Type-specific influenza vaccine effectiveness of split vaccination in previous seasons and subunit vaccination in the 2014-2015 season

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Background

- Higher effect of split-virion vs. subunit influenza vaccines has been suggested.
- Split-virion vaccines usually contain more internal proteins, which may be important for cellular immune responses.

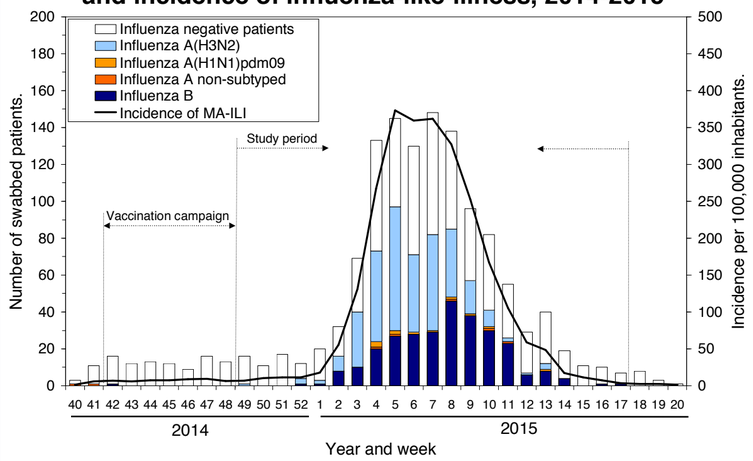
The aim was to estimate the effectiveness of subunit vaccination in the 2014-2015 season and of split-virion vaccination in the two previous seasons in preventing laboratory-confirmed influenza and analyse the combined effect of both vaccines in consecutive seasons.

Methods

- Influenza-like illness patients hospitalized or attended by a sentinel network of general practitioners were swabbed for influenza testing in the 2014-2015 season in Navarra, Spain.
- Trivalent split vaccines had been used in previous seasons and subunit vaccine was first time used in the 2014-2015 season.
- The previous and current vaccine status were compared between laboratory-confirmed cases and test-negative controls using logistic regression to obtain odds ratio adjusted by sex, age, major chronic conditions, period and healthcare setting.
- Case control test-negative design.
- Vaccine effectiveness (VE) = (1- odds ratio)x100.

Results

Number of influenza cases and test-negative controls, and incidence of influenza-like-illness, 2014-2015

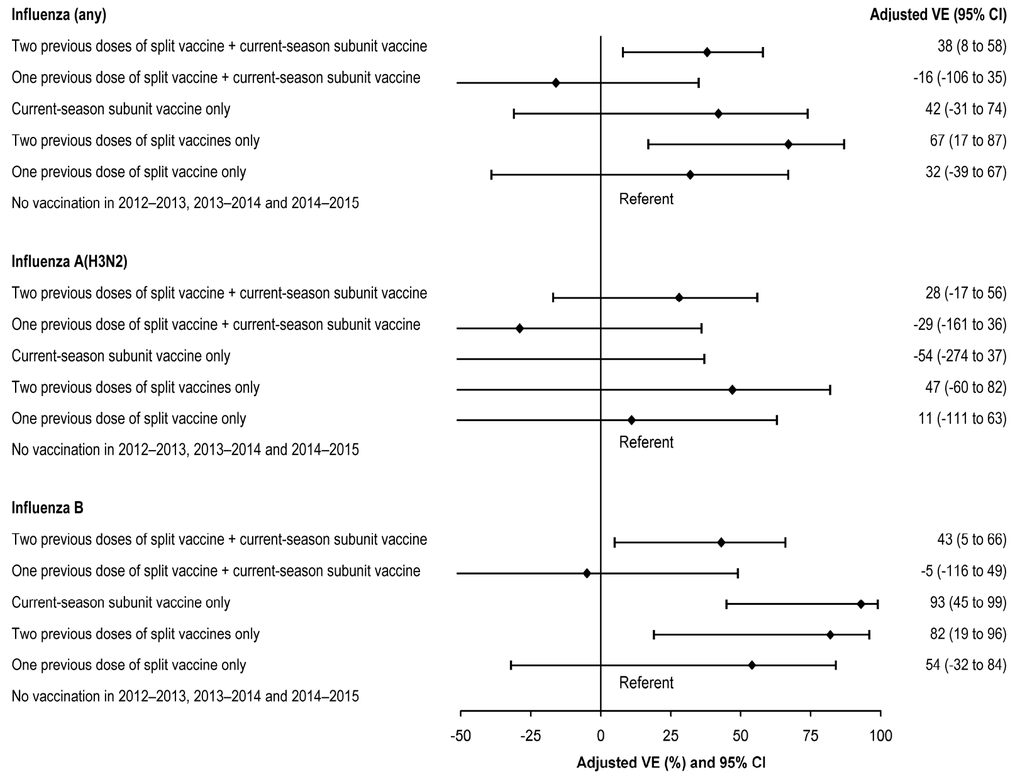


Vaccination status of laboratory-confirmed influenza cases and test-negative controls

	Test-negative controls N (%)	All influenza cases N (%)	Influenza A(H3N2) N (%)	Influenza B N (%)
Influenza vaccine 2014–2015				
No	405 (68)	466 (75)	232 (72)	226 (79)
Cell-grown subunit vaccine	173 (29)	140 (23)	82 (25)	56 (20)
Egg-grown subunit vaccine	16 (3)	13 (2)	9 (3)	4 (1)
Influenza vaccine 2013–2014				
No	399 (67)	475 (77)	238 (74)	229 (80)
Yes	195 (33)	144 (23)	85 (26)	57 (20)
Influenza vaccine 2012–2013				
No	418 (70)	488 (79)	248 (77)	232 (81)
Yes	176 (30)	131 (21)	75 (23)	54 (19)
Influenza vaccine in the two previous seasons				
No	382 (64)	455 (74)	228 (71)	220 (77)
One dose	53 (9)	53 (9)	30 (9)	21 (7)
Two doses	159 (27)	111 (18)	65 (20)	45 (16)
Total	**594 (100)**	**619 (100)**	**323 (100)**	**286 (100)**

Among people who had received any split vaccine in the two previous seasons, a second dose of split vaccine in previous season increased 47% (CI 95%: 9% to 69%) the preventive effect. The subunit vaccine in the current season reduced 78% the protection (OR=1.78; CI 95%: 0.94-3.36; p=0.078).

Effect of split influenza vaccination in the previous seasons and subunit vaccination in the current season in preventing laboratory-confirmed influenza



Adjusted vaccine effectiveness (VE): vaccine effectiveness adjusted for sex, age group (<5, 5–14, 15–44, 45–64, 65–84 and ≥85 years), major chronic conditions, three-week periods and healthcare setting (primary healthcare and hospital).

Conclusions

- **The results suggest a considerable residual protection of vaccination in previous seasons, especially in people vaccinated for influenza in successive seasons with maintained vaccine composition.**
- **Split-virion vaccines may confer a stronger and longer-lasting protection than subunit vaccines, probably as results of a more complete activation of immunity mechanisms.**
- **Results suggest possible interference of changing from split-virion to subunit influenza vaccine in consecutive seasons.**

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