

Supplementary table 1: Influenza vaccine effectiveness for current season stratified by two previous seasons vaccination status by influenza (sub)type and season, InNHOVE, 2011-14 and I-MOVE+ 2015-16, restricted to study sites using vaccine registers for vaccination status ascertainment\*

Type subtype	Seasons included	Among those not vaccinated in either of the two previous seasons				95%CI	Cases (vaccinated)
		Cases (vaccinated)	Controls (vaccinated)	VE (%)	95%CI		
A(H1N1)pdm09	2012-13, 2013-14 and 2015-16	105 (11)	472 (80)	25	(-58 to 64)	140 (11)	
A(H3N2)	2011-12, 2012-13 and 2013-14	88 (10)	183 (27)	-4	(-153 to 58)	307 (27)	
B	2012-13 and 2015-16	65 (7)	381 (62)	34	(-55 to 72)	73 (6)	

\*adjusted for study site, month of onset, age, presence of chronic conditions and season

<sup>1</sup> Missing vaccination status for 20 influenza A(H1N1)pdm09 cases and 56 controls. Missing information on chronic conditions for 3 influenza A(H1N1)pdm09 cases

<sup>2</sup> Missing vaccination status for 41 influenza A(H3N2) cases and 106 controls.

<sup>3</sup> Missing vaccination status for 1 influenza B cases and 20 controls

Supplementary table 2: Previous, current and combined seasonal influenza vaccine effectiveness (VE) by influenza (sub)type and season, InNHOVE 2011-14 and I-MOVE+ 2015-16, restricted to study sites using vaccine registers for vaccination status ascertainment \*

Season	Vaccine uptake in the current and past two seasons	Influenza A(H1N1)pdm09				Influenza A(H3N2)			
		Cases	Controls	VE	95% CI	Cases	Controls	VE	95% CI
season 11-12	None					55	83		Reference
	Current only					5	10	24	(-135 to 75)
	Previous season and not current					55	109	23	(-23 to 52)
	All					232	525	33	(2 to 54)
season 12-13	None	12	248		Reference	1	40	Ref	
	Current only	4	55	-51*	(-388 to 53)	1	12	NA	
	Previous season and not current	3	104	39*	(-120 to 83)	0	16	NA	
	All	19	485	19*	(-69 to 61)	2	95	NA	
season 13-14	None	11	33		Reference	22	33		Reference
	Current only	0	5	NA		4	5	-20	(-397 to 71)
	Previous season and not current	7	20	-5*	(-215 to 65)	17	20	-28	(-196 to 45)
	All	13	92	58*	(-4 to 83)	33	92	46	(-5 to 73)
season 15-16	None	71	111		Reference				
	Current only	7	20	43	(-51 to 79)				
	Previous season and not current	19	42	32	(-34 to 65)				
	All	95	284	43	(12 to 63)				
Overall	None	94	392		Reference	78	156		Reference
	Current only	11	80	26	(-55 to 64)	10	27	4	(-137 to 61)

Previous season and not current	29	166	21	(-32 to 53)	72	145	20	(-24 to 48)	2
All	127	861	36	(10 to 54)	267	712	38	(12 to 56)	6

\* adjusted for study site, month of onset, age, presence of chronic conditions and season unless otherwise specified

\* adjusted for study site

NA: not applicable (sample size too small to adjust IVE on study site)