

Estimation of Influenza Incidence by Age in the 2011/12 Seasons in Japan using SASSy

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Objective

So far, it is difficult to show the incidence rate of influenza in the official sentinel surveillance in Japan. Hence we construct the system which record infectious diseases at schools, kindergartens, and nursery schools, and then can show the accurate incidence rate of influenza in children by age/grade.

Introduction

So as to develop more effective countermeasures against influenza, timely and precise information about influenza activity at schools, kindergartens, and nursery schools may be helpful. At the Infectious Diseases Surveillance Center of the National Institute of Infectious Diseases, a School Absenteeism Surveillance System (SASSy) has been in operation since 2009. SASSy monitors the activity of varicella, mumps, mycoplasma pneumonia, pharyngoconjunctival fever, hand-foot-mouth disease, influenza, and many other infectious diseases in schools. In 2010, SASSy was extended to the Nursery School Absenteeism Surveillance System (NSASSy). These systems record the number of absentees due to infectious diseases in each class of all grades of schools every day. As a powerful countermeasure to the pandemic flu of 2009, SASSy was activated in 9 prefectures, in which included more than 6000 schools, and it is gradually being adopted in other prefectures. As of February 2012, 18 prefectures and 4 big cities, which together comprised 15,700 schools (about 35% of all schools in Japan), utilized SASSy. NSASSy is used in more than 4100 nursery schools, which is about 18% of all nursery schools in Japan. Some studies of similar systems were performed in the UK (1), Hong Kong (2), and the USA (3,4), examined surveillance systems for monitoring infectious disease incidence, but the systems to construct in those studies do not operate nationwide like SASSy or NSASSy, and they cannot provide influenza incidence rates in children.

Methods

All schools, kindergartens, and nursery schools in the community, enter data of the absentees due to infectious diseases into the system every day, thereby providing real-time data regarding infectious diseases prevalent in schools, to the schools around, school boards, public health centers, local governments, and medical professionals. It analyzed data for the 2011/2012 season (from September 1, 2011 to March 31, 2012) mainly, but also two seasons (2010/2011 and 2011/2012) were compared in some prefectures. In total, 12 prefectures, which comprised 2,352,839 children, were participated in 2011/2012 season. In the 2010/2011 season, 1,795,766 children of 9 prefectures were analyzed.

Results

The incidence rate in the first grade of elementary schools is the highest both in the two seasons. The highest incidence rate in this grade distributes from 17.8% to 40.3% in 2011/2012 season, and from 11.0% to 30.7% in 2010/2011 season.

Conclusions

This study proved SASSy and NSASSy are quite useful for monitoring of influenza outbreak in schools and it will be gold standard of surveillance for school children in Japan. The present study also showed incidence rate of influenza in children at schools, kindergartens, and nursery schools, and proved the highest incidence was in the first grade of the elementary school. This is the first finding using such the huge number of subjects, which is more than 2 million. The intervention targeting to the weak age/grade is necessary for effective countermeasure and control of influenza and other infectious diseases.

Keywords

Surveillance; Influenza; School Absenteeism

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