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Global Influenza Hospital Surveillance Network

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Hospitalizations with influenza during the 2013–2014 influenza season: Preliminary results from the Global Influenza Hospital Surveillance Network*

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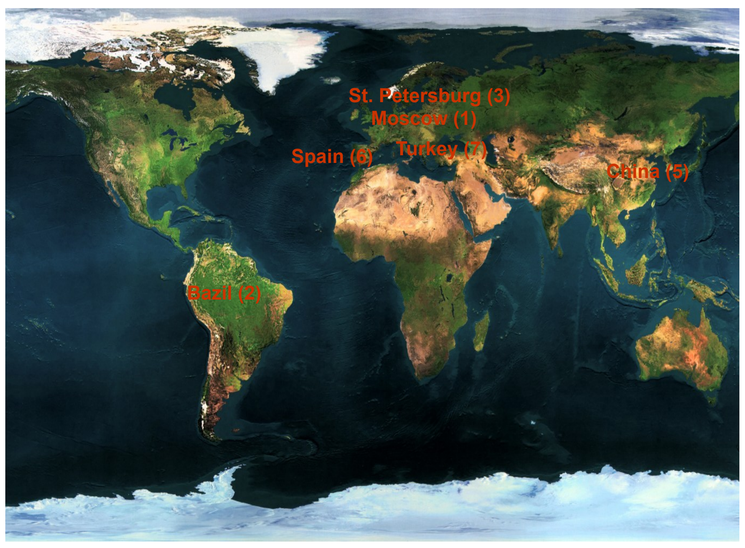
Introduction

The Global Influenza Hospital Surveillance Network (GIHSN) was launched to address growing awareness that influenza-related hospitalization is a significant burden that remains insufficiently characterised. The GIHSN is a partnership between industry and public health institutions that use active surveillance to collect data on the epidemiology of severe influenza. Here we present preliminary results for the 2013–2014 influenza season.

Methods

This was a multi-centre, on-going, prospective, active-surveillance, hospital-based epidemiological observational study during the main 2013–2014 influenza season in 24 hospitals around the world (map below)



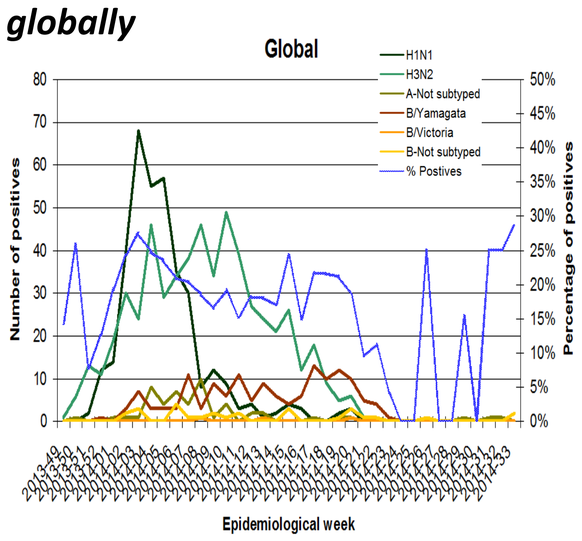
Hospitalized patients of all ages presenting influenza like-illness (ILI) within 7 days between onset of symptoms and admission were swabbed. Positives for influenza were real time reverse transcription polymerase chain reaction (RT-PCR) positive for influenza A(H3N2), A(H1N1)pdm09, or influenza B.

Results

Of 10,204 patients screened, 5,297 had valid RT-PCR and 1044 (20%) were positive for influenza*. Influenza A(H3N2) type (n = 539, 47%) was the most common, followed by A(H1N1)pdm09 (n = 341, 30%) and influenza B/Yamagata lineage (n = 137, 12%).

For the GIHSN sites of the northern hemisphere, the influenza season started in December with an early peak of A(H1N1)pdm09 from wk3 to wk5, and second peak of A(H3N2) from wk8 to wk10 (Figure 1).

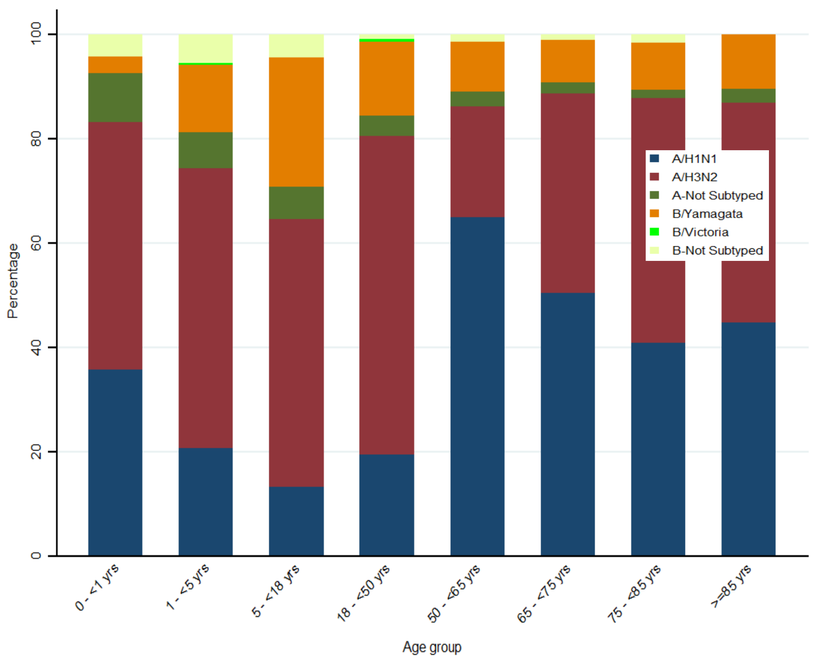
Figure 1: Number of influenza positives by epidemiological week globally



Globally: A/H1N1 followed by A/H3N2 and B/Yamagata were present this season 2013-2014

A/H1N1 followed by A/H3N2 in the Valencia region
A/H3N2 followed by B/Yamagata in Russia and Turkey
In the Beijing province, B/Yamagata was more present

Figure 2: The distribution of influenza viruses in hospitalized patients by age group in years.



Significant differences between positives and negatives for influenza are shown in Table 1.

Table 1: Adjusted odds ratios for being hospitalized and positive for influenza.

	Positive for influenza N = 1044	Negative for influenza N = 4253	Estimated RR	95% CI	P-value
Age					
<18 y	350	1968	1		
18–64 y	451	1232	1·53	1·27–1·84	<0·001
≥65 y	241	1036	1·18	0·92–1·51	0·204
Sex					
Male	520	2402	1		
Female	524	1847	1·05	0·90–1·22	0·556
Pregnant	145	162	3·27	2·47–4·33	<0·001
Number of comorbidities					
0	579	2620	1		
1	263	784	1·68	1·38–2·04	<0·001
≥2	171	725	1·32	1·03–1·68	0·029
Vaccinated 2013–2014					
No	910	3563	1		
Yes	134	690	0·70	0·56–0·88	0·003

Pregnancy and obesity were significant risk factors for being admitted in hospital with influenza
A/H1N1, A/H3N2 & B/Yamagata in the pregnant
A/H1N1 in the obese

Table 2: Risk (OR) of admission with influenza according to influenza subtype or lineage in pregnant women and obese

Pregnant

Strain	OR	95%CI	P-value
A(H1N1)p	7.9	2.2-28.0	0.001
A(H3N2)	4.1	2.1-8.2	<0.0001
B/Yamagata	6.2	1.5-25.0	0.001

Obese

Strain	OR	95%CI	P-value
A(H1N1)p	1.6	1.3-2.1	<0.0001
A(H3N2)	1.2	0.9-1.6	0.2120
B/Yamagata	0.8	0.4-1.7	0.5660

OR Adjusted by site odds ratio. CI Confidence interval

Conclusions

Given the virus and vaccine features, it is relevant that geographic representative information on influenza epidemiology, burden of disease and vaccine performance is an on-going monitoring activity performed across consecutive seasons.
The preliminary data obtained in the second GIHSN season gives a global overview of the 2013-2014 influenza season.

* Manuscript with preliminary results for the Northern Hemisphere sites submitted to *Influenza and Other Respiratory Viruses* journal (under consideration for review)

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