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Global Influenza Hospital Surveillance Network

Abstract : 486

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Vaccine effectiveness in preventing hospitalizations with influenza. Preliminary results from the Global Influenza Hospital Surveillance Network for the northern hemisphere 2013/14 influenza season using a test-negative approach.

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Background

This was a multicentric study performed by the Global Influenza Hospital Surveillance Network (GIHSN). From December 2013 to June 2014 influenza-like-illness (ILI) admissions were prospectively screened for influenza viruses in 19 hospitals across Russia Federation; Turkey, China and Spain. Assessment of influenza vaccine effectiveness (IVE) evidence was facilitated by reducing the heterogeneity of evaluations across sites through the use of a common, standardized operational protocol.

Global Influenza Hospital Network (GIHSN)

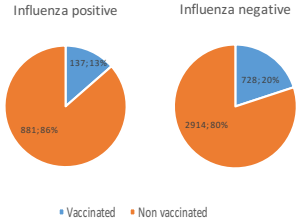
Methods

We followed the test negative-design to estimate IVE. A random effects logistic regression model was fitted with influenza RT-PCR results as the outcome and seasonal influenza vaccination status from registry records or recall data as the linear predictor. The I^2 test was used to asses heterogeneity between sites.

Results

Total eligible	St. Petersburg 1,713 n	%	Moscow 1,743 n	%	Turkey 1,509 n	%	Beijing 655 n	%	Valencia 3,887 n	%	Total 9,507 n	%
Exclusion criteria												
Non- resident	11	0.6	63	3.61	127	8.4	1	0.2	49	1.3	251	2.6
Institutionalized	5	0.3	11	0.63	1	0.1	5	0.8	11	0.3	33	0.3
Unable to communicate	28	1.6	47	2.70	21	1.4	8	1.2	175	4.5	279	2.9
Not giving consent	74	4.3	59	3.38	39	2.6	69	10.5	71	1.8	312	3.3
Previous discharge<30days	13	0.8	44	2.52	152	10.1	8	1.2	27	0.7	244	2.6
No ILI symptoms>=5years of age	4	0.2	39	2.24	558	37.0	40	6.1	1140	29.3	1781	18.7
Swabbed >7 days after onset of symptom (all ages)	286	16.7	149	8.55	103	6.8	61	9.3	407	10.5	1006	10.6
Sample inadequate	0	0.0	0	0.00	0	0.0	0	0.0	5	0.1	5	0.1
Previous influenza infection	1	0.1	1	0.06	9	0.6	0	0.0	3	0.1	14	0.1
Recruited in periods without influenza cases	35	2.0	70	4.02	13	0.9	42	6.4	119	3.1	279	2.9
Under 6 months of age	238	14.0	46	2.6	47	3.1	5	0.8	221	5.7	557	5.9
Vaccination contraindicated	63	3.7	3	0.2	5	0.3	9	1.4	6	0.1	86	0.9
Included in the IVE analysis	**955**	**55.7**	**1,211**	**69.5**	**434**	**28.8**	**407**	**62.1**	**1,653**	**42.5**	**4,660**	**49.0**
RT-PCR result*												
Negative	758	79.4	932	77.0	328	75.6	321	78.9	1,303	78.8	3642	78.0
Influenza positive	197*	20.6	279	23.0	106	24.4	86	21.1	350	21.2	1018	21.8
Influenza A(H3N2)	143	15.0	184	15.2	85	19.6	32	7.9	63	3.8	507	10.9
Influenza A(H1N1)	17	1.8	27	2.2	0	0.0	15	3.7	278	16.8	337	7.2
Influenza A/ not typed	15	1.6	7	0.6	0	0.0	1	0.2	9	0.5	32	0.7
Influenza B/Yamagata	14	1.5	52	4.3	21	4.8	38	9.3	0	0.0	125	2.7
Influenza B/Victoria	0	0.0	3	0.2	0	0.0	0	0.0	0	0.0	3	0.1
Influenza B/ not typed	9	0.9	6	0.5	0	0.0	0	0.0	0	0.0	15	0.3

Of 4,660 included admissions, 1,018 (22%) were positive for influenza (13% vaccinated) and 3,642 (78%) were negative controls (20% vaccinated).

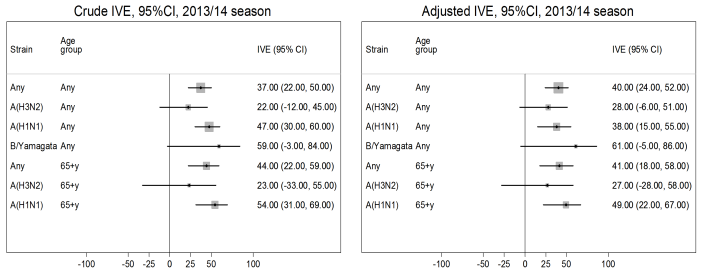


Influenza A(H3N2) virus comprised 50% of test positive specimens, A(H1N1)pdm09, 33% and B/Yamagata-lineage, 12%.

Moderate vaccine protection was observed overall, with adjusted effectiveness for the 2013/14 of 40% (95%CI 24 to 52).

Adjusted TIV effectiveness in preventing laboratory-confirmed A(H3N2), A(H1N1)pdm09 and B/Yamagata-lineage hospitalizations was 28% (-6 to 51), 38%(15 to 55) and to 61% (-5 to 86) respectively.

By age, IVE estimates against A(H1N1) were significantly larger in the elderly 65+ years old, IVE of 49% (22 to 77) than in younger patients (data not shown), IVE of 22% (-26 to 52) with a P-value for effect modification of age 0.020). Statistical tests for heterogeneity by site were not significant(I^2=0%, P=0.904).



Too small numbers ot run analysis for B/Yamagata 65+y

Conclusion

Influenza vaccine effectiveness in preventing admissions with influenza was low to moderate. While influenza vaccination is to be recommended for preventing influenza related disease, improved vaccines that offer better protection are needed.

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