Start of the influenza season 2008-9 in Europe - increasing influenza activity moving from West to East dominated by A(H3N2)

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The influenza season 2008-9 started in week 49 of 2008 and is so far characterised by influenza virus type A subtype H3N2. Isolates of this subtype that were tested proved susceptible to neuraminidase inhibitors, but resistant to M2 inhibitors. The circulating A(H3N2) viruses are antigenically similar to the component in the current northern hemisphere influenza vaccine.

This report describes the epidemiological and virological characteristics of seasonal influenza at the start of the influenza season 2008-9 in Europe. Linked clinical and virological surveillance of seasonal influenza in Europe is carried out between October and May (week 40 of one year and week 20 of the following year) by networks of sentinel physicians (mainly general practitioners). Clinical surveillance includes recording of episodes of influenza-like illness (ILI) and/or acute respiratory infections (ARI) and comparison with baseline levels usually seen outside of the surveillance season. Influenza activity is defined according to two main indicators: intensity and geographical spread [1]. Intensity is scaled based on the consultation rates per week as compared to historical data in each country. The start of increased influenza activity is defined as the week of first occurrence of medium intensity. Geographical spread indicates the spatial distribution of influenza activity in each country and ranges between no activity and widespread activity. Clinical specimens for virological confirmation are collected from the sentinel population, and virological data are also reported based on non-sentinel sources of virus detection, e.g. hospital outpatients. In addition, viruses are used for antigenic and genetic characterisation and antiviral resistance testing.

Results

Epidemiology

A number of European countries reported primary care consultation rates for ILI or ARI above their baseline levels towards the end of 2008. Increased influenza activity was initially reported in Malta in week 48, after that in Ireland, Northern Ireland (United Kingdom (UK)) and Portugal in week 49, in England (UK) in week 50, in Austria and Spain in week 51, in Denmark, France, Italy, Scotland (UK) and Sweden in week 52 of 2008, and in many other European countries since the first week of 2009 (Table 1).

By week 2 of 2009, high intensity influenza activity has been reported in Portugal, Ireland and Switzerland and the number of countries reporting medium intensity activity since the start of the influenza season has increased to 23 (Table 1). Consultation rates have increased in a number of eastern European countries (Czech Republic, Estonia, Hungary, Latvia, Lithuania, Serbia, Slovakia and Romania), but the levels of influenza activity in these countries remain below their respective baseline level thresholds. Portugal has already passed peak influenza activity as clinical consultation rates for Portugal have decreased since week 52 of 2008 and the activity indicator has returned from high to medium activity (Table 1).

Virology

The proportion of sentinel respiratory specimens positive for influenza continued to increase over the past weeks and has reached 39.7% in week 2 of 2009. A total of 5,693 laboratory-confirmed cases of influenza infection from sentinel and non-sentinel sources have been detected across Europe since the start of the 2008-9 season. Of these, 5,474 were influenza type A (2,128 subtype H3, 141 subtype H1, 3,205 not subtyped) and 219 were type B (Figure).

Of the influenza viruses detected up to week 2 of 2009, 374 were antigenically and/or genetically characterised: 321 were reported as A/Brisbane/10/2007(H3N2)-like, 32 as A/Brisbane/59/2007(H1N1)-like, 14 as B/Malaysia/2506/2004-like (B/Victoria/2/87 lineage) and seven as B/Florida/4/2006-like (B/Yamagata/16/88 lineage). This indicates that both lineages of influenza B are currently circulating at low levels in Europe. The circulating influenza A and B/Yamagata lineage viruses are

Table 1

Spread of influenza across Europe* as measured by level of influenza activity, influenza season 2008-9

Country	Intensity by week							
	2008						2009	
	47	48	49	50	51	52	1	2
Ireland								
Portugal								
Spain								
England								
Northern Ireland								
Scotland								
Wales								
France								
Belgium								
Netherlands								
Luxembourg								
Switzerland								
Germany								
Denmark								
Norway								
Italy								
Austria								
Malta								
Slovenia								
Sweden								
Czech Republic								
Slovakia								
Hungary								
Poland								
Serbia								
Greece								
Lithuania								
Bulgaria								
Latvia								
Romania								
Estonia								
Finland								
Cyprus								

Low intensity
Medium intensity
High intensity
No report

* Countries ordered by longitude of data providers

Table 2

Antiviral resistance detected in influenza viruses in Europe, influenza season 2008-9

Virus type and subtype	Resistance to neuraminidase inhibitors				Resistance to M2 inhibitors	
	Oseltamivir		Zanamivir		Isolates tested	Resistant n (%)
	Isolates tested	Resistant n (%)	Isolates tested	Resistant n (%)		
A(H3N2)	93	0	93	0	88	88/(100)
A(H1N1)	52	51/(98)	52	0	23	0
B	3	0	3	0	n.a.	n.a.

n.a. = not applicable as M2 inhibitors do not act on influenza B viruses.

similar to the A(H1N1), A(H3N2) and B components in the current influenza vaccine recommended by the World Health Organization (WHO) [2].

Antiviral susceptibility

Antiviral susceptibility data for neuraminidase inhibitor drugs (oseltamivir and zanamivir) and M2 inhibitors (amantadine and rimantadine) is limited to analyses of isolates from five countries which experienced early influenza activity (Italy, Norway, Spain, Sweden and the UK) (Table 2).

Data were obtained by both genotypic and phenotypic methods. Drug susceptibility patterns vary with influenza type and subtype. Circulating A(H3N2) viruses in all countries were sensitive to neuraminidase inhibitors, but resistant to M2 inhibitors. A limited number of A(H1N1) viruses has been identified in Europe this season (141/2,269; 6.2% of influenza A viruses typed/subtyped up to week 2/2009). Over 95% of the A(H1N1) isolates tested in four different countries (Norway, Spain, Sweden and the UK) were resistant to oseltamivir, but retained sensitivity to zanamivir, and all of them were sensitive to the M2 inhibitors. The few influenza B isolates that were analysed retained sensitivity to oseltamivir and zanamivir.

Discussion

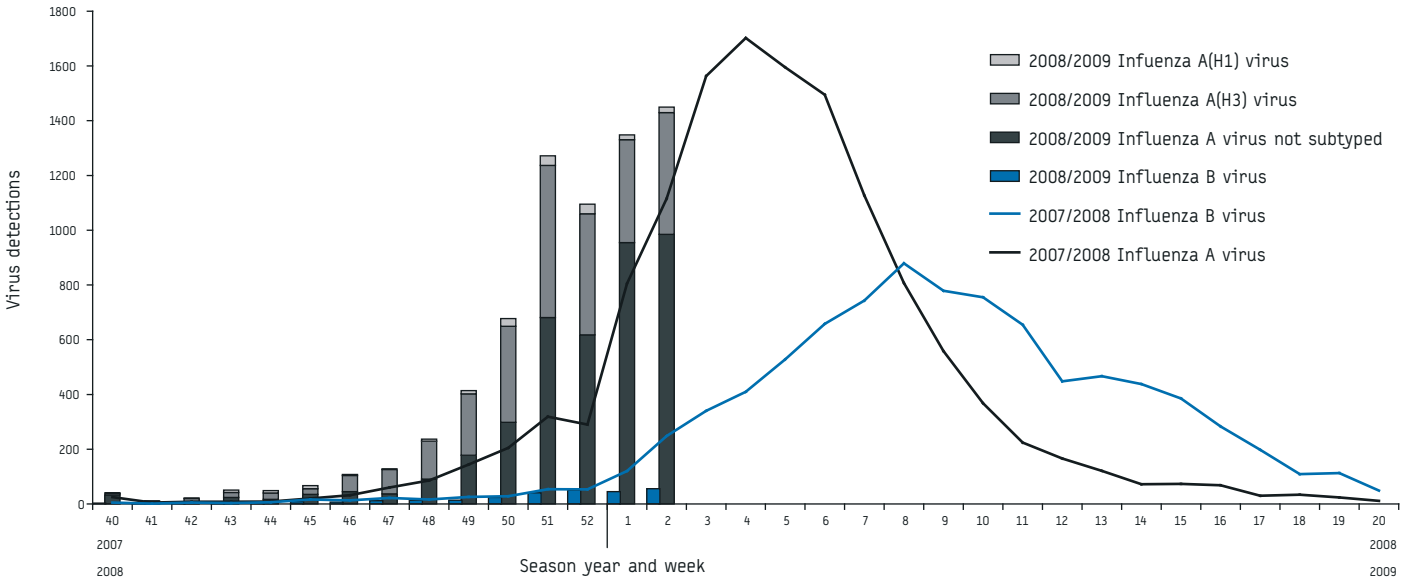
Experience from previous influenza seasons suggests that it is most likely, though not inevitable, that the annual epidemics will now intensify in the countries in the east and north of Europe [3]. The final virological picture may change because typing and subtyping data are based on specimens from a limited number of sites and countries at this point in the season. In addition, type B influenza viruses are generally detected in the second half of the influenza season. A comparison can be made with the situation in other countries in the northern hemisphere such as the United States (US). They are experiencing a season with a predominance of A(H1N1) viruses resistant to oseltamivir but sensitive to zanamivir [4]. The different patterns observed in Europe and the US may have arisen due to differences in population immunity, since the preceding 2007-8 season had been dominated by A(H1N1) viruses in Europe but by A(H3N2) viruses in the US. The European Centre for Disease Prevention and Control (ECDC) issued a technical opinion and press release on 8 January stressing the importance of immunising people in risk groups as well as health care workers [5]. This was partly done to address the fact that immunisation coverage is known to be lower in older people particularly in the east of Europe [6].

Aknowledgements

The European Influenza Surveillance Scheme in Europe (EISS) formed the basis for monitoring the spread of influenza virus strains and their epidemiological impact in Europe from 1996 onwards in collaboration with the WHO Collaborating Centre in London (UK) [7]. From this season, the system continues under the European Centre for Disease Prevention and Control (ECDC) who finances the ongoing virological laboratory network coordination by the CNRL co-ordinating team. All 27 European union (EU) countries, Norway, Serbia and Switzerland have participated in the surveillance scheme which publishes an update of influenza activity in Europe online every Friday at http://www.eiss.org [8] and on the ECDC home page (www.ecdc.europa.eu). The whole feeds into the WHO's Global Influenza Surveillance Network (GISN; http://www.who.int/csr/disease/influenza/surveillance/en/).

FIGURE

Influenza virus detections in the influenza seasons 2007-8 and 2008-9, by week and virus type/subtype*



* 96% of influenza A viruses in the 2007-8 season were A(H1N1) for Europe as a whole.

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