



ASSESSMENT OF THE EFFECT OF REPEATED VACCINATION ON CURRENT SEASON IVE – PATIENTS 60 YEARS OR OVER, 2013-2014 TO 2015-2016

FISABIO, Valencia.



GENERALITAT
VALENCIANA



Fundación para el Fomento de la
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Authors



J. Puig-Barberà; V. Baselga-Moreno; A. Mira-Iglesias;
B. Guglieri-López; M. Tortajada-Girbés; F.X. López-
Labrador; M. Carballido-Fernández C. Carratalá-
Munuera; P Correcher-Medina; V. Gil-Guillén; R.
Limón-Ramírez; J. Mollar-Maseres (*), M.C. Otero-
Reigada (*), G. Schwarz, J. Díez-Domingo

on behalf of the Valencia Hospital Network for the Study of Influenza and
other Respiratory Viruses (VAHNSI, Spain)

FISABIO,
(*) Hospital La Fe , Valencia

Conflict of interest: JDD Has acted as advisor for SP, GSK and Pfizer. Travel grants to assist to scientific meetings.

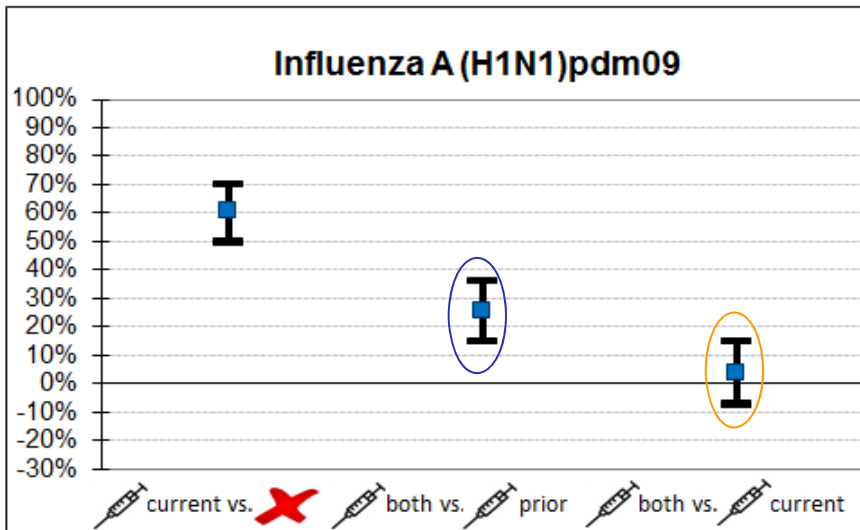
This study was funded by FISABIO, Sanofi Pasteur (seasons 2013-2014 & 2014-2015)
and the Foundation for Influenza Epidemiology (season 2015-2016).

- Annual influenza vaccination is recommended for risk groups
- Debate about the effect of annual vaccination:
 - Has vaccination in the current season a different effectiveness depending on previous vaccinations?
 - Have frequent vaccinations in previous seasons a different effectiveness depending on the current vaccination status?

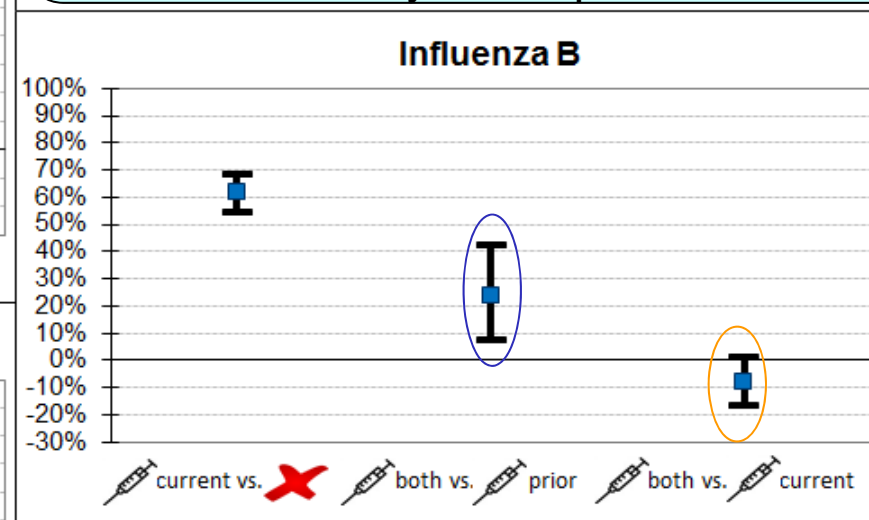
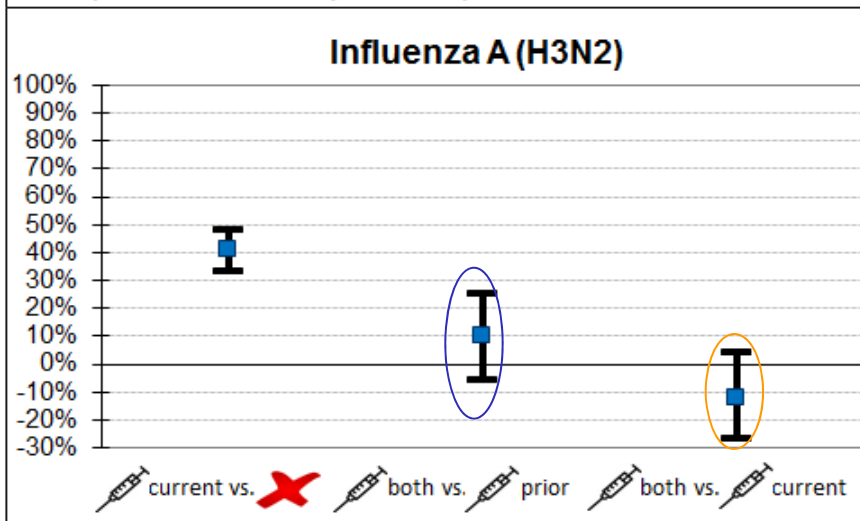


Impact of previous vaccination on IVE

Ramsay LC, meta-analysis (seasons 2007/08-2014/15)



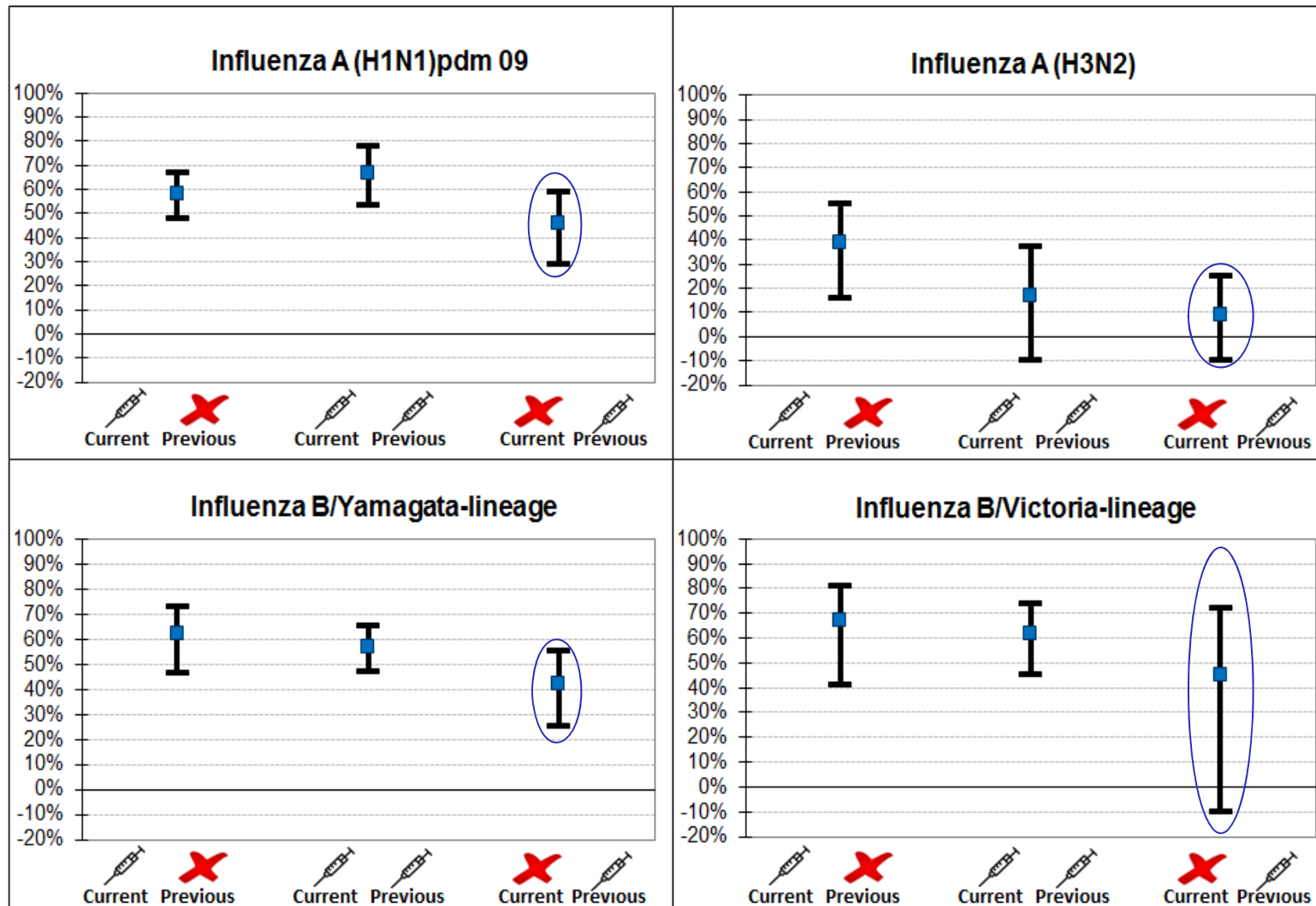
Influenza vaccine effectiveness (IVE) for those vaccinated in current and prior season is higher than IVE for those vaccinated only in the prior season



Current season vaccination could be less effective for those vaccinated in the prior season for Influenza A(H3N2) and Influenza B, and similar for Influenza A(H1N1)pdm09

Impact of previous vaccinations on IVE

Belongia E, Metanalysis (seasons 2010/11-2014/15)

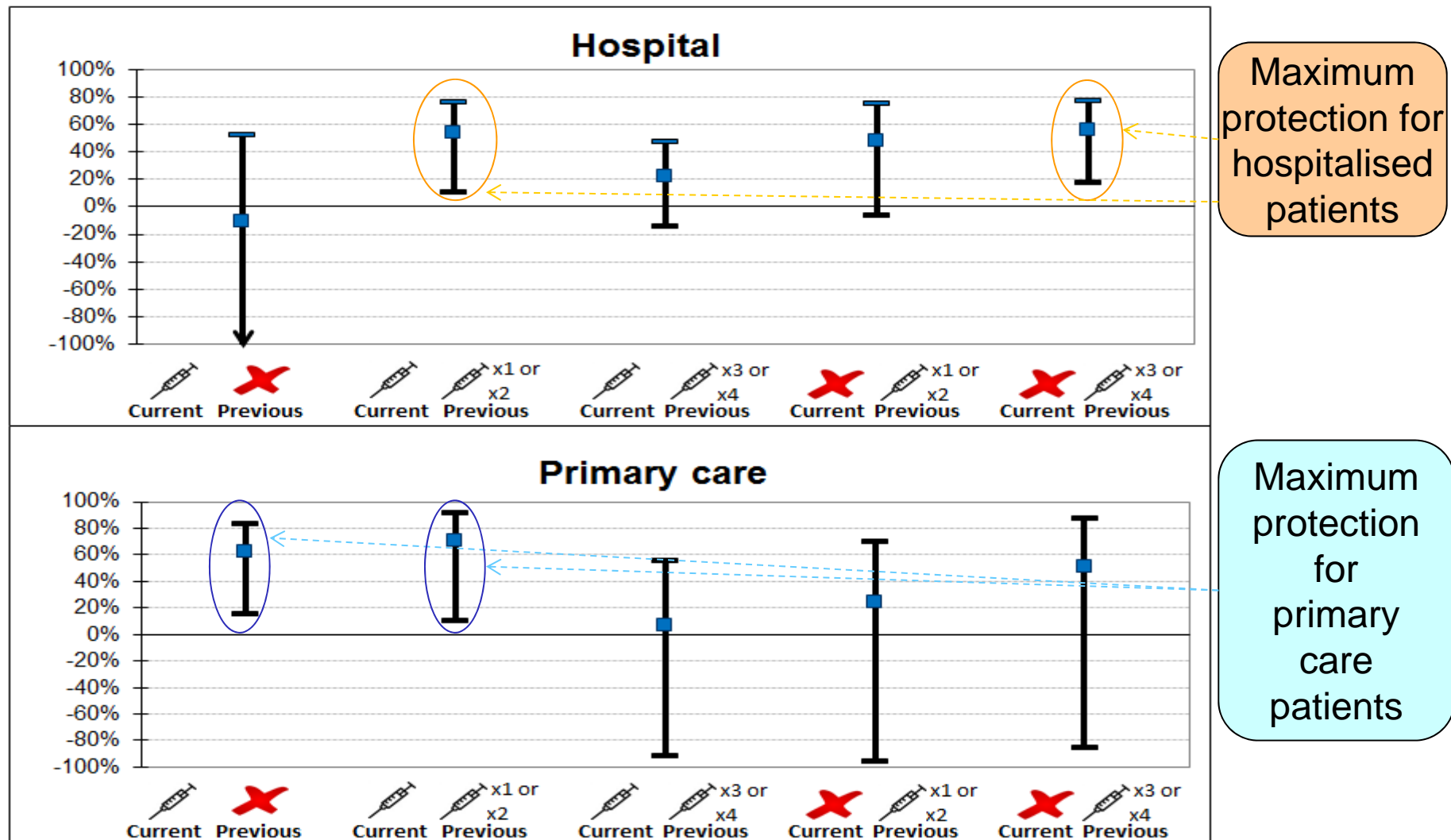


Not clear if repeated vaccination offers more or less protection

Lower effectiveness for those vaccinated only in the previous season

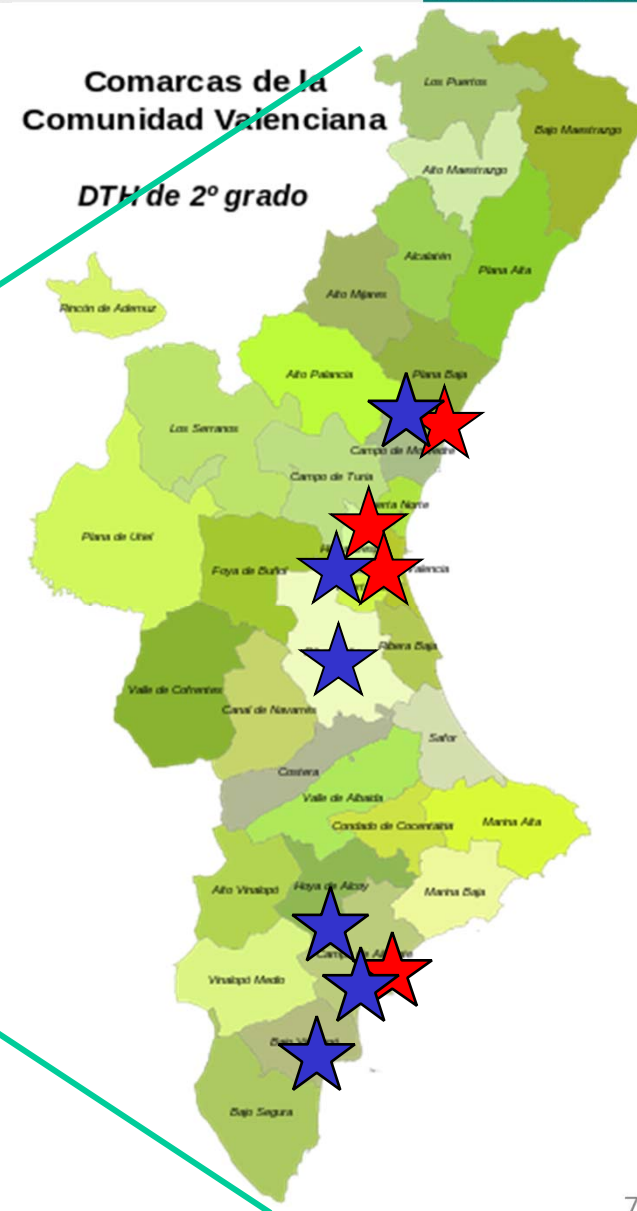
Impact of previous vaccinations on IVE

Castilla J (mid-season 2016/17 – Hospitalization; Navarre, Spain)



METHODS

Inclusion criteria

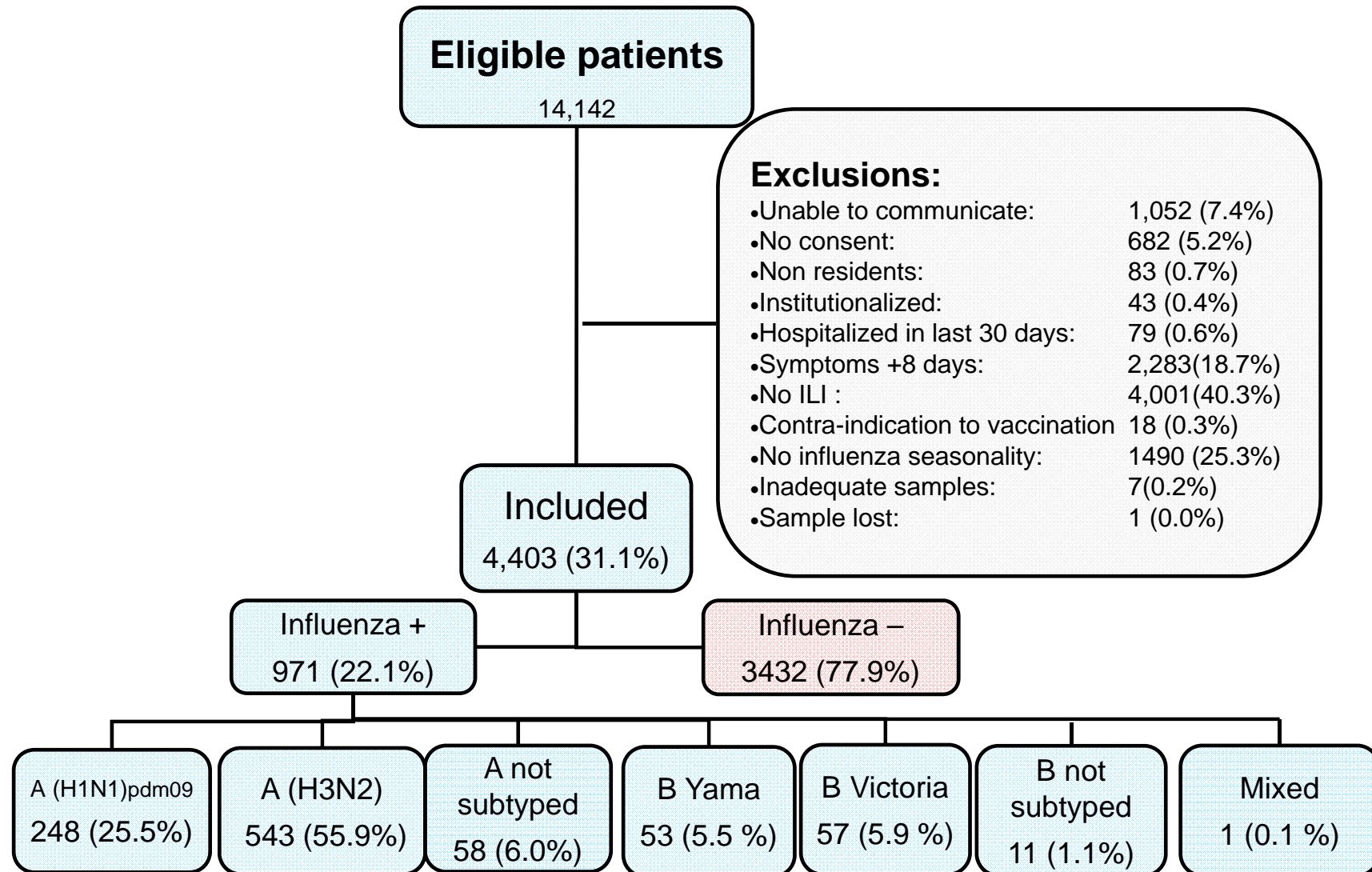


Inclusion criteria









Hospitalised patients. Seasons 2013/14- 2015/16

- Acute condition
- 60 + years
- Residents
- Not institutionalised
- Not discharged <30 days
- ILI

Patients flow








Vaccination status

		GROUP			
		0 (REF)	1	2	3
SEASON	0				
	-1 OR -2				





SAMPLE SIZE



		Season 2013-2014	Season 2014-2015	Season 2015-2016	All seasons
Group 0		272 (28.2%)	566 (23.7%)	313 (29.8%)	1151 (26.1%)
Group 1		22 (2.3%)	71 (3.0%)	19 (1.8%)	112 (2.5%) 
Group 2		575 (59.7%)	1541 (64.5%)	627 (59.8%)	2743 (62.3%)
Group 3		94 (9.8%)	213 (8.9%)	90 (8.6%)	397 (9.0%)
Total		963 (100%)	2391 (100%)	1049 (100%)	4403 (100%)

Vaccination status and influenza results

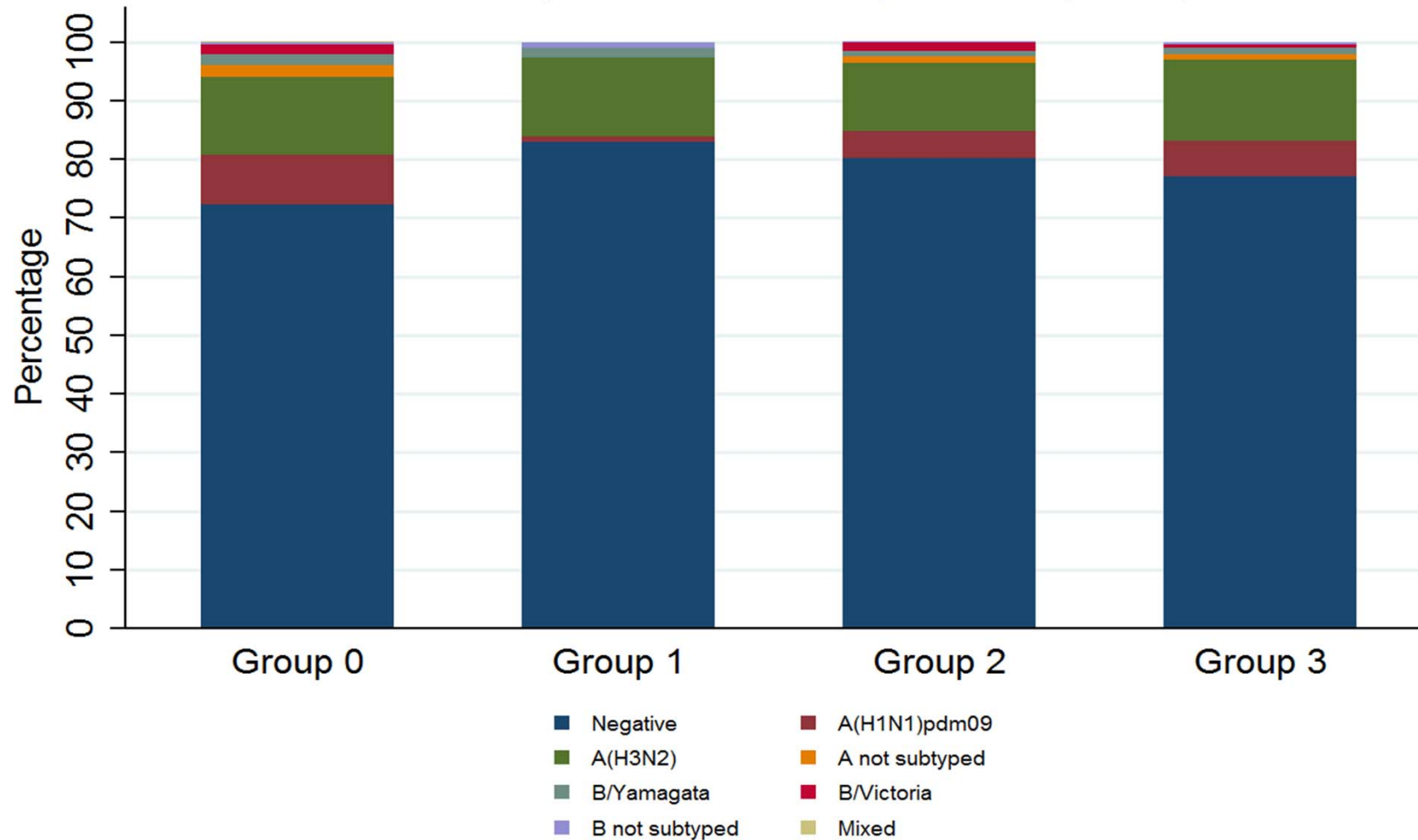


GROUP	Season 2013-2014		Season 2014-2015		Season 2015-2016		All seasons	
	Influenza +	% (95% CI)	Influenza +	% (95% CI)	Influenza +	% (95% CI)	Influenza +	% (95% CI)
0 	78	28.7 (23.4-34.4)	173	30.6 (26.8-34.5)	68	21.7 (17.3-26.7)	319	27.7 (25.1 -30.4)
1 	2	9.1 (1.1 -29.2)	17	23.9 (14.6 -35.5)	0	0 (0 -17.6)	19	17.0 (10.5 -25.2)
2 	96	16.7 (13.7 -20.0)	341	22.1 (20.1 -24.3)	105	16.8 (13.9 -19.9)	542	19.8 (18.3 -21.3)
3 	18	19.2 (11.8 -28.6)	59	27.7 (21.8 -34.2)	14	15.6 (8.8 -24.7)	91	22.9 (18.9 -27.4)
Total	194	20.2 (17.7 -22.8)	590	24.7 (23.0 -26.5)	187	17.8 (15.6 -20.3)	971	22.1 (20.8 -23.3)

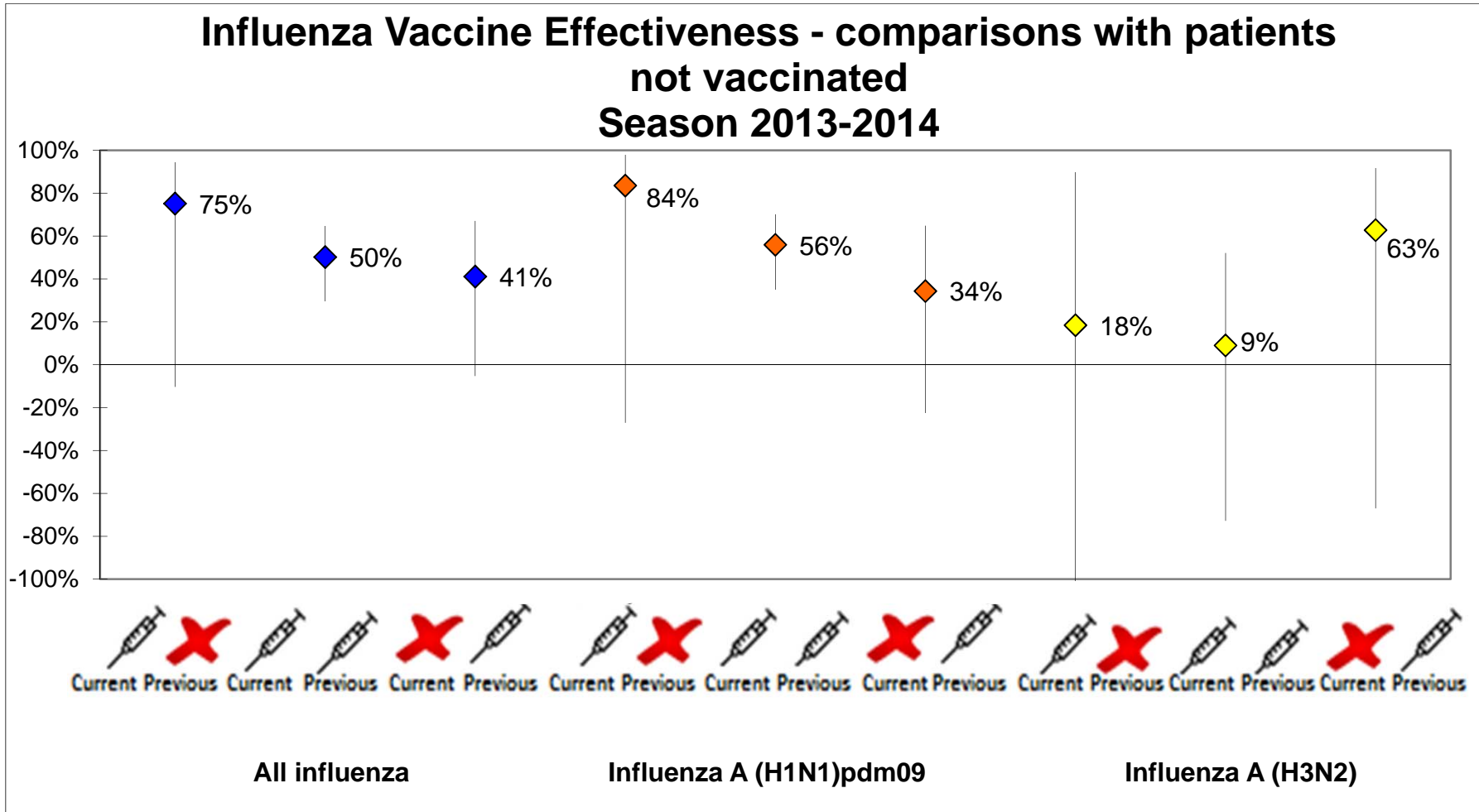
Vaccination status & influenza –



Laboratory results by category
Valencia Hospital Network for the Study of Influenza (VAHNSI)



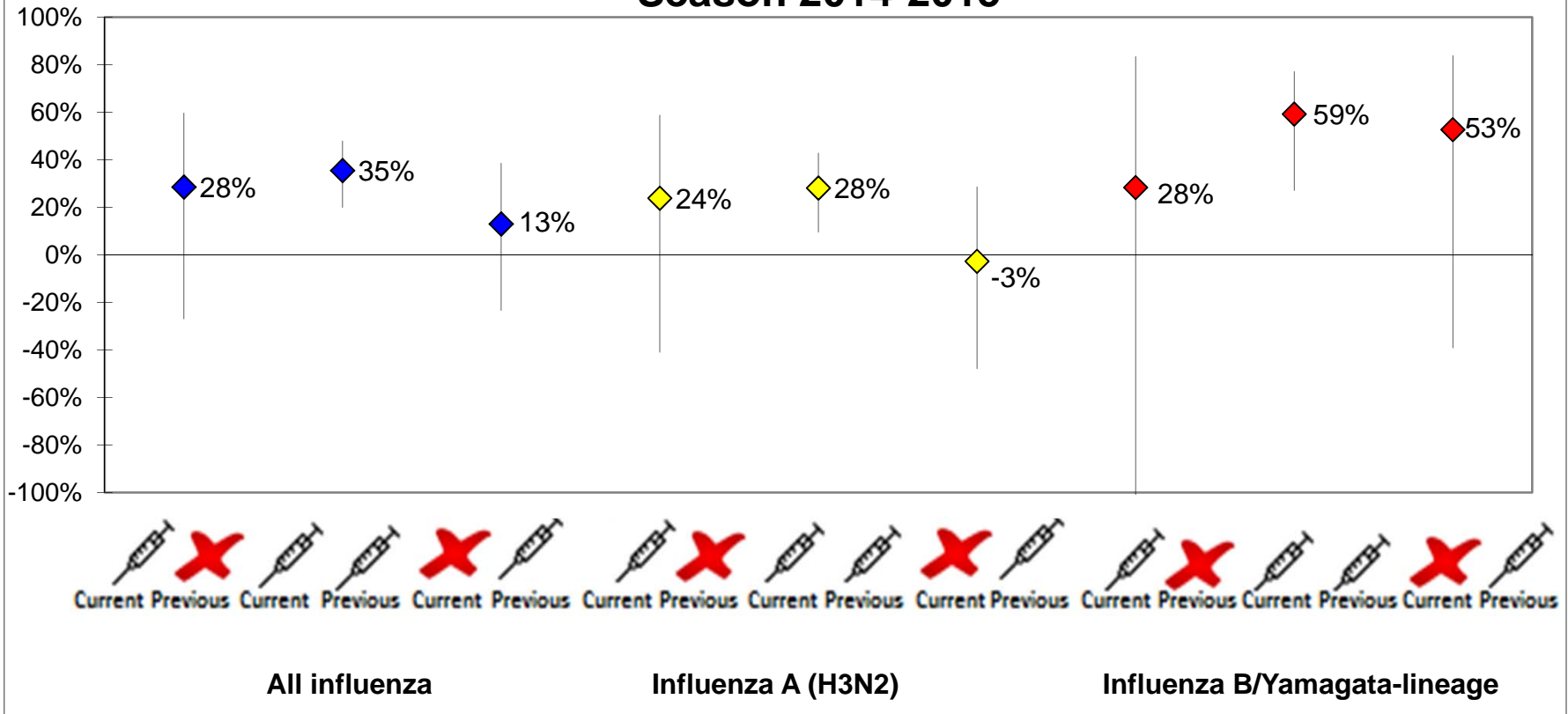
Crude Influenza vaccine effectiveness



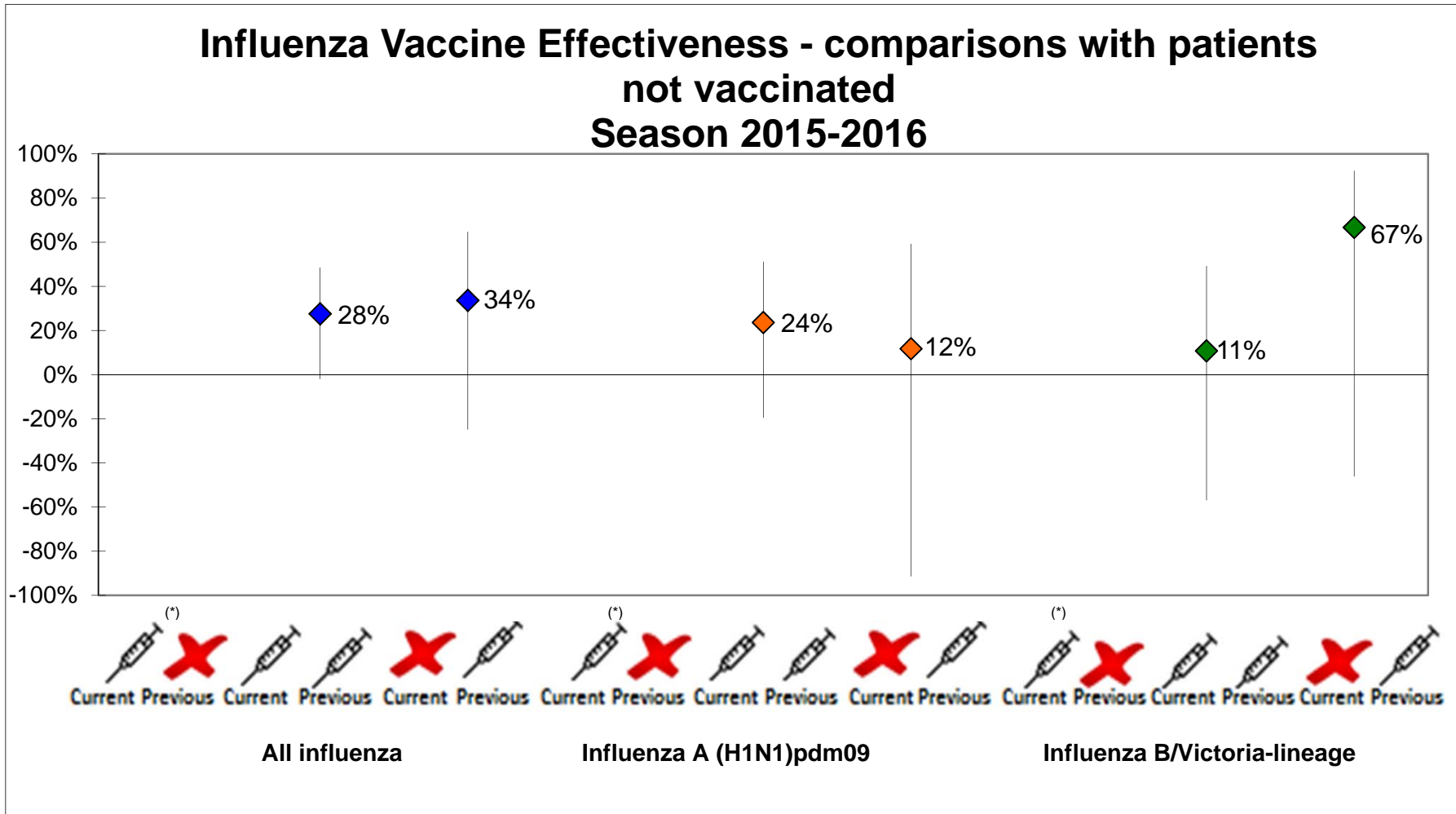
Crude Influenza vaccine effectiveness



Influenza Vaccine Effectiveness - comparisons with patients not vaccinated Season 2014-2015



Crude Influenza vaccine effectiveness



Characteristics of the included patients



	Influenza negative		Influenza positive		P- value
	N	%	N	%	
	3432	100.0	971	100.0	
Age group					0.0065
60-69	617	18.0	210	21.6	
70-79	1088	31.7	329	33.9	
80-89	1374	40.0	351	36.2	
>=90	353	10.3	81	8.3	
Sex					0.1555
Female	516	44.3	455	46.9	
Underlying conditions					0.0099
None	452	13.2	159	16.4	
One	1144	33.3	350	36.0	
Two or more	1836	53.5	462	47.6	
Admission in the previous 12 months	1335	38.9	322	33.2	0.0010
Outpatient contacts (in past three months)					0.0026
None	537	15.7	171	17.6	
One to three	1810	52.7	548	56.4	
Four or more	1085	31.6	252	26.0	
Body mass index status					0.7723
Functional status (Barthel Index) (*)	3180	92.7	878	90.4	0.0011
Dependent	574	18.1	117	13.3	
Mild dependence	593	18.7	154	17.5	
No dependence	2013	63.3	607	69.1	

(*) Only for patients 65 years old or more

Characteristics of the included patients



	Influenza negative		Influenza positive		P-value
	N	%	N	%	
	3432	100.0	971	100.0	
Smoking					0.0040
Current	386	11.2	140	14.4	
Ex	1373	40.0	342	35.2	
Never	1673	48.8	489	50.4	
Occupational socioeconomic class					0.0038
Professional to skilled no manual	450	13.3	135	14.1	
Skilled manual	295	8.7	117	12.2	
Partially skilled to unskilled	2638	78.0	706	73.7	
Days from onset to swab					0.0015
0 to 2	786	22.9	250	25.8	
3 to 4	1418	41.3	434	44.7	
5 to 7	1048	30.5	254	26.2	
>7	180	5.2	33	3.4	

Characteristics of the included patients



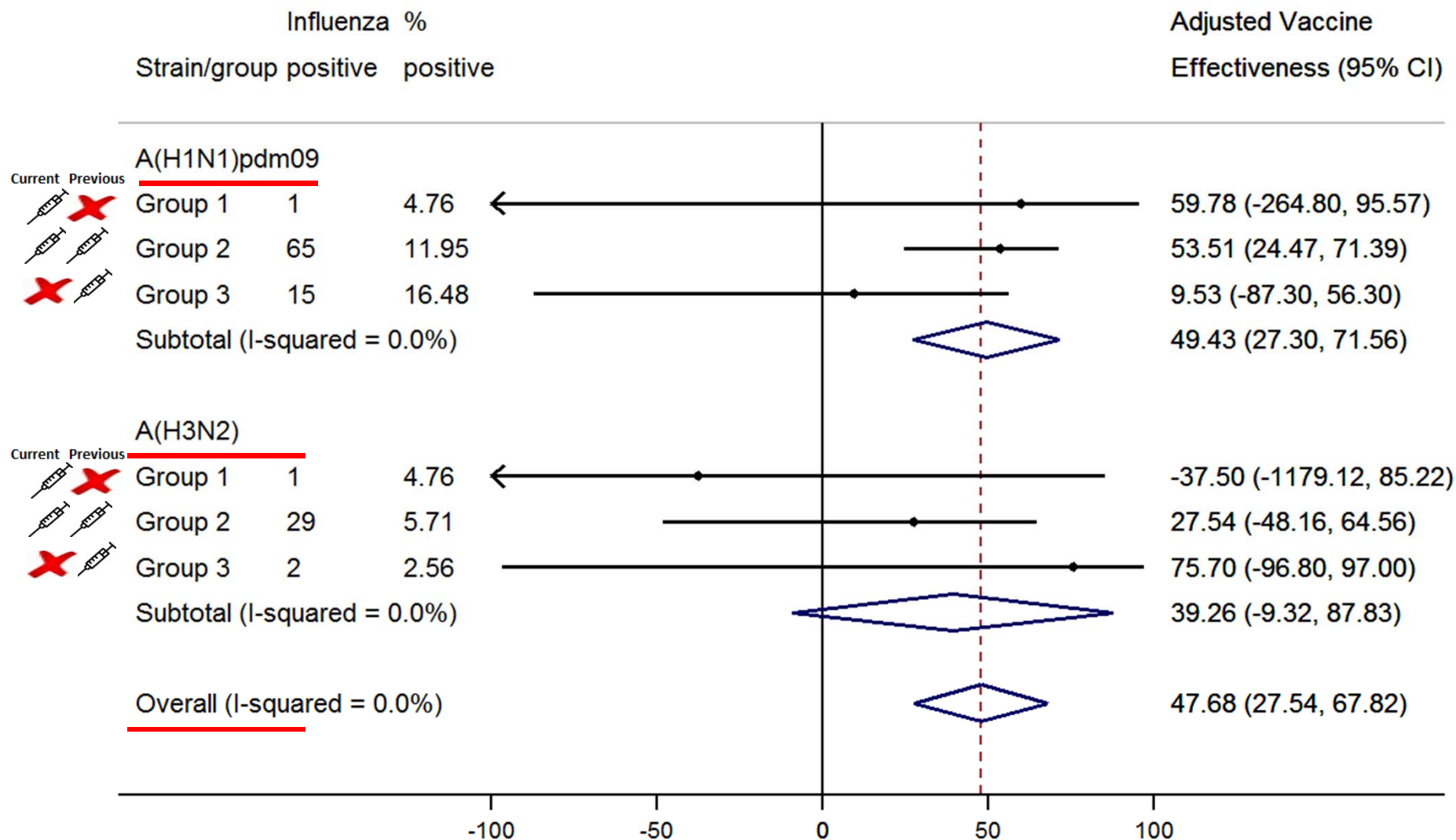
	Influenza negative		Influenza positive		P-value
	N	%	N	%	
	3432	100.0	971	100.0	
Season					0.0000
2013-2014	769	22.4	194	20.0	
2014-2015	1801	52.5	590	60.7	
2015-2016	862	25.1	187	19.3	
Vaccination status					0.0000
Group 0	832	24.2	319	32.9	
Group 1	93	2.7	19	2.0	
Group 2	2201	64.1	542	55.8	
Group 3	306	8.9	91	9.4	

Vaccination status of the included patients



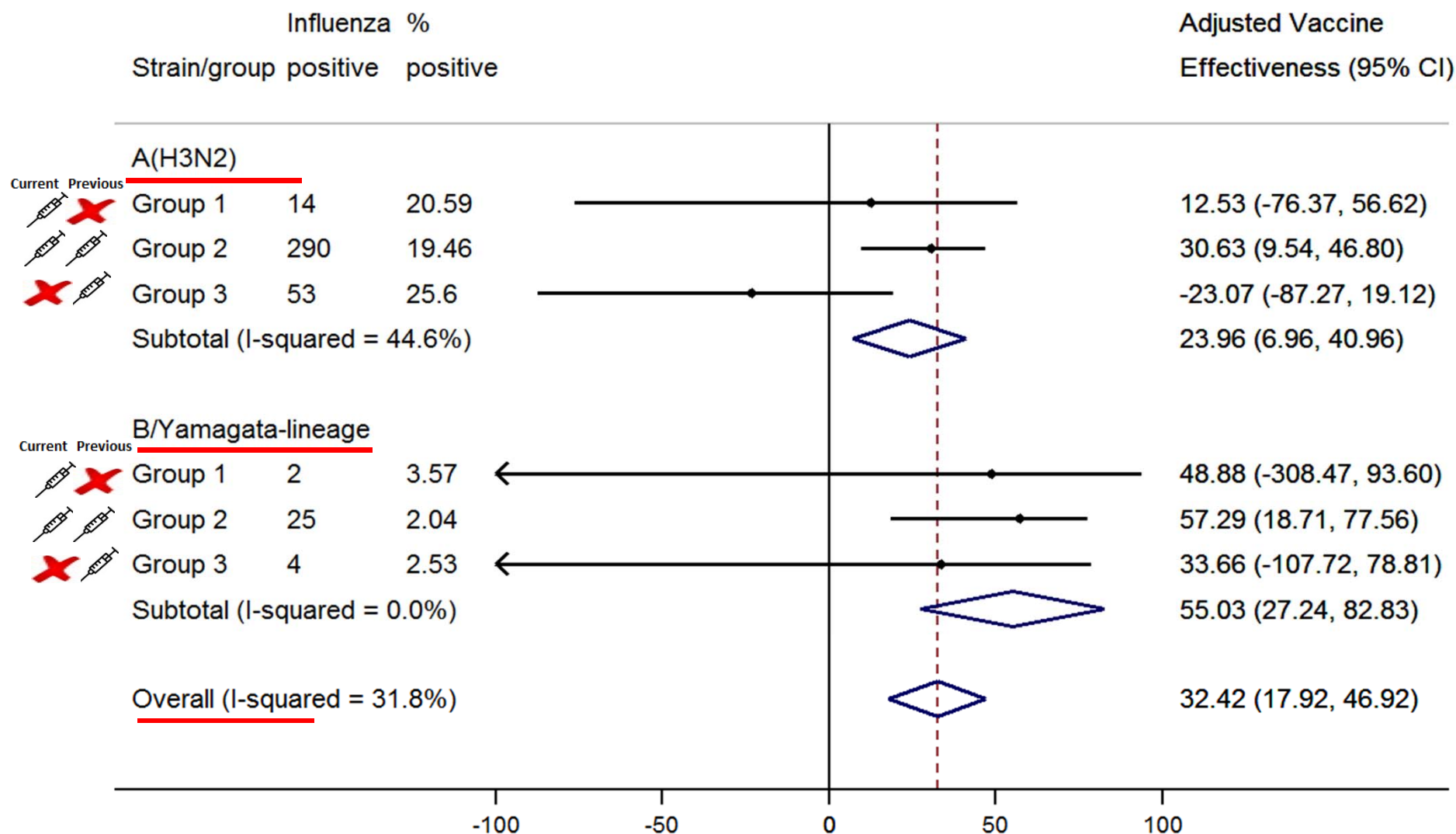
		Influenza negative	Influenza positive
		n (%)	n (%)
Season 0	Not vaccinated	1138 (33.2%)	410 (42.2%)
	Vaccinated	2294 (66.8%)	561 (57.8%)
Season -1	Not vaccinated	1067 (31.1%)	380 (39.1%)
	Vaccinated	2365 (68.9%)	591 (60.9%)
Season -2	Not vaccinated	1316 (38.3%)	425 (43.8%)
	Vaccinated	2116 (61.7%)	546 (56.2%)

Adjusted Vaccine Effectiveness by strain – Season 2013-2014



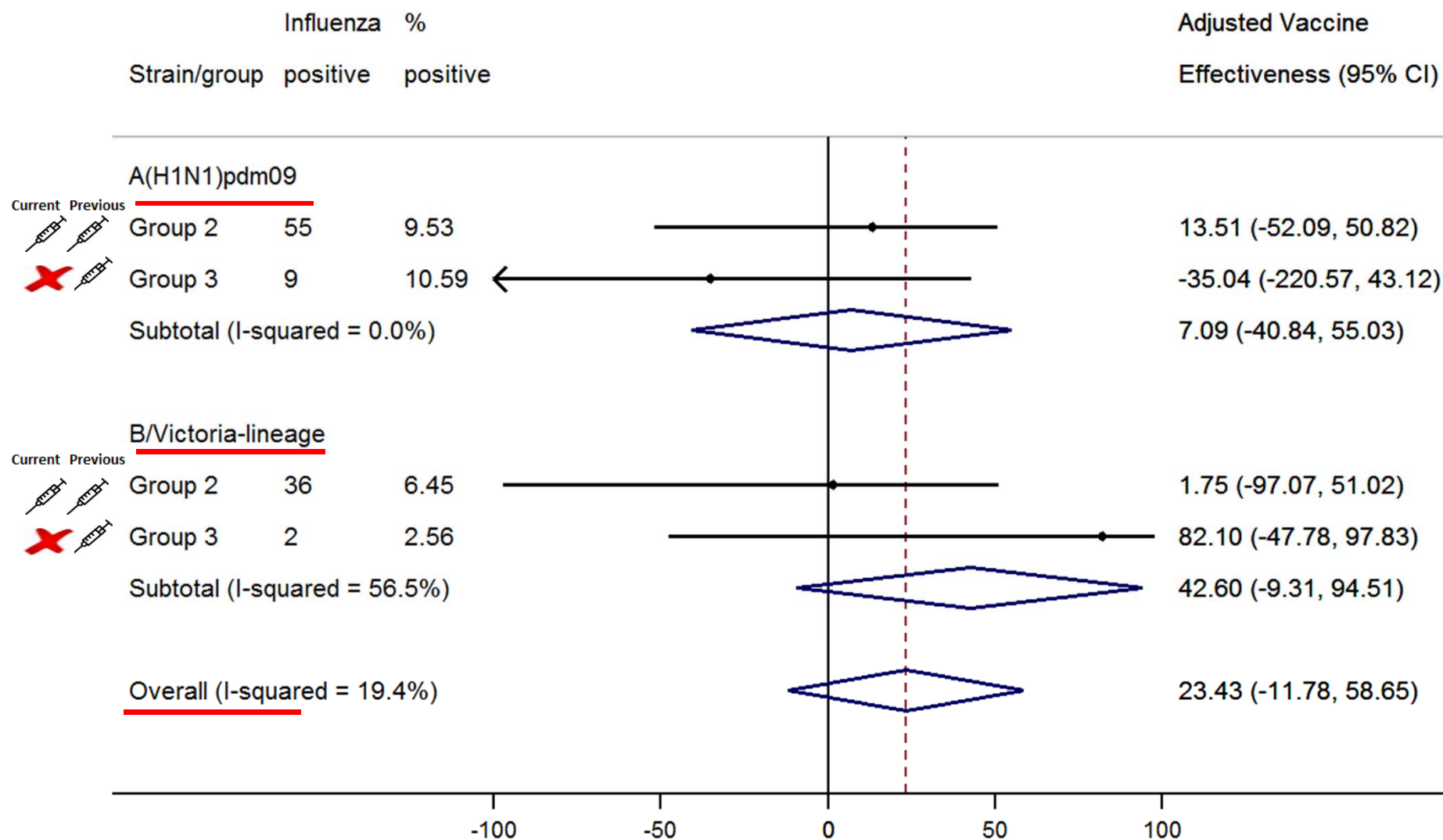
Multivariable regression of hospitalised patients 60 years old and more with influenza in Valencia Region, with the adjusted Vaccine Effectiveness (aVE) and the 95% Confidence Intervals, using patients not vaccinated as the reference group and adjusting by age, sex, comorbidities, hospitalisations in the last 12 months, functional dependence (Barthel Index) and days from onset of symptoms to swabbing as fixed effects, and epidemiological week of admission as a random effect

Adjusted Vaccine Effectiveness by strain – Season 2014-2015



Multivariable regression of hospitalised patients 60 years old and more with influenza in Valencia Region, with the adjusted Vaccine Effectiveness (aVE) and the 95% Confidence Intervals, using patients not vaccinated as the reference group and adjusting by age, sex, comorbidities, hospitalisations in the last 12 months, functional dependence (Barthel Index) and days from onset of symptoms to swabbing as fixed effects, and epidemiological week of admission as a random effect

Adjusted Vaccine Effectiveness by strain – Season 2015-2016

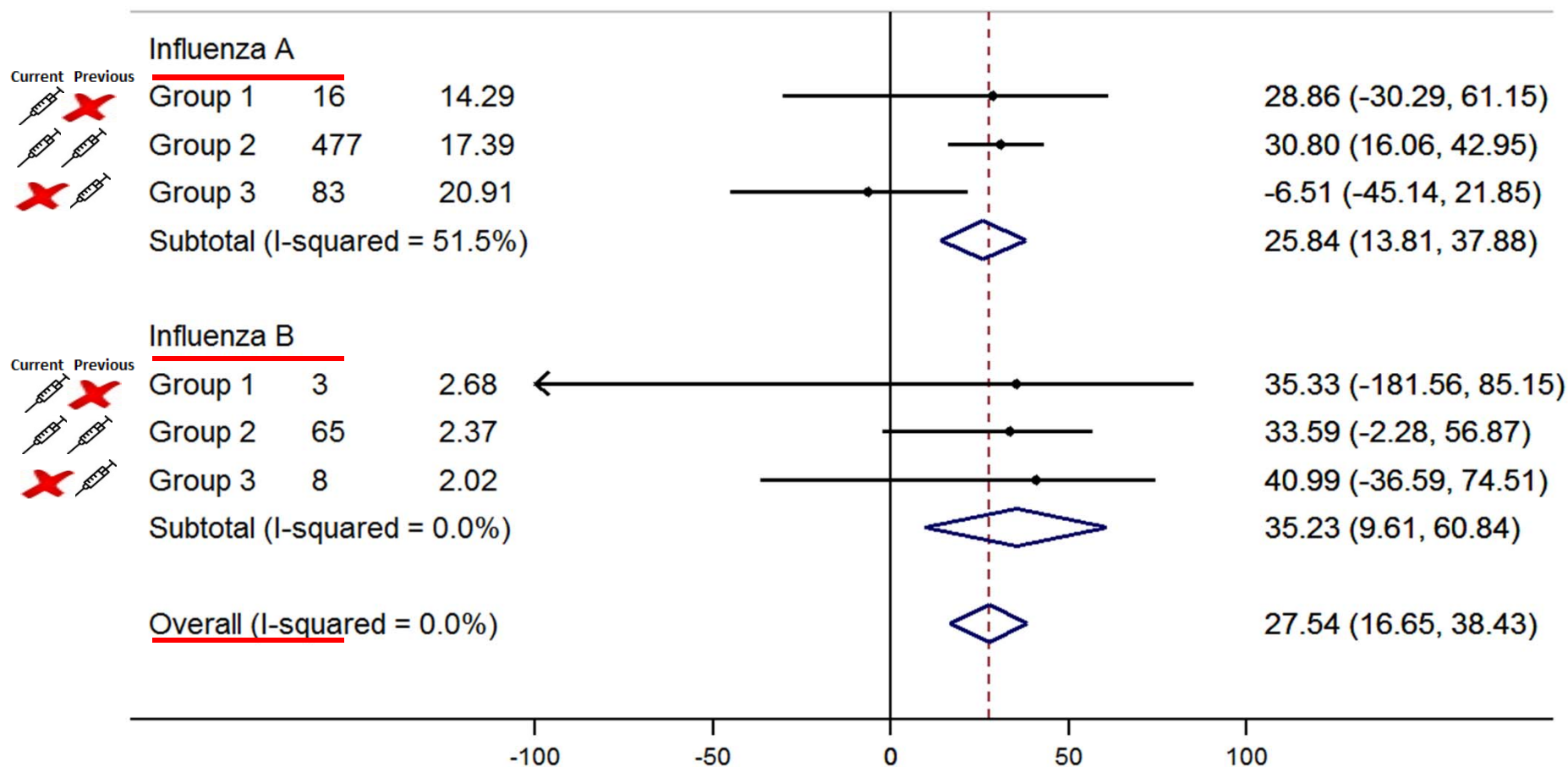


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Adjusted Vaccine Effectiveness by influenza type – All seasons

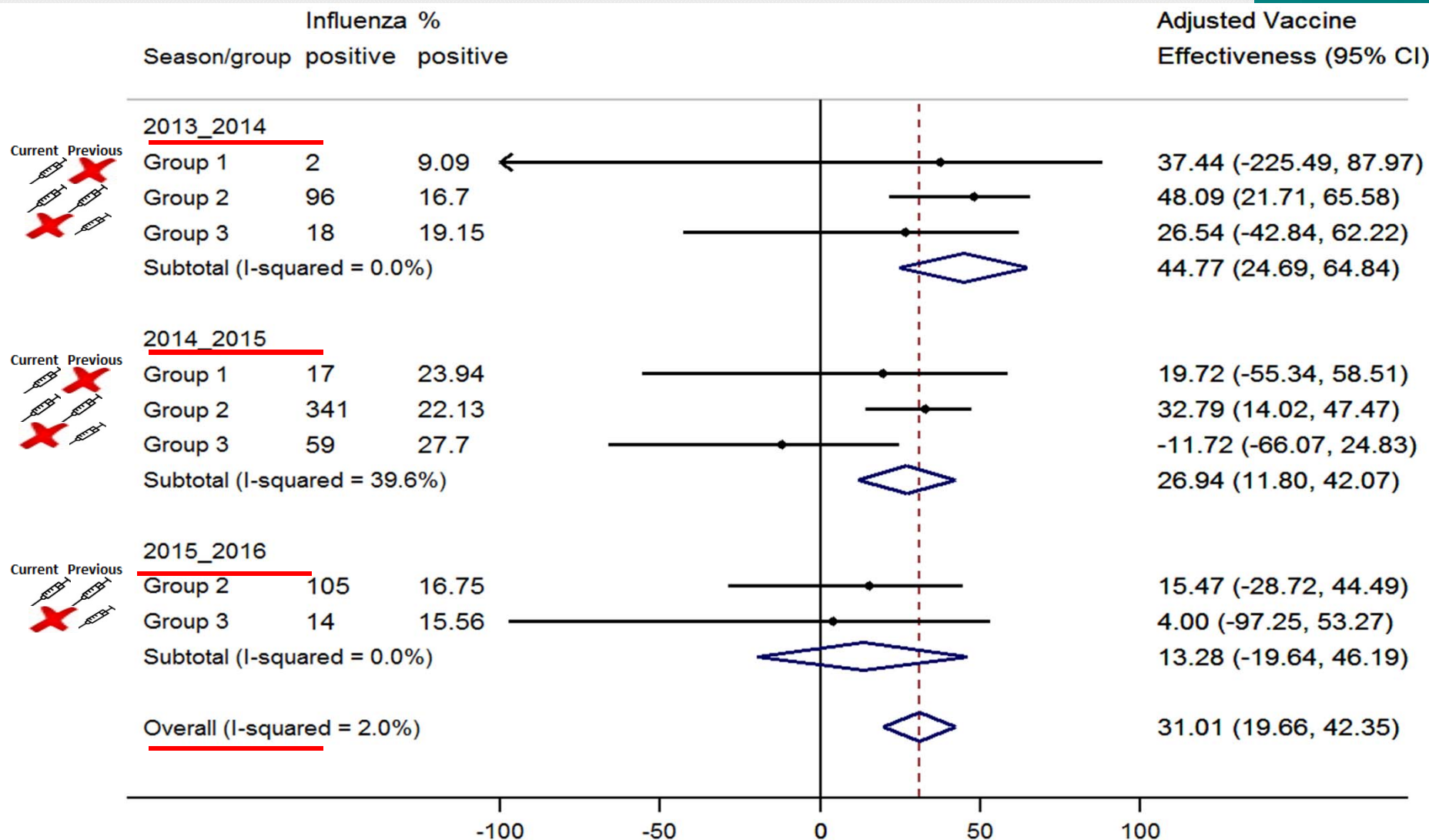
Influenza
type/group - Influenza %
All seasons positive positive

Adjusted Vaccine
Effectiveness (95% CI)



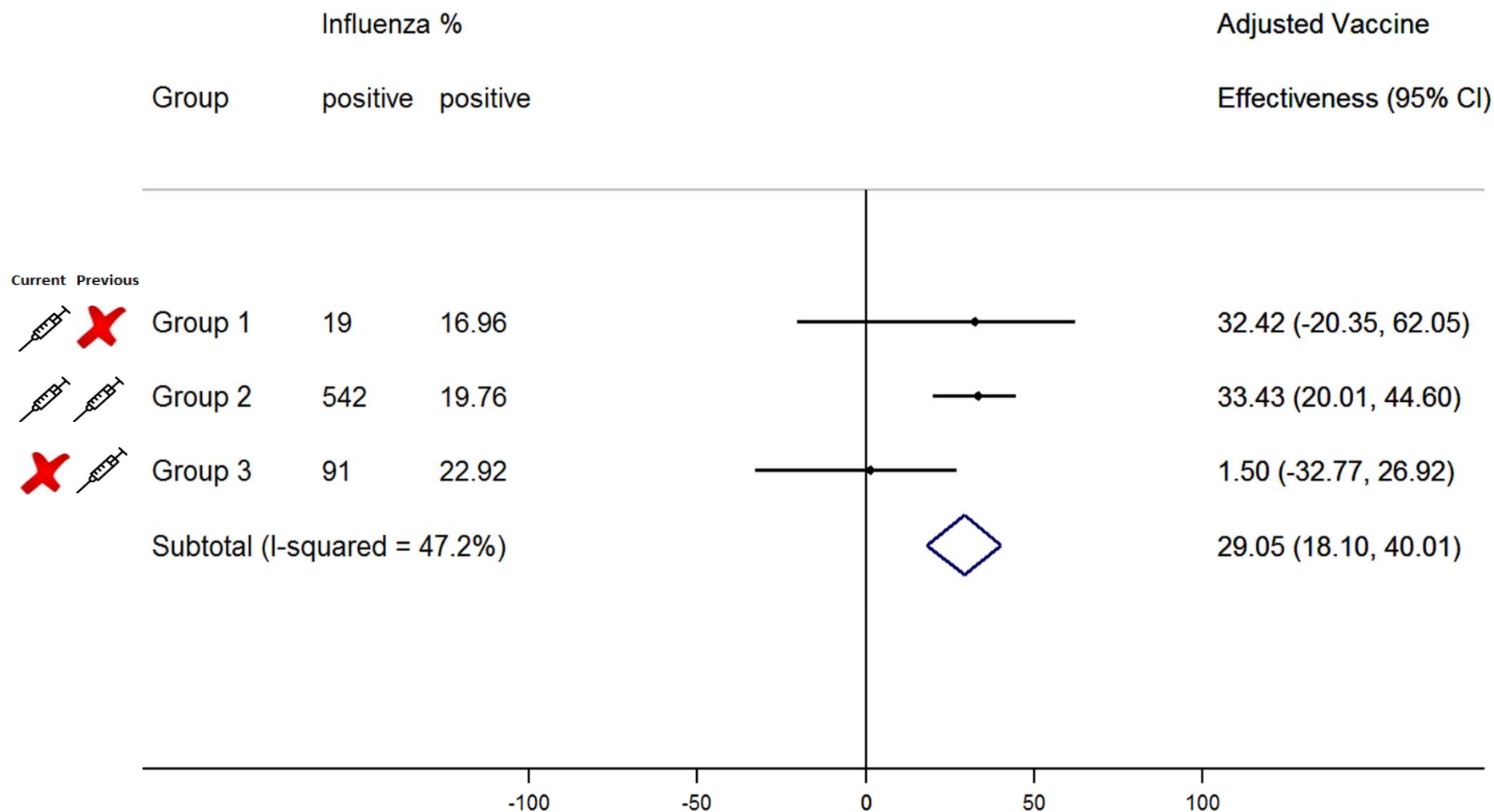
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Adjusted Vaccine Effectiveness – All strains (by season)



Multivariable regression of hospitalised patients 60 years old and more with influenza in Valencia Region, with the adjusted Vaccine Effectiveness (aVE) and the 95% Confidence Intervals, using patients not vaccinated as the reference group and adjusting by age, sex, comorbidities, hospitalisations in the last 12 months, functional dependence (Barthel Index) and days from onset of symptoms to swabbing as fixed effects, and epidemiological week of admission as a random effect

Adjusted Vaccine Effectiveness – All strains (all seasons)



Multivariable regression of hospitalised patients 60 years old and more with influenza in Valencia Region, with the adjusted Vaccine Effectiveness (aVE) and the 95% Confidence Intervals, using patients not vaccinated as the reference group and adjusting by age, sex, comorbidities, hospitalisations in the last 12 months, functional dependence (Barthel Index) and days from onset of symptoms to swabbing as fixed effects, and epidemiological week of admission as a random effect

Conclusions



- Low # influenza cases.
- Vaccination is always efficacious.
- Seasonal vaccination offers significant protection in patients previously vaccinated.
- Vaccination only in the previous season some more protection against influenza B than influenza A.

THANK YOU FOR YOUR ATTENTION