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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Abstract

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.

Introduction

The GIHSN is a key surveillance system, which is involved in the global response to influenza pandemics. Since 2008, it has collected data on a broad number of influenza-related outcomes, including respiratory failure and ICU admission. This information is crucial for public health decision making, as it helps to assess the impact of vaccination campaigns and to anticipate future pandemics.

Methods

Eligible patients considered for inclusion:
- All consecutive admissions for an acute process
- Admission in the previous 48 hours
- Chief complaint of a respiratory illness possibly related to or previous influenza infection
- Residents in the predefined study’s catchment areas (study population or study site)

Compliance with inclusion criteria:
- Able to communicate
- Informed consent to participate
- A permanent resident (as defined in the site protocol)

Study procedures:
- Common standardised questionnaires
- Combined respiratory swabs
- Site’s reference laboratory
- RT-PCR
- Fluorescent and NGS

Results

The adjusted odds ratio (aOR) for admission with influenza was estimated by logistic regression using 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 greater risk of ICU admission and B/Yamagata-lineage with an increased risk of respiratory failure.

Figure 1. Global Influenza Hospital Surveillance Network (GIHSN)

Figure 2. Study methods flowchart

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