

Influenza vaccine effectiveness in preventing admissions with influenza during the 2014-2015 influenza season. A test-negative hospital-based study in the Valencia Hospital Network for the Study of Influenza and Other Respiratory Viruses (VAHNSI), Valencia (Spain).

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Background

The 2014/15 influenza season was characterized by the circulation of A(H3N2) viruses belonging to clade 3C.2a and 3C.3a, distinct from the A/Texas/50/2012(H3N2)-like (clade 3C.1) reference for the 2014/15 vaccine. In addition, B Yamagata lineage and few A(H1N1)pdm09 were identified. Preliminary influenza vaccine effectiveness (IVE) estimates in Europe and North America reported null to low IVE against confirmed influenza acute respiratory infection.

Methods

We performed a test-negative study in ten hospitals located in Valencia, Spain, that provided care to 2,351,526 inhabitants.

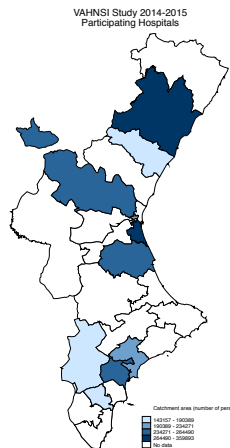


Figure 1. Valencia region (Spain), participating health districts

We enrolled consecutive consenting admissions of non-institutionalized, 18 years old or older subjects, with onset of influenza-like-illness (ILI) within 7 days of hospitalization. We obtained combined nasopharyngeal swabs and influenza was confirmed by RT-PCR. A split trivalent vaccine (Vaxigrip®; SANOFI PASTEUR MSD) was offered free of charge to subjects targeted for influenza vaccination. We considered a subject as immunized when vaccinated 15 or more days before ILI onset. We estimated IVE as (1-odds ratio)*100, taking into account clustering by hospital and epidemiological week.

Results

We enrolled 2,713 admissions, 652 influenza positive (546 (84%), A(H3N2); 56 (9%), B Yamagata; 37 (6%), A no subtyped; 9 (1%) A(H1N1)pdm09 and 4 (0.6%) B with no lineage).

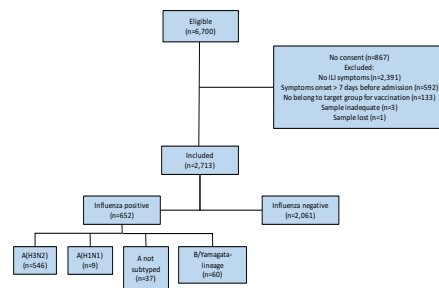


Figure 2. Flow-chart of the VAHNSI study in the 2014/15 influenza season (after submission one influenza A(H1N1)pdm09 was reported as negative, IVE estimates and numbers in Figure 5 and Figure 6 were not affected and are reported as submitted).

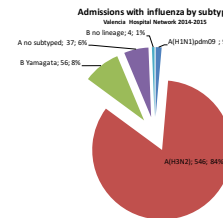


Figure 3. Number and proportion of influenza positive admissions by strain

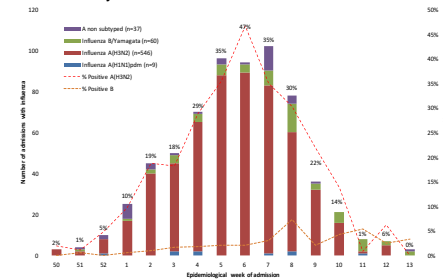


Figure 4. Number and percentage of positive admission with influenza by week and strain

Vaccination status

1334 (65%) influenza negative were vaccinated compared to 382 (59%) influenza positive.

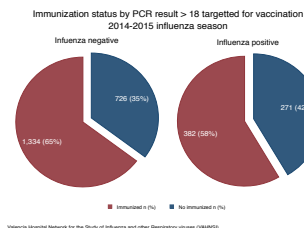


Figure 5. Proportion of vaccinated among admissions with and without influenza

For subjects over 18 years of age, adjusted IVE was 18% (-1 to 34%) and 50% (13% to 71%) in preventing A(H3N2) or influenza B admissions, respectively.

When considering subjects 65 years old or older, adjusted IVE was 32% (15% to 46%); 30% (12% to 45%) and 60% (27% to 78%) in preventing admissions with influenza, influenza A(H3N2) or influenza B, respectively.

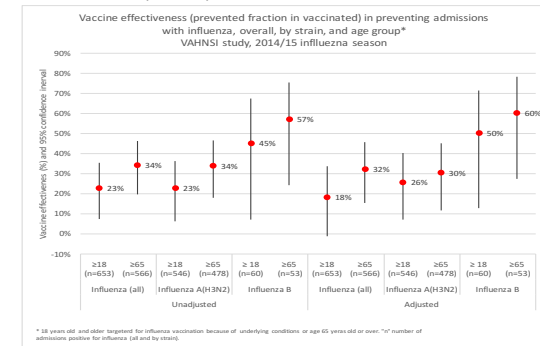


Figure 6. Influenza vaccine effectiveness

Conclusion

Vaccination conferred moderate protection against the risk of admission with influenza. Low effectiveness against A(H3N2) was most possibly due to mismatch, whereas, vaccination more than halved the risk of admission with influenza B