter et al. 1997, Hayward et al. 2006, Lemaitre et al. 2009

References

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