SURVEILLANCE REPORT

Weekly influenza surveillance overview

15 April 2011

Main surveillance developments in week 14/2011 (04 Apr 2011 – 10 Apr 2011)

This first page contains the main developments of this week and can be printed separately or together with the more detailed information following.

- Twenty-four of the 25 reporting countries experienced low influenza activity, while Sweden reported medium activity. Stable or decreasing trends were reported by 25 countries
- During week 14/2011, of 47 influenza viruses detected in sentinel specimens, 37 (78.7%) were influenza B viruses and 10 (21.3%) were influenza A viruses. For the fourth consecutive week, influenza B viruses were detected more frequently than influenza A viruses.
- A new detailed virology report has been published showing genetically distinct virus groups emerging in subtypes A(H1N1) 2009 and A(H3N2) but the viruses circulating still show antigenic similarity to the 2010/11 vaccine viruses.
- Three countries reported 15 hospitalised severe respiratory infections, of which four were due to influenza infection.

Sentinel surveillance of influenza-like illness (ILI)/ acute respiratory infection (ARI): Low influenza activity was reported by twenty-four countries, while Sweden reported medium activity. Stable or decreasing trends were reported by 25 countries but Bulgaria reported sporadic activity and increasing trend. For more information, **click here**.

Virological surveillance: In week 14/2011, 78.7% of viruses detected from sentinel specimens were influenza B viruses and 21.3% were influenza A. The former virus type was reported as dominant or co-dominant with A(H1N1)2009 virus in eight countries. A new report showing genetic characterisation of circulating viruses is available. For more information, **click here**.

Hospital surveillance of severe acute respiratory infection (SARI): Three countries reported four severe influenza and 11 SARI cases from all causes. For more information, **click here**.

Sentinel surveillance (ILI/ARI)

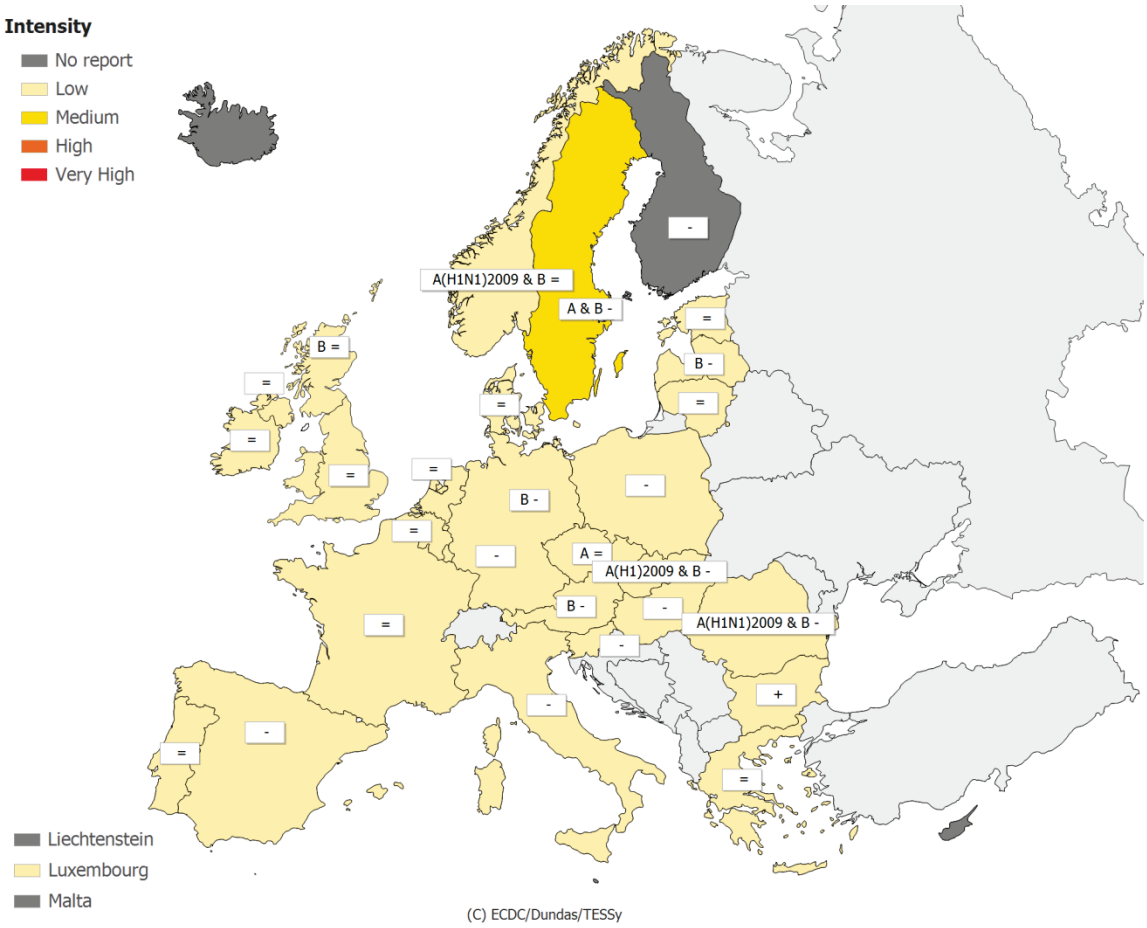
Weekly analysis – epidemiology

During week 14/2011, 25 countries reported clinical data. All but one country reported low intensity of influenza activity, Sweden notified medium activity.

Regional activity was reported by Lithuania and Sweden and local or sporadic activity was reported by 21 countries and the UK (England and Scotland). Three countries, Luxembourg, Portugal and the UK (Northern Ireland and Wales), notified no activity.

Decreasing or stable trends were reported by 25 countries, but Bulgaria reported an increasing trend (Table 1, Map 2).

Map 1: Intensity for week 14/2011

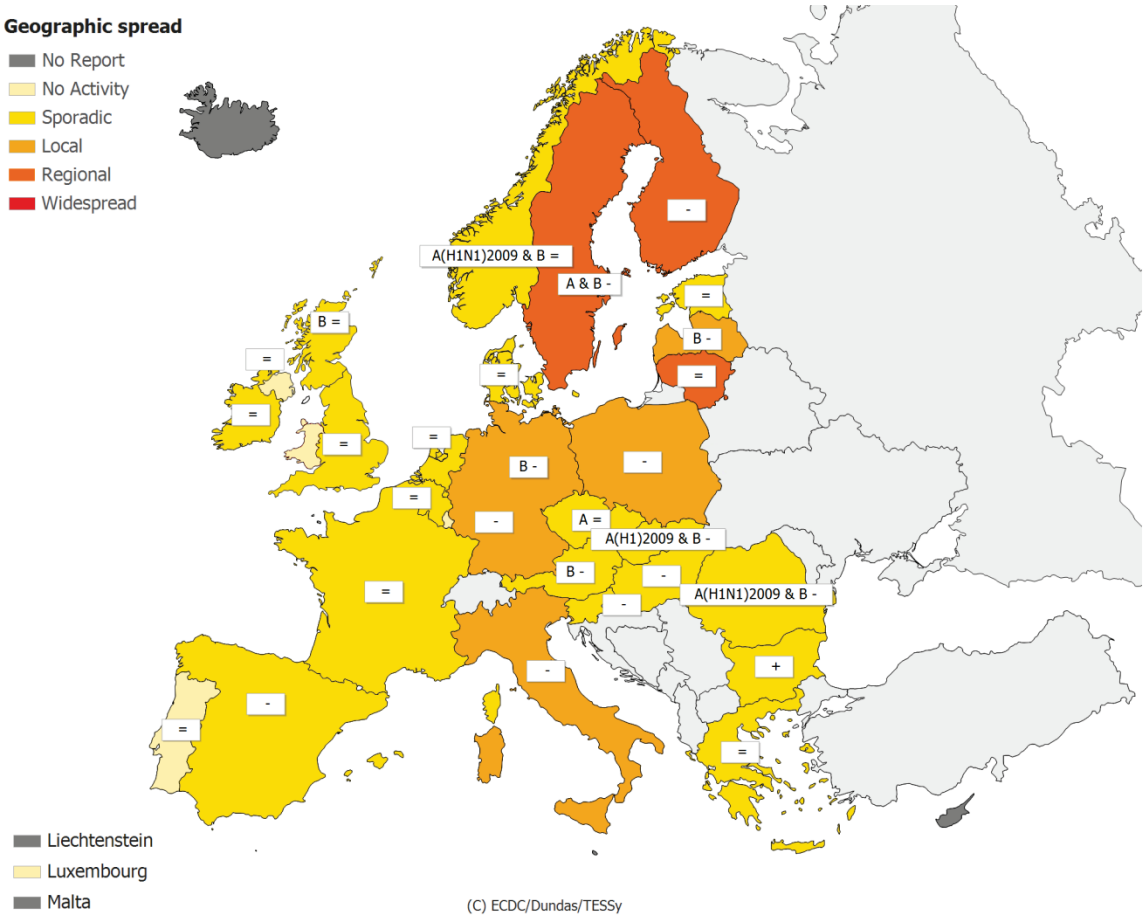


* A type/subtype is reported as dominant when > 40 % of all samples are positive for the type/subtype.

Legend:

No report	Intensity level was not reported	**-**	Decreasing clinical activity
Low	No influenza activity or influenza at baseline levels	**+**	Increasing clinical activity
Medium	Usual levels of influenza activity	**=**	Stable clinical activity
High	Higher than usual levels of influenza activity	**A**	Type A
Very high	Particularly severe levels of influenza activity	**A & B**	Type A and B
		A(H1)2009 & B	Type B and Type A, Subtype (H1)2009
		A(H1N1) 2009 & B	Type B and Type A, Subtype (H1N1)2009
		B	Type B

Map 2: Geographic spread for week 14/2011



* A type/subtype is reported as dominant when at least ten samples have been detected as influenza positive in the country and of those > 40 % are positive for the type/subtype.

Legend:

No report	Activity level was not reported
No activity	No evidence of influenza virus activity (clinical activity remains at baseline levels)
Sporadic	Isolated cases of laboratory confirmed influenza infection
Local outbreak	Increased influenza activity in local areas (e.g. a city) within a region, or outbreaks in two or more institutions (e.g. schools) within a region (laboratory confirmed)
Regional activity	Influenza activity above baseline levels in one or more regions with a population comprising less than 50% of the country's total population (laboratory confirmed)
Widespread	Influenza activity above baseline levels in one or more regions with a population comprising 50% or more of the country's population (laboratory confirmed)

-	Decreasing clinical activity
+	Increasing clinical activity
=	Stable clinical activity
A	Type A
A & B	Type A and B
A(H1)2009 & B	Type B and Type A, Subtype (H1)2009
A(H1N1) 2009 & B	Type B and Type A, Subtype (H1N1)2009
B	Type B

Table 1: Epidemiological and virological overview by country, week 14/2011

Country	Intensity	Geographic spread	Trend	No. of sentinel swabs	Dominant type	Percentage positive*	ILI per 100.000	ARI per 100.000	Epidemiological overview	Virological overview
Austria	Low	Sporadic	Decreasing	4	B	25.0	-	-	Graphs	Graphs
Belgium	Low	Sporadic	Stable	11	None	9.1	35.7	1373.6	Graphs	Graphs
Bulgaria	Low	Sporadic	Increasing	-	None	0.0	-	430.0	Graphs	Graphs
Cyprus				-	-	0.0	-	-		
Czech Republic	Low	Sporadic	Stable	16	A	25.0	33.8	809.1	Graphs	Graphs
Denmark	Low	Sporadic	Stable	6	None	0.0	36.4	-	Graphs	Graphs
Estonia	Low	Sporadic	Stable	28	None	21.4	9.8	309.8	Graphs	Graphs
Finland	No information available	Regional	Decreasing	22	None	13.6	-	-	Graphs	Graphs
France	Low	Sporadic	Stable	14	None	0.0	-	1225.9	Graphs	Graphs
Germany	Low	Local	Decreasing	39	B	46.2	-	797.9	Graphs	Graphs
Greece	Low	Sporadic	Stable	1	None	0.0	53.1	-	Graphs	Graphs
Hungary	Low	Sporadic	Decreasing	27	None	11.1	53.1	-	Graphs	Graphs
Iceland				0	-	0.0	-	-	Graphs	Graphs
Ireland	Low	Sporadic	Stable	3	None	33.3	5.2	-	Graphs	Graphs
Italy	Low	Local	Decreasing	12	-	0.0	94.0	-	Graphs	Graphs
Latvia	Low	Local	Decreasing	0	B	0.0	-*	-*	Graphs	Graphs
Lithuania	Low	Regional	Stable	3	None	0.0	6.7	407.8	Graphs	Graphs
Luxembourg	Low	No activity	Decreasing	4	None	0.0	-*	-*	Graphs	Graphs
Malta				-	-	0.0	-	-		
Netherlands	Low	Sporadic	Stable	5	None	40.0	26.7	-	Graphs	Graphs
Norway	Low	Sporadic	Stable	0	A(H1N1)2009 & B	0.0	34.9	-	Graphs	Graphs
Poland	Low	Local	Decreasing	1	None	0.0	50.5	-	Graphs	Graphs
Portugal	Low	No activity	Stable	2	None	0.0	3.6	-	Graphs	Graphs
Romania	Low	Sporadic	Decreasing	16	A(H1N1)2009 & B	6.3	9.1	749.5	Graphs	Graphs
Slovakia	Low	Sporadic	Decreasing	4	A(H1)2009 & B	25.0	153.0	1508.9	Graphs	Graphs
Slovenia	Low	Sporadic	Decreasing	1	None	0.0	1.3	752.6	Graphs	Graphs
Spain	Low	Sporadic	Decreasing	31	None	9.7	8.9	-	Graphs	Graphs
Sweden	Medium	Regional	Decreasing	18	A & B	16.7	4.2	-	Graphs	Graphs
UK - England	Low	Sporadic	Stable	25	None	0.0	4.2	382.7	Graphs	Graphs
UK - Northern Ireland	Low	No activity	Stable	2	-	0.0	11.2	386.2	Graphs	Graphs
UK - Scotland	Low	Sporadic	Stable	15	B	0.0	0.0	194.1	Graphs	Graphs
UK - Wales	Low	No activity	Unknown (no information available)	-	-	0.0	4.5	-	Graphs	Graphs
Europe				310		15.2				Graphs

**Incidence per 100 000 is not calculated for these countries as no population denominator is provided.*
Note: Liechtenstein is not reporting to the European Influenza Surveillance Network

Description of the system

Surveillance is based on nationally organised sentinel networks of physicians, mostly general practitioners (GPs), covering at least 1 to 5% of the population in their countries. All EU/EEA Member States (except Liechtenstein) are participating. Depending on their country's choice, each sentinel physician reports the weekly number of patients seen with influenza-like illness (ILI), acute respiratory infection (ARI), or both to a national focal point. From the national level, both numerator and denominator data are then reported to the European Surveillance System (TESSy) database. Additional semi-quantitative indicators of intensity, geographic spread, and trend of influenza activity at the national level are also reported.

Virological surveillance

Weekly analysis – virology

In week 14/2011, 26 countries reported virological data. Sentinel physicians collected 310 specimens, of which 47 (15.2%) were tested influenza positive.

For the fourth consecutive week, influenza B virus detections were higher than those for influenza A viruses. Of the 230 influenza viruses detected during week 14/2011 in sentinel and non-sentinel specimens, 100 (43.5%) were type A and 130 (56.5%) were type B. Influenza B virus was reported as dominant or co-dominant with A(H1N1) 2009 virus in eight countries.

Since week 40/2010, of 56 554 influenza detections in sentinel and non-sentinel specimens, 37 632 (66.5%) were influenza A and 18 922 (33.5%) were influenza B viruses. Of 27 155 influenza A viruses sub-typed, 26 482 (97.5%) were A(H1N1) 2009 and 673 (2.5%) were A(H3) viruses (Table 2). Trends in virological detections since week 40/2010 are shown in Figures 1–3.

Since week 40/2010, 3823 influenza viruses from sentinel and non-sentinel specimens have been characterised antigenically (Figure 4): 1950 as A/California/7/2009 (H1N1)-like; 1587 as B/Brisbane/60/2008-like (Victoria lineage); 145 as B/Florida/4/2006-like (Yamagata lineage); 139 as A/Perth/16/2009 (H3N2)-like and two as B/Bangladesh/333/2007-like (Yamagata lineage).

Since week 40/2010, Denmark, Germany, Ireland, Italy, the Netherlands, Norway, Spain and the UK have reported antiviral resistance data to TESSy (Table 3). Ninety-two of 1 999 influenza A(H1)2009 viruses tested were resistant to oseltamivir but all viruses tested remained sensitive to zanamivir. All the resistant viruses carried the NA H275Y substitution. Sixteen of 55 resistant viruses, from patients for whom exposure to antivirals was known, were from patients who had not been treated with oseltamivir. These patients were probably infected with resistant viruses carrying the NA H275Y substitution.

More details on circulating viruses can be found in the March report prepared by the Community Network of Reference Laboratories (CNRL) coordination team. A subset (over 660) of the sentinel and non-sentinel specimens collected between December 2010 and March 2011 (Figure 4), has been sent to the WHO Collaborating Centre in London: 65% type A and 35% type B. Of the influenza A viruses 89% were pandemic A(H1N1)2009 and 11% A(H3N2), and of the B viruses 89% were of the Victoria lineage and 11% of the Yamagata lineage. Antigenically, the vast majority of viruses were similar to the viruses recommended for the 2010/11 vaccine: A/California/7/2009 (pandemic A(H1N1)2009), A/Perth/16/2009 (A(H3N2)) and B/Brisbane/60/2008 (B/Victoria-lineage). While viruses of the B/Yamagata lineage were still recognised by antisera raised against the most recently used vaccine virus, B/Florida/4/2006, they reacted better to antisera raised against more recently circulating viruses, notably B/Bangladesh/3333/2007 representative of the HA genetic clade in which most of the analysed Yamagata lineage viruses fell. While the bulk of viruses analysed were antigenically similar to the 2010/11 vaccine viruses, genetically they fell within a number of groups: four for pandemic A(H1N1)2009, five for A(H3N2) and two for B/Victoria-lineage viruses.

In week 14/2011, respiratory syncytial virus detections continued to decline in 13 reporting countries (Figure 5).

Table 2: Weekly and cumulative influenza virus detections by type, subtype and surveillance system, weeks 40/2010–14/2011

	Current Period		Season	
Virus type/subtype	Sentinel	Non-sentinel	Sentinel	Non-sentinel
Influenza A	10	90	8349	29283
A(H1)2009	4	32	7440	19042
A (subtyping not performed)	6	48	692	9785
A (not subtypable)	0	0	0	0
A (H3)	0	10	217	456
A (H1)	0	0	0	0
Influenza B	37	93	5497	13425
Total Influenza	**47**	**183**	**13846**	**42708**

Note: A(H1)2009, A(H3) and A(H1) includes both N-subtyped and non-N-subtyped viruses

Figure 1: Number of sentinel specimens positive for influenza, by type, subtype and by week of report, weeks 40/2010–14/2011

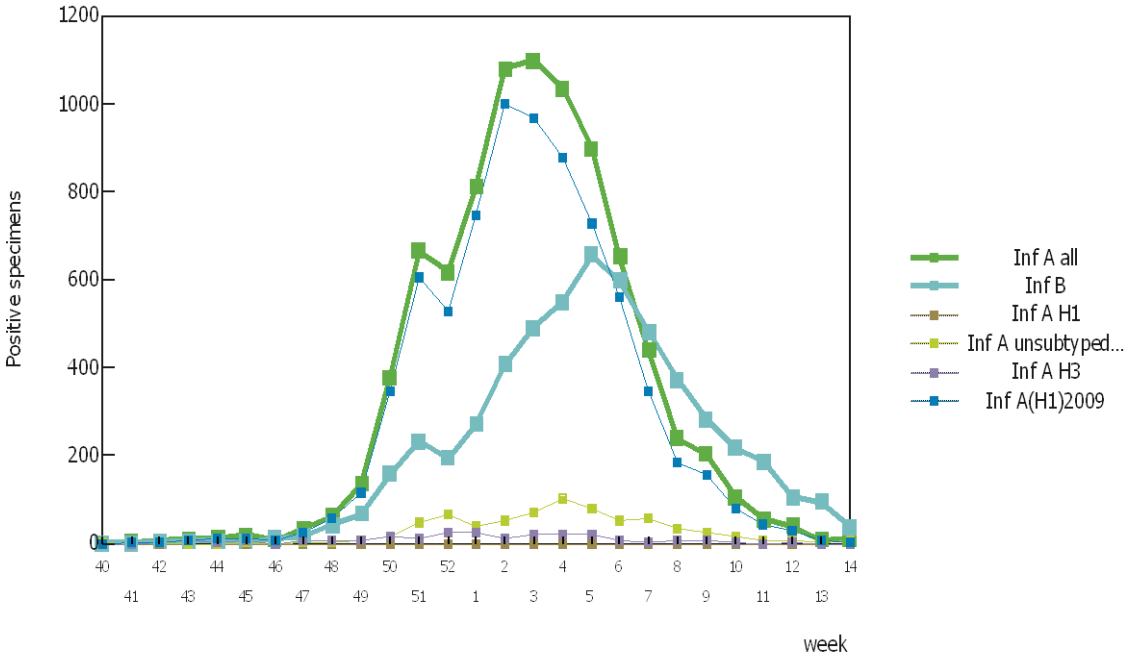


Figure 2: Number of non-sentinel specimens positive for influenza by type, subtype and week of report, weeks 40/2010–14/2011

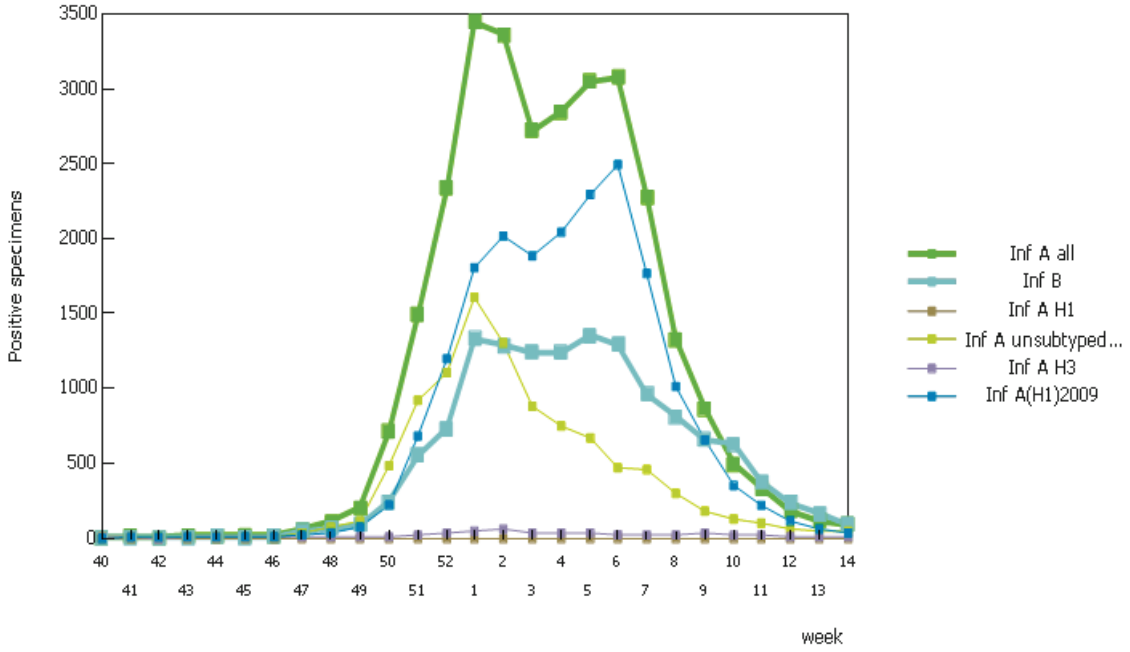


Figure 3: Proportion of sentinel samples positive for influenza, weeks 40/2010–14/2011

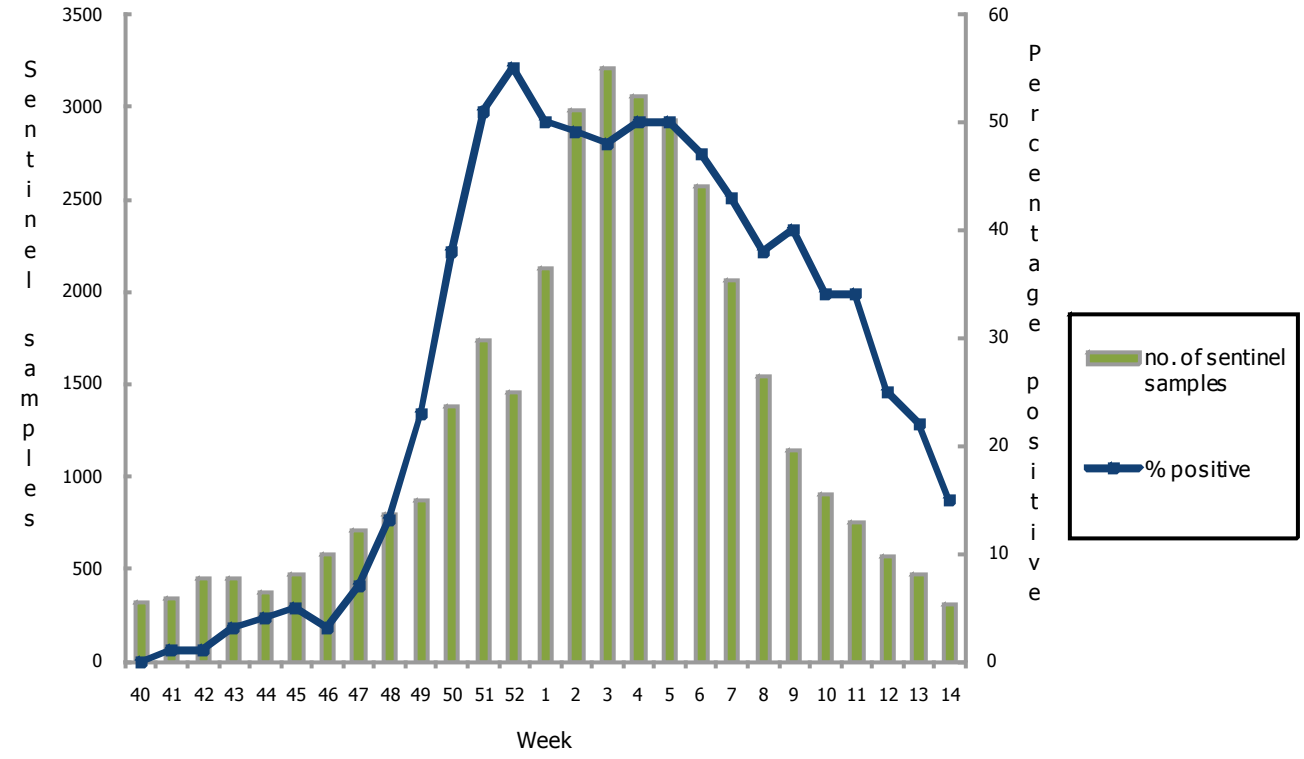


Figure 4: Results of antigenic characterisations of sentinel and non-sentinel influenza virus isolates, weeks 40/2010–14/2011

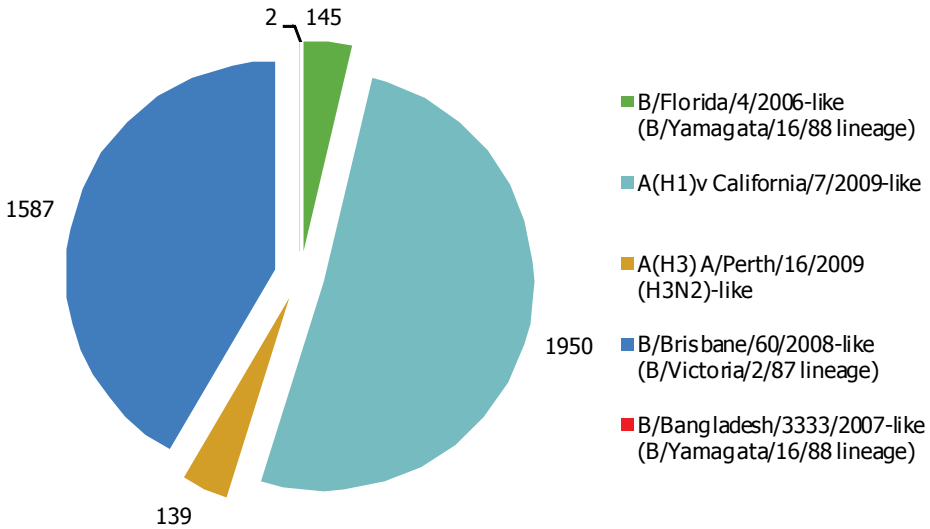
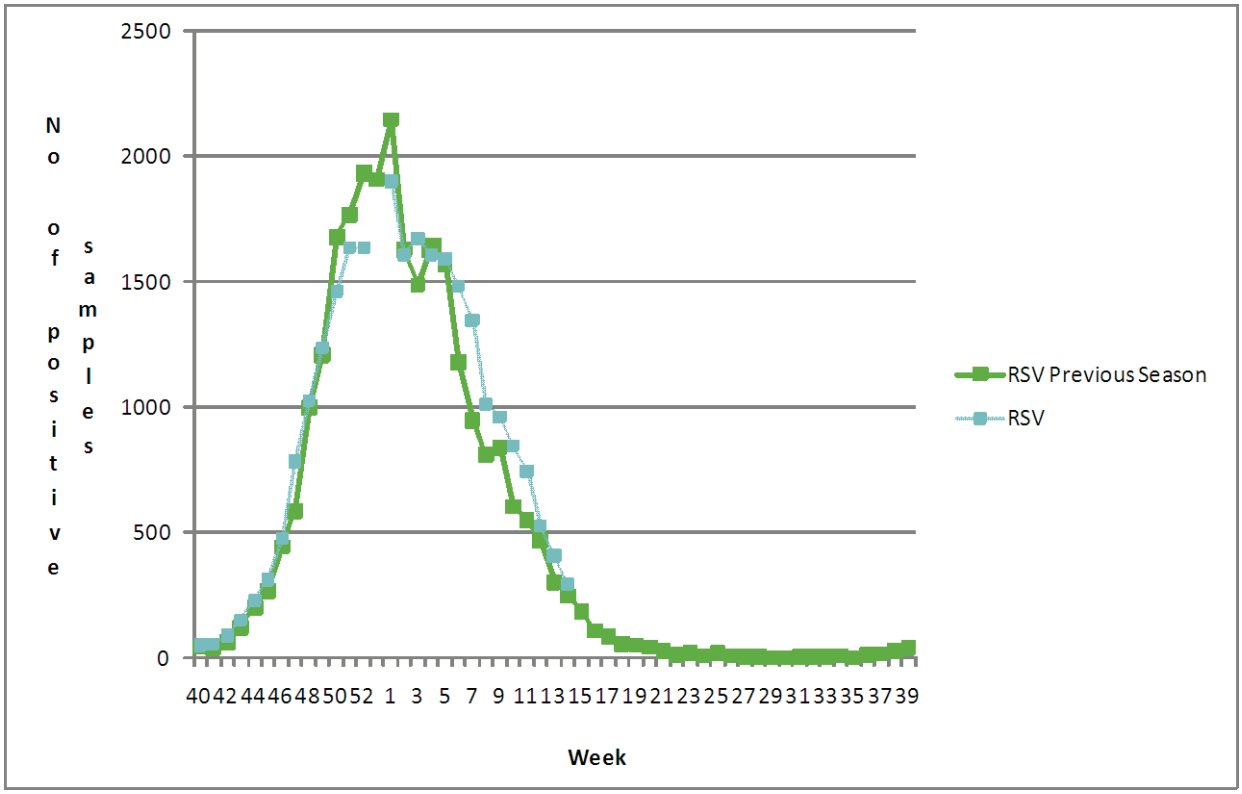


Table 3: Antiviral resistance by influenza virus type and subtype, weeks 40/2010–14/2011

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(H3)	4	0	4	0	10	10(100)
A(H1)	0	0	0	0	0	0
A(H1)2009	1999	92 (4.6)	1999	0	197	197 (100)
B	346	0	340	0	NA*	NA*

* NA - not applicable, as M2 inhibitors do not act against influenza B viruses.
Data are from single location (e.g. H275Y only) or multiple location mutation analysis (full sequencing) and/or phenotypic characterisation (IC50 determination), and therefore data should be interpreted in this context.

Figure 5: Respiratory syncytial virus (RSV) detections, sentinel and non-sentinel, weeks 40/2010–14/2011



Description of the system

According to the nationally defined sampling strategy, sentinel physicians take nasal or pharyngeal swabs from patients with influenza-like illness (ILI), acute respiratory infection (ARI) or both and send the specimens to influenza-specific reference laboratories for virus detection, (sub-)typing, antigenic or genetic characterisation and antiviral susceptibility testing.

For details of the current viruses recommended by WHO for vaccine preparation click here.

Hospital surveillance – severe acute respiratory infection (SARI)

Weekly analysis – hospitalised severe influenza and SARI cases

During week 14/2011, four hospitalised severe influenza cases were reported by Austria (one influenza A and one A(H1N1)2009), Romania and Slovakia (one A(H1N1)2009 each). In addition, Romania and Slovakia reported eight and three SARI cases, respectively.

Of 4 766 hospitalised cases with severe respiratory illness reported since week 40/2010, 3 447 (72.3%) were infected with an influenza virus. Of 3 072 typed and sub-typed influenza viruses, 2 757 (89.8%) were influenza A(H1N1)2009, 22 (0.7%) were A(H3) and 293 (9.5%) were influenza B viruses (Table 6).

Since week 40/2010, 1 919 severe respiratory cases have been admitted to ICU, of which 1 025 (53.4%) needed ventilation (Table 8).

In patients for whom information was available, 39.4% had no prior underlying condition and obesity, morbid or not, was the most common underlying condition (Table 7).

Table 4: Cumulative number of SARI cases, weeks 40/2010–14/2011

Country	Number of cases	Incidence of SARI cases per 100,000 population	Number of fatal cases reported	Incidence of fatal cases per 100,000 population	Estimated population covered
Finland	80		15		
Romania	426	6.64	30	0.47	6413821
Belgium	922				
Spain	1386		156		
Malta	55	13.3	1	0.24	413609
Slovakia	194	3.57	21	0.39	5433385
Austria	373		12		
France	790		144		
Ireland	122		23		
Portugal	418		45		
Total	4766		447		

Figure 6: Number of SARI cases by week of onset, weeks 40/2010–14/2011

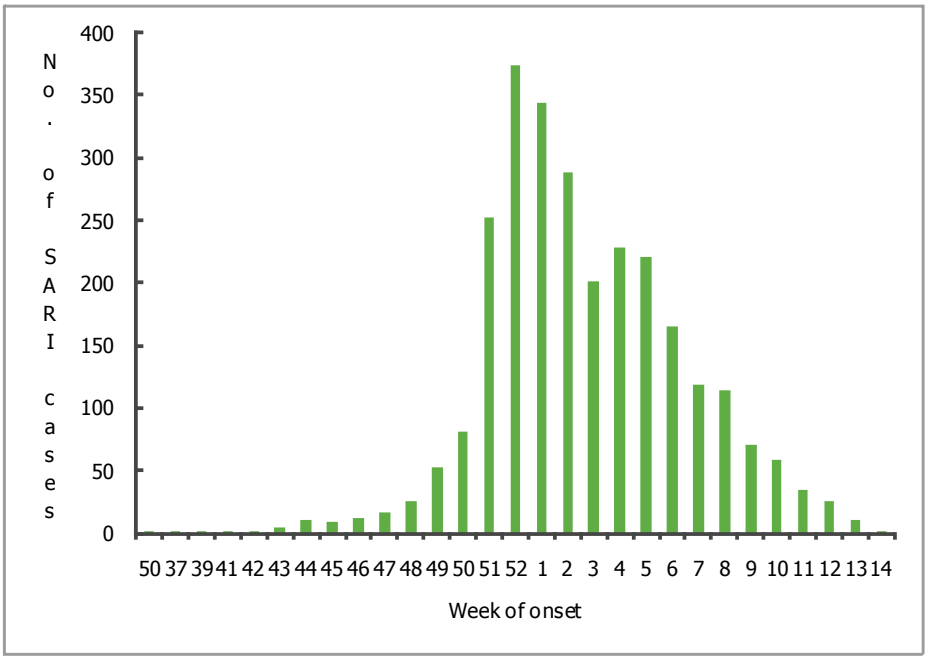


Table 5: Number of SARI cases by age and gender, weeks 40/2010–14/2011

Age groups	Male	Female	Unknown
Under 2	346	252	6
2-17	367	329	7
18-44	602	577	2
45-59	678	487	2
>=60	597	464	3
Unknown	32	14	1
Total	2622	2123	21

Table 6: Number of SARI cases by influenza type and subtype, week 14/2011

Virus type/subtype	Number of cases during current week	Cumulative number of cases since the start of the season
Influenza A	4	3154
A(H1)2009	3	2757
A(subtyping not performed)	1	375
A(H1)		
A(H3)		22
Influenza B		293
Other Pathogen		36
Unknown	11	1283
Total	**15**	**4766**

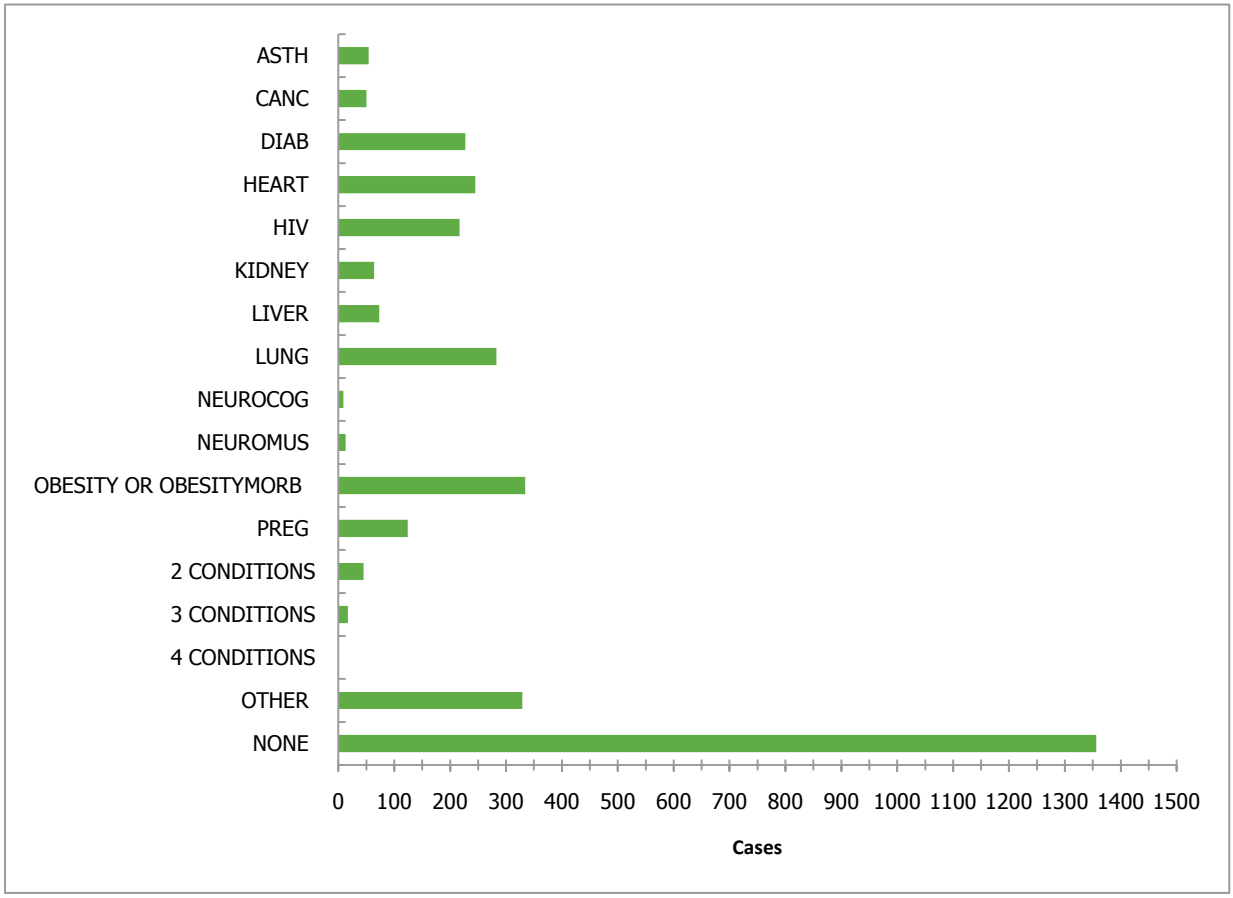
Table 8: Number of SARI cases by level of care and respiratory support, weeks 40/2010–14/2011

Respiratory support	ICU	Inpatient ward	Other	Unknown
No respiratory support available		1		
No respiratory support necessary	173	468	431	
Oxygen therapy	135	197	384	
Respiratory support given unknown	586	312	751	231
Ventilator	1025	17	6	49

Table 9: Number of SARI cases by vaccination status, weeks 40/2010–14/2011

Vaccination Status	Number Of Cases	Percentage of cases
Both, monovalent 2009 pandemic H1N1 and seasonal 2010 vaccination	125	2.6
Monovalent 2009 pandemic H1N1 vaccinati	50	1
Not vaccinated	2167	45.5
Seasonal 2010 vaccination	257	5
Unknown	2167	45.5
TOTAL	4766	

Figure 7: Number of SARI cases by underlying condition, weeks 40/2010–14/2011



Note: Other represents any other underlying condition than: asthma (ASTH), cancer (CANC), diabetes (DIAB), chronic heart disease (HEART), HIV/other immune deficiency (HIV), kidney-related conditions (KIDNEY), liver-related conditions (LIVER), chronic lung disease (LUNG), neurocognitive disorder (including seizure; NEUROCOG), neuromuscular disorder (NEUROMUS), obesity (BMI between 30 and 40; OBESITY), morbid obesity (BMI above 40; OBESITYMORB) or pregnancy (PREG). NONE is reported if there were no underlying conditions.

Table 10: Number of underlying conditions in SARI cases by age group, weeks 40/2010–14/2011

Underlying condition/risk factor	0-11 months	1-4 years	5y-14	15-24	25-64	>=65
Asthma	2	8	5	5	40	4
Cancer		1	1		39	12
Diabetes		3	4	3	164	78
Chronic heart disease	16	8	4	6	153	87
HIV/other immune deficiency		6	10	13	142	46
Chronic lung disease	12	19	8	8	171	72
No underlying condition	332	304	131	59	440	67
Obesity (BMI between 30 and 40)		1	3	9	236	32
Pregnancy			1	25	102	
Underlying condition unknown	81	149	67	68	740	208
Other (including all other conditions)	35	31	31	14	296	198

Table 11: Additional clinical complications in SARI cases by age group, weeks 40/2010–14/2011

Additional clinical complications	0-11 months	1-4 years	5y-14	15-24	25-64	>=65
Acute respiratory distress syndrome	50	90	50	50	652	134
Bronchiolitis	5	2			3	
Encephalitis		1	1	1	2	
Myocarditis					2	1
None	22	29	23	45	151	43
Other (please specify separately)	3	9	6	2	94	25
Pneumonia (secondary bacterial infection	48	115	42	50	921	228
Sepsis/Multi-organ failure	1	1	2		44	9
Unknown	349	286	140	65	747	368

Country comments and specific information concerning hospitalised cases and mortality

This section is compiled from specific comments and published reports available from national websites. They are intended to provide additional information on influenza-associated hospitalisations (including emergency hospital consultations), higher-level care load, and mortality.

Denmark: Up to 11 April (week 14/2011), a cumulative total of 156 influenza patients has been reported by intensive care units (ICUs) in Denmark with a median age of 55 years (range 1 week to 83 years). One patient was admitted to an ICU in week 14/2011 compared with three new admissions in week 13. Other influenza surveillance systems in the country show low activity. The pressure on the wards, reflected by the proportion of ICU beds used for influenza patients, decreased. On Monday 11 April 2011 at 8:00 am, three influenza patients were in ICUs, corresponding to 0.9% of the total number of occupied ICU beds in the country. Of the ICU patients, 115 were diagnosed with influenza A, 45 of which were reported to be sub-typed as subtype A(H1N1)2009. Forty-one patients had an influenza B infection. Eleven patients with influenza A and three patients with influenza B received extracorporeal membrane oxygenation (ECMO). Nineteen patients with confirmed influenza A and seven with influenza B died. Twenty-four patients were reported to be previously healthy and for another 39 patients no underlying condition was reported. For 93 patients one or more underlying conditions were described. One influenza patient was reported to be pregnant. Initial alignment with the Danish Vaccination Registry showed that 28 of the 156 patients had received the 2010/11 seasonal influenza vaccine between weeks 39 and 50 of 2010. The other 128 patients were probably not vaccinated with the 2010/11 seasonal influenza vaccine.

Spain: Information concerning severe illness due to influenza infection with associated admission to hospitals comes from a surveillance system developed during the 200910 pandemic season specifically for this purpose. Since week 40/2010 and up to week 14/2011, 1 386 severe hospitalised confirmed influenza cases have been reported. Severely affected cases were mostly in the 15–64 years age groups (63%), 15% were under five years old and 18% were over 64 years old, 25% of them with no known risk factors. Of 1 382 cases with outcome information, 156 died (13% with no known risk factors). Of the severe cases, 893 had information available on the

status of influenza vaccination for the 2010/11 season and only 134 (15%) individuals had been immunised. Monovalent pandemic vaccine 2009 was reported to have been received by 10% of hospitalised cases. Most of the severe and fatal cases within groups which were recommended for influenza vaccination, had not been vaccinated this season.

This report was written by an editorial team at the European Centre for Disease Prevention and Control (ECDC): Eeva Broberg, Flaviu Plata, Phillip Zucs, and René Snacken. The bulletin text was reviewed by the Community Network of Reference Laboratories for Human Influenza in Europe (CNRL) coordination team: Adam Meijer, Rod Daniels, John McCauley and Maria Zambon. On behalf of the EISN members, the bulletin text was reviewed by Bianca Snijders (RIVM Bilthoven, Netherlands) and Thedi Ziegler (National Institute for Health and Welfare, Finland). In addition, the report is reviewed by experts of WHO Regional Office for Europe.