Impact of influenza strain and patient characteristics on the risk of admissions with influenza. Global Influenza Hospital Surveillance Network Results, 2014-2015 influenza season

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Introduction

The Global Influenza Hospital Surveillance Network (GIHSN) is a public-private partnership between various Public Health institutions and Sanofi Pasteur. The main goal of the GIHSN is to study influenza epidemiology. During the 2014-2015 influenza season, in 24 hospitals in Russia Federation, Czech Republic, Turkey, China and Spain (Figure 1), we screened consecutive admissions following a common protocol.

Methods

Eligible patients considered for inclusion:
- Admissions for an acute process.
- Admissions in the previous 48 hours.
- Chief complaint or admission history related to an acute influenza-like illness.
- Residence in the predefined study catchment area.
- Study population (study base) recruited.

Study protocol:
- Common standardized questionnaires.
- Combined respiratory swabs.
- GIHSN’s reference laboratory for qualitative real-time reverse transcription PCR for influenza virus (or rapid antigen test).

Results

Table 1. Comparison of admissions with influenza, by virus strain and week

<table>
<thead>
<tr>
<th>Strain</th>
<th>Admissions (n=5,256)</th>
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<tr>
<td>A(H3N2)</td>
<td>2,718 (51.8%)</td>
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<tr>
<td>B/Yamagata lineage (n=11)</td>
<td>529 (10.1%)</td>
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<tr>
<td>B/Victoria-lineage (n=8)</td>
<td>110 (2.1%)</td>
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Figure 2. Study methods flowchart

The adjusted odds ratio (aOR) for admission with influenza was estimated by logistic regression using as comparison group influenza negative admissions without underlying conditions. All estimates were adjusted as by sex, site, number of admissions in previous twelve months, smoking habits, time to swab and calendar time.

Discussion

Influenza was a significant threat for all age groups. Comorbidity increased the risk of influenza and this was observed for all influenza strains. Pregnancy was an risk factor regardless of involved strain.

A(H1N1)pdm09 was associated with a grater risk of ICU admission and B/Yamagata-lineage with an increased risk of respiratory failure.