SURVEILLANCE REPORT

Weekly influenza surveillance overview

14 January 2011

Main surveillance developments in week 1/2011 (03 – 09 Jan 2011)

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

- Most countries are now reporting regional or widespread influenza activity, with medium to high influenza-like illness/acute respiratory infection (ILI/ARI) consultation rates and increasing trends. This is more prominent in Western European countries.
- Forty-three per cent of sentinel swabs tested positive for influenza: 71% were type A, and of the type A viruses subtyped, 97% were A(H1N1) 2009.
- Since week 40/2010, 1148 severe acute respiratory infection (SARI) cases, including 37 fatal cases, have been reported by seven countries.
- In addition to the UK, other countries are now reporting cases requiring higher level care and deaths in young adults associated with influenza infection. Most are with A(H1N1) 2009 virus, but some are with B viruses as well.

Sentinel surveillance of ILI/ARI: In addition to Denmark, Ireland and the UK (England) that had reported high ILI/ARI consultation levels the previous week, Norway has changed its indicator from medium to high. For more information, **click here.**

Virological surveillance: Sentinel physicians collected 1661 specimens, 715 (43%) of which tested positive for influenza. For more information, **click here.**

Hospital surveillance of SARI: During week 1/2011, 196 SARI cases were reported. The number of SARI cases by week of onset appears to be increasing (Figure 6). Males and females were equally affected. For more information, **click here.**

Sentinel surveillance (ILI/ARI)

Weekly analysis – epidemiology

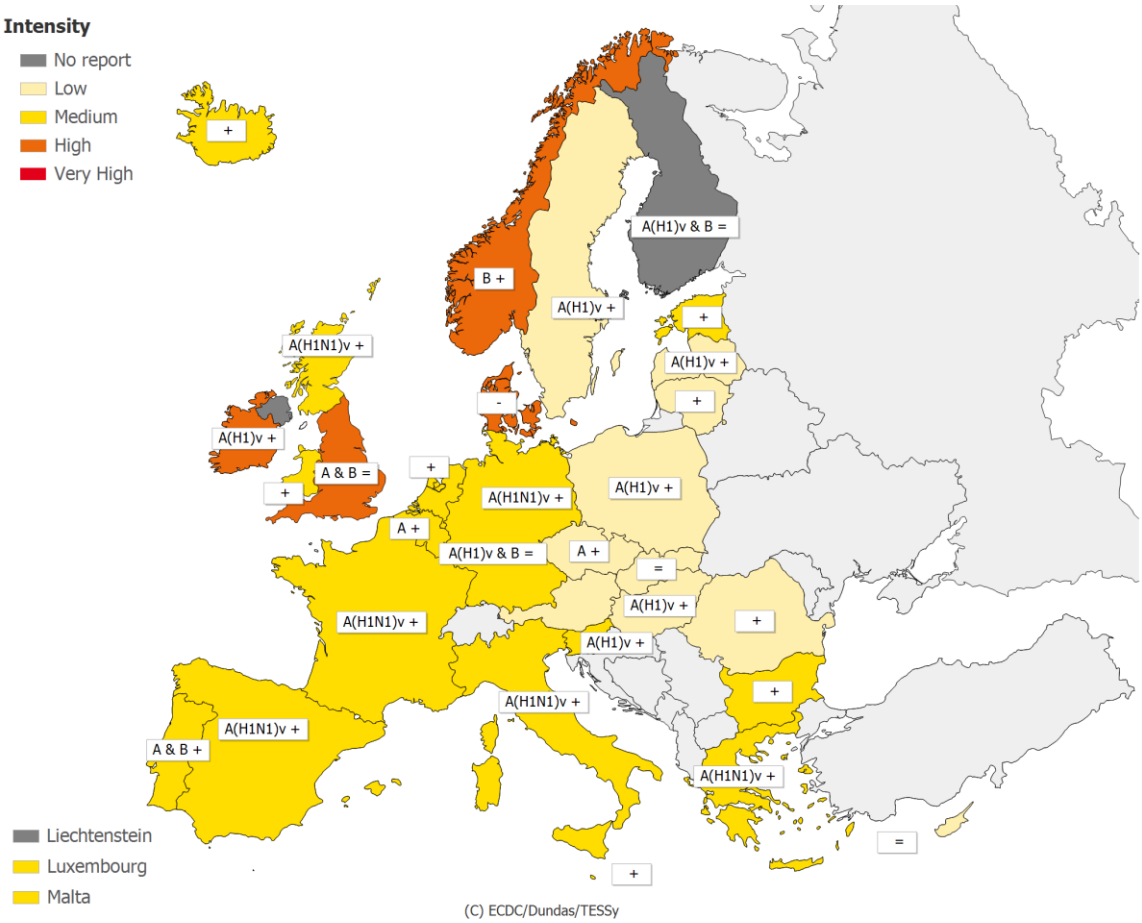
In week 1/2011, 28 countries reported intensity of influenza activity (Table 1, Map 1). In addition to Denmark, Ireland and the UK (England) that had reported high ILI/ARI consultation levels the previous week, Norway has changed its indicator from medium to high. Medium intensity was again reported by Belgium, France, Italy, Luxembourg, Malta, Portugal, Spain and the UK (Scotland and Wales), with Bulgaria, Estonia, Germany, Greece, Iceland, the Netherlands and Slovenia this week raising their indicators to this level. The remaining ten countries continued to report low intensity levels.

The four countries with high intensity differ from each other in their epidemiology. While Denmark reports the highest ILI consultation rates in children below 15 years of age, the age group predominantly affected in Ireland, Norway and the UK (England) appears to be that from 15 to 64 years, although the UK (England) also saw an early ILI peak in children during weeks 50 and 51/2010. Further, while ILI consultation rates are still well below levels reported at the beginning of last year in Denmark and Norway, they have reached these levels in Ireland and exceeded them threefold in the UK (England).

All 29 countries reported on the geographic spread of influenza (Table 1, Map 2). Widespread activity continued to be seen in Belgium, Denmark, France, Ireland, the Netherlands, Norway, Portugal and the UK (England), and was newly reported by Estonia, Luxembourg, Spain and the UK (Scotland and Wales). Regional activity was still observed in Finland and Italy, and now in Lithuania. Fourteen countries reported sporadic or local activity. Austria was the only country still reporting no activity.

The trend indicator was reported by 28 countries: increasing trends by 22 countries and the UK (Scotland and Wales) and stable trends by the remaining countries (Table 1, Map 2).

Map 1: Intensity for week 1/2011

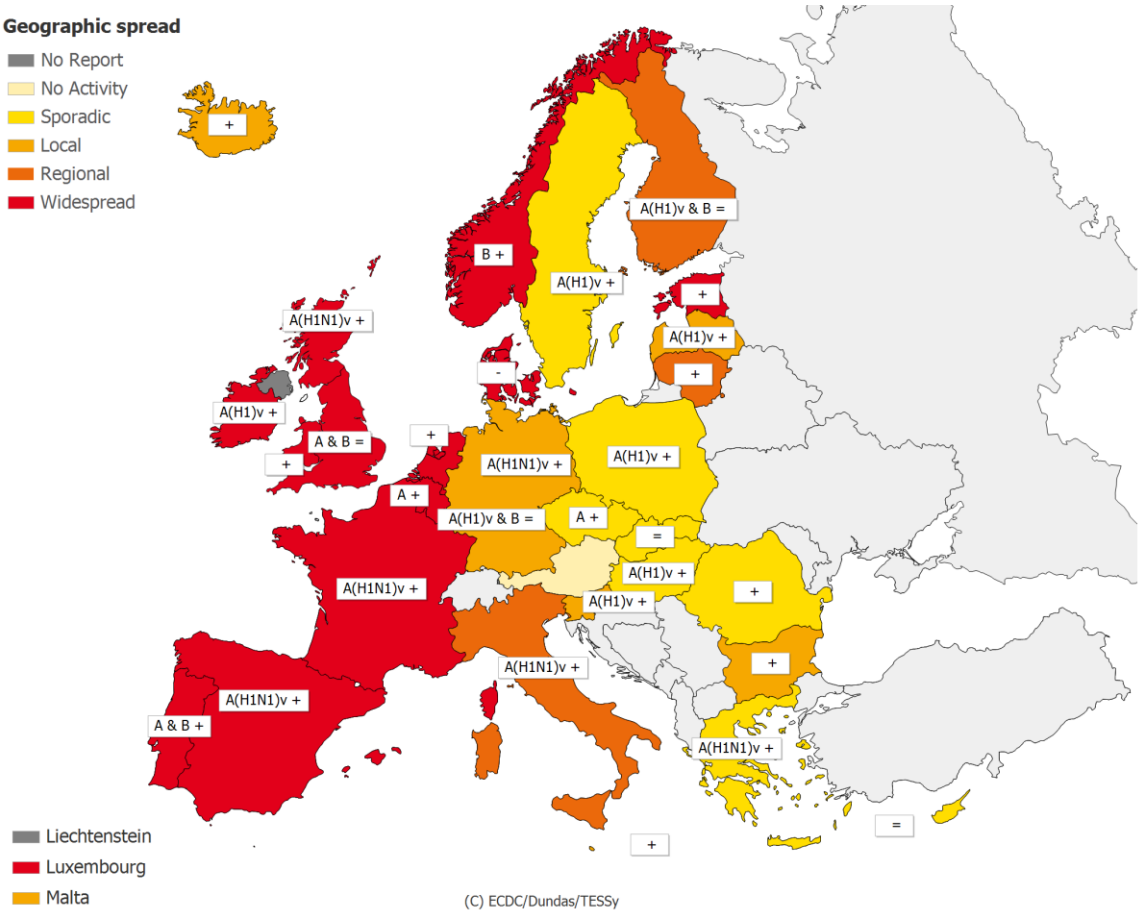


* A type/subtype is reported as dominant when > 40 % of all samples are positive for the type/subtype.

Legend:

Low	No influenza activity or influenza at baseline levels	-	Decreasing clinical activity
Medium	Usual levels of influenza activity	+	Increasing clinical activity
High	Higher than usual levels of influenza activity	=	Stable clinical activity
Very high	Particularly severe levels of influenza activity	**A**	Type A
		A & B	Type A and B
		A(H1)v	Type A, Subtype H1v
		A(H1)v & B	Type B and Type A, Subtype H1v
		A(H1N1)v	Type A, Subtype H1N1v
		B	Type B

Map 2: Geographic spread for week 1/2011



* 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 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)v	Type A, Subtype H1v
A(H1)v & B	Type B and Type A, Subtype H1v
A(H1N1)v	Type A, Subtype H1N1v
B	Type B

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

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	No activity	Unknown (no information available)	11	None	45.5	-	15.5	Graphs	Graphs
Belgium	Medium	Widespread	Increasing	53	A	67.9	487.8	1908.8	Graphs	Graphs
Bulgaria	Medium	Local	Increasing	1	None	0.0	-	1227.4	Graphs	Graphs
Cyprus	Low	Sporadic	Stable	-	-	0.0	-*	-*	Graphs	Graphs
Czech Republic	Low	Sporadic	Increasing	16	A	37.5	30.4	932.5	Graphs	Graphs
Denmark	High	Widespread	Decreasing	32	None	37.5	-	-	Graphs	Graphs
Estonia	Medium	Widespread	Increasing	41	None	22.0	10.0	317.6	Graphs	Graphs
Finland	Unknown (no information available)	Regional	Stable	25	B, A(H1)2009	48.0	-	-	Graphs	Graphs
France	Medium	Widespread	Increasing	219	A(H1N1)2009	42.0	-	2493.1	Graphs	Graphs
Germany	Medium	Local	Increasing	112	A(H1N1)2009	45.5	-	1217.4	Graphs	Graphs
Greece	Medium	Sporadic	Increasing	7	A(H1N1)2009	42.9	106.0	-	Graphs	Graphs
Hungary	Low	Sporadic	Increasing	90	A(H1)2009	15.6	125.8	-	Graphs	Graphs
Iceland	Medium	Local	Increasing	-	-	0.0	14.8	-	Graphs	Graphs
Ireland	High	Widespread	Increasing	116	A(H1)2009	62.9	204.2	-	Graphs	Graphs
Italy	Medium	Regional	Increasing	52	A(H1N1)2009	32.7	451.3	-	Graphs	Graphs
Latvia	Low	Local	Increasing	1	A(H1)2009	0.0	15.7	1014.4	Graphs	Graphs
Lithuania	Low	Regional	Increasing	-	-	0.0	41.1	646.9	Graphs	Graphs
Luxembourg	Medium	Widespread	Stable	34	B, A(H1)2009	58.8	-*	-*	Graphs	Graphs
Malta	Medium	Local	Increasing	-	-	0.0	-*	-*	Graphs	Graphs
Netherlands	Medium	Widespread	Increasing	36	None	63.9	87.3	-	Graphs	Graphs
Norway	High	Widespread	Increasing	43	B	53.5	165.1	-	Graphs	Graphs
Poland	Low	Sporadic	Increasing	22	A(H1)2009	18.2	90.8	-	Graphs	Graphs
Portugal	Medium	Widespread	Increasing	16	A, B	62.5	95.1	-	Graphs	Graphs
Romania	Low	Sporadic	Increasing	48	None	8.3	20.7	722.8	Graphs	Graphs
Slovakia	Low	Sporadic	Stable	1	None	0.0	120.8	1249.4	Graphs	Graphs
Slovenia	Medium	Local	Increasing	48	A(H1)2009	50.0	30.0	1677.4	Graphs	Graphs
Spain	Medium	Widespread	Increasing	244	A(H1N1)2009	46.3	208.5	-	Graphs	Graphs
Sweden	Low	Sporadic	Increasing	17	A(H1)2009	47.1	16.9	-	Graphs	Graphs
UK - England	High	Widespread	Stable	328	A, B	39.3	108.4	667.4	Graphs	Graphs
UK - Northern Ireland				-	-	0.0	-	-		
UK - Scotland	Medium	Widespread	Increasing	48	A(H1N1)2009	56.3	18.2	227.0	Graphs	Graphs
UK - Wales	Medium	Widespread	Increasing	-	-	0.0	92.8	-	Graphs	Graphs
Europe				1661		43.0				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

This surveillance is based on nationally organized sentinel networks of physicians, mostly general practitioners (GPs), covering at least 1–5% 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 1/2011, 25 countries reported virological data. Sentinel physicians collected 1661 specimens, 715 (43%) of which tested positive for influenza (Tables 1 and 2). This represents the first decrease compared to the previous week (45.8%) since week 46/2010 (Figure 3). However, proportions of influenza-positive sentinel samples of more than 60% were reported by Belgium, Ireland, the Netherlands and Portugal, followed by proportions ≥ 50% in Luxembourg, Norway, Slovenia and the UK (Scotland) (Table 1). In addition, 3740 non-sentinel source specimens (i.e. specimens collected for diagnostic purpose in hospitals) were reported positive for influenza virus.

Of the 4455 influenza viruses detected during week 1/2011, 3180 (71.4%) were type A and 1275 (28.6%) were type B. Of the 484 sentinel influenza A viruses that were subtyped, 470 (97.1%) were A(H1N1) 2009 and 14 (2.9%) were A(H3) viruses (Table 2).

Since week 40/2010, 9866 (72.7%) of the 13 579 influenza virus detections in sentinel and non-sentinel specimens, were type A and 3711 (27.3%) were type B. Of the 2163 sentinel influenza A viruses subtyped, 2063 (95.4%) were A(H1N1) 2009, 99 (4.6%) were A(H3) and one, detected in Poland in week 50/2010, was A(H1) (Table 2). Trends of virological detections since week 40/2010 are shown in Figures 1–3.

Since week 40/2010, 373 influenza viruses from sentinel and non-sentinel specimens have been characterised antigenically (Figure 4): 161 (43.2%) as A/California/7/2009 (H1N1)-like; 47 (12.6%) as A/Perth/16/2009 (H3N2)-like; 155 (41.5%) as B/Brisbane/60/2008-like (Victoria lineage); and 10 (2.7%) as B/Florida/4/2006-like (Yamagata lineage).

In terms of antiviral resistance, since week 40/2010, a total of 185 influenza A(H1N1) 2009 viruses and six influenza B viruses have been tested for susceptibility to neuraminidase inhibitors. Data were provided for either single location substitution (e.g. H275Y by pyrosequencing or targeted gene fragment sequencing) or multiple location substitution analysis (full gene sequencing) and/or phenotyping (IC_{50} determination) and should be interpreted in this context (Table 2). All but two viruses were sensitive to both oseltamivir and zanamivir. Two A(H1N1) 2009 viruses from the UK had the H275Y substitution known to confer resistance to oseltamivir while retaining susceptibility to zanamivir. Both viruses were from patients who had not been treated with oseltamivir.

More details on circulating viruses can be found in this report prepared by the Community Network of Reference Laboratories (CNRL) coordination team. Also, a detailed analysis of the viruses isolated in the UK was published last week in Eurosurveillance indicating no evidence of any antigenic changes in the A(H1N1) 2009 and type B viruses in that country and a good match with the seasonal vaccine viruses.

In week 1/2011, 16 countries reported 1426 respiratory syncytial virus (RSV) detections, a number that has decreased for the second consecutive week (Figure 5).

Table 2: Weekly and cumulative influenza virus detections by type, subtype and surveillance system, weeks, 40/2010–1/2011

	Current Period		Season	
Virus type/subtype	**Sentinel**	**Non-Sentinel**	**Sentinel**	**Non-Sentinel**
Influenza A	539	2641	2361	7507
A (H1) 2009	470	1123	2063	3135
A (subtyping not performed)	55	1505	198	4280
A (not subtypable)	0	0	0	0
A (H3)	14	13	99	92
A (H1)	0	0	1	0
Influenza B	176	1099	889	2822
Total Influenza	**715**	**3740**	**3250**	**10329**

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 40/2010–1/2011

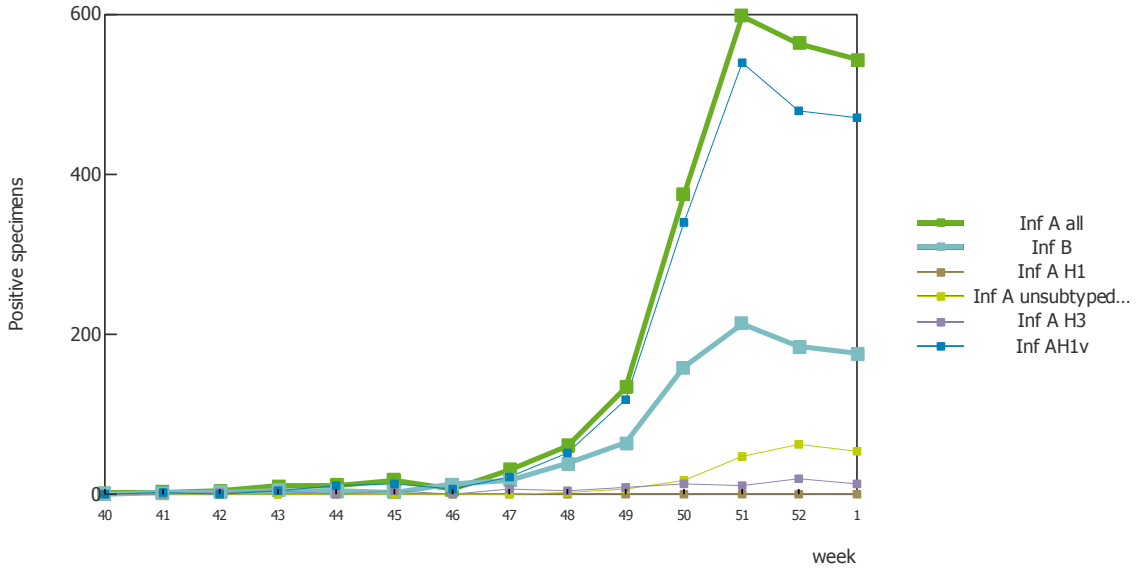


Figure 2: Number of non-sentinel specimens positive for influenza by type, subtype and week of report, weeks 40/2010–1/2011

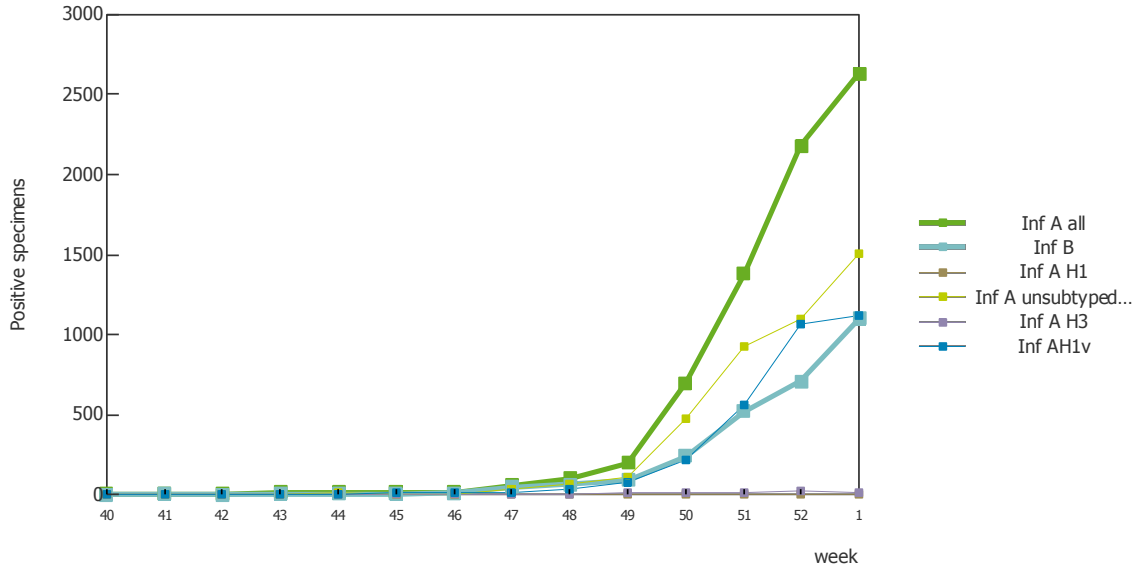


Figure 3: Proportion of sentinel samples positive for influenza, weeks 40/2010–1/2011

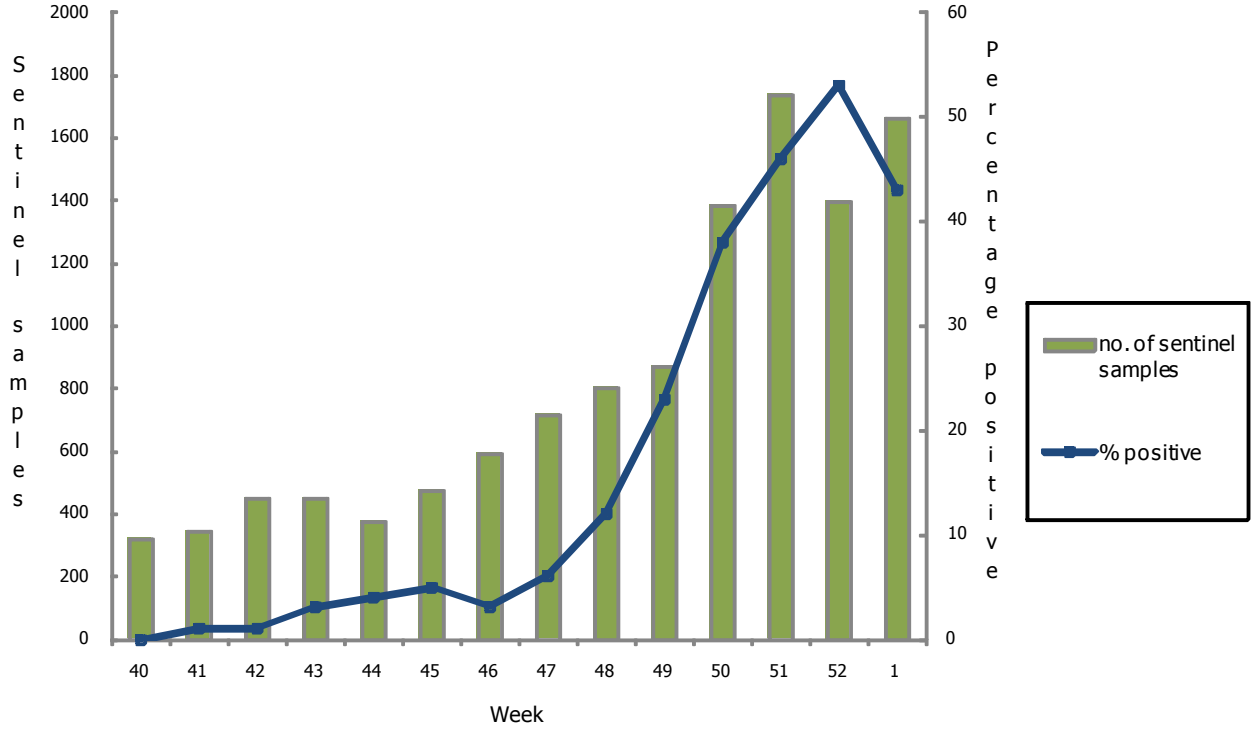


Figure 4: Results of antigenic characterisations of sentinel and non-sentinel influenza virus isolates, weeks 40/2010–1/2011

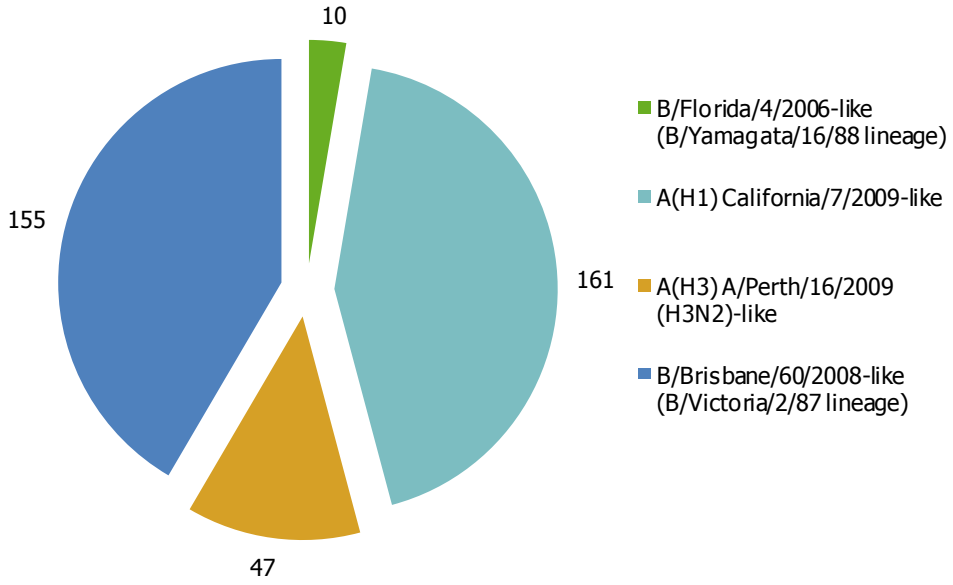
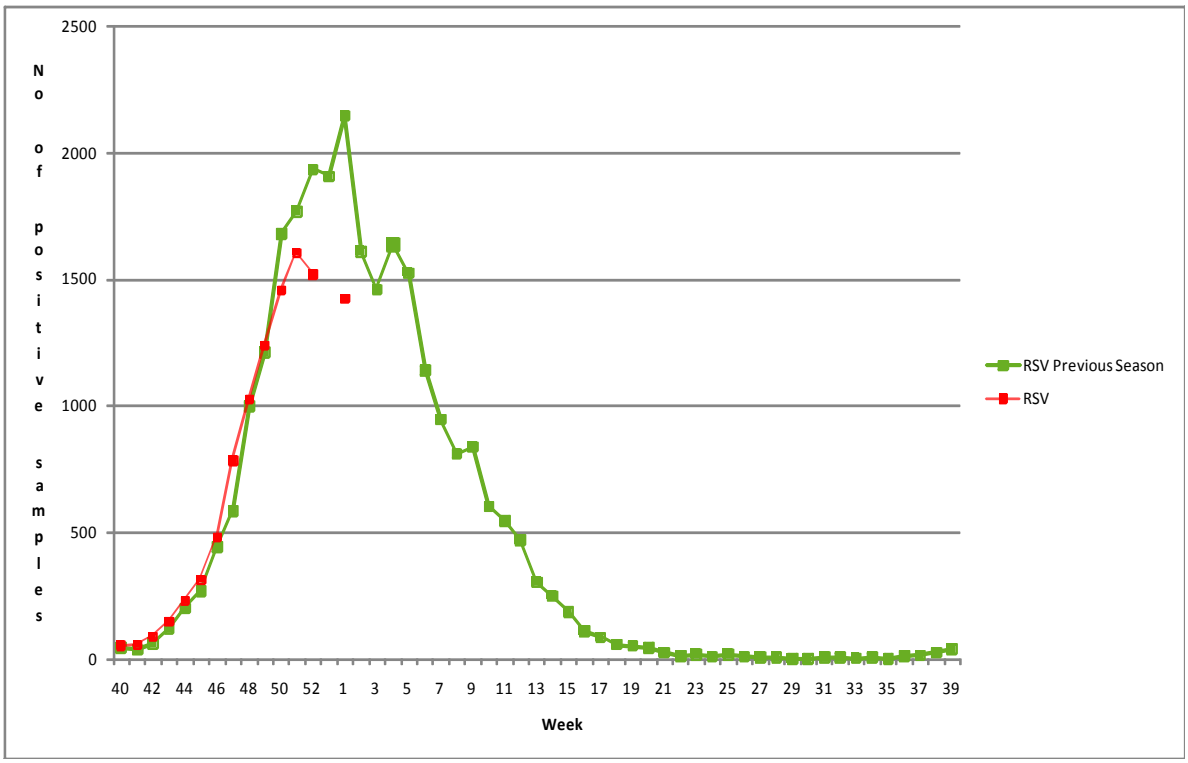


Table 3: Antiviral resistance by influenza virus type and subtype, weeks 40/2010–51/2010

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)	0	0	0	0	0	0
A(H1)	0	0	0	0	0	0
A(H1)2009	185	2 (1.1)	185	0	0	0
B	6	0	6	0	NA*	NA*

** NA - not applicable, as M2 inhibitors do not act against influenza B viruses*

Figure 5: Respiratory syncytial virus detections, sentinel and non-sentinel, weeks 40/2010–1/2011



Country comments

UK (Scotland): A small number of type B virus cases and H3 cases were identified. Continued increase in SARI cases, the majority of which are influenza A(H1N1) 2009.

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 on the current virus strains recommended by WHO for vaccine preparation, click here.

Hospital surveillance – severe acute respiratory infection (SARI)

Weekly analysis – SARI

Since week 40/2010, 1148 SARI cases, including 37 fatal cases, have been reported by seven countries (Table 4). Only three countries—Belgium, Romania and Slovakia—are collecting syndromic SARI cases. The remaining countries are reporting laboratory-confirmed hospitalised influenza cases or severe influenza cases admitted to intensive care, as in France.

During week 1/2011, 196 SARI cases were reported. Males and females were equally affected (Table 5). The number of SARI cases by week of onset appears to be increasing still (Figure 6). However, these increases may simply reflect a new system and new countries, few of which have a baseline for these data.

Of the 317 cases that tested positive for influenza in week 1/2011, 311 (98.1%) were infected by type A and 6 (1.9%) by type B viruses (Table 6). Of the 284 type A viruses subtyped, 283 (99.6%) were A(H1) 2009 and one was A(H3). Since week 40/2010, 495 (97.8%) of 506 influenza viruses detected were type A, and 454 (99.1%) of 458 type A viruses subtyped were A(H1) 2009.

Of the 1148 reported cases since week 40/2010, 402 (35.0%) were admitted to intensive care with 187 (16.3%) requiring ventilatory support (Table 8).

Table 4: Cumulative number of SARI cases, weeks 40/2010–1/2011

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
Austria	9		1		
Belgium	496				
Spain	345		16		
France	171		11		
Portugal	39		4		
Romania	84	1.31	5	0.08	6413821
Slovakia	4				
Total	1148		37		

Figure 6: Number of SARI cases by week of onset, weeks 40/2010–1/2011

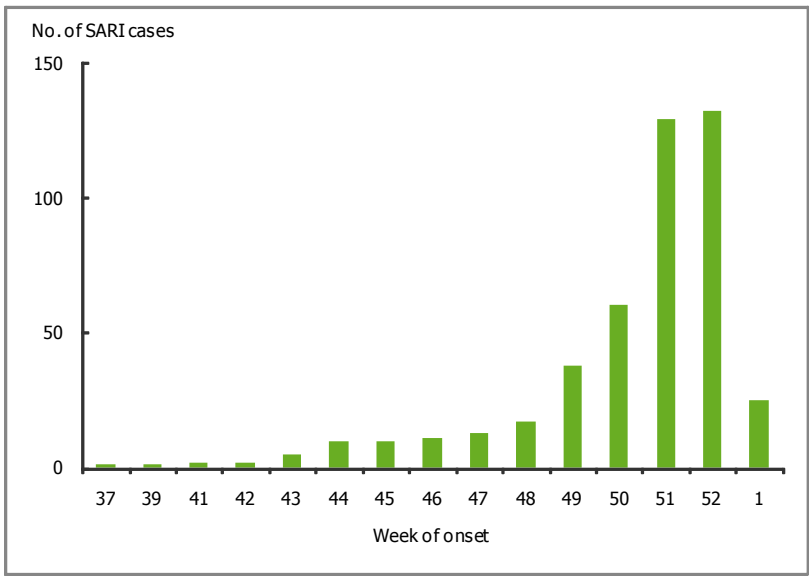


Table 5: Number of SARI cases by age and gender, week 1/2011

Age groups	Male	Female	Unknown
Under 2	18	14	
2-17	9	3	
18-44	27	28	
45-59	27	19	2
>=60	19	27	1
Unknown		1	1
Total	100	92	4

Table 6: Number of SARI cases by influenza type and subtype, week 1/2011

Virus type/subtype	Number of cases during current week	Cumulative number of cases since the start of the season
Influenza A	311	495
A(H1) 2009	283	454
A(H1)		
A(H3)	1	4
A(subtyping not performed)	27	37
Influenza B	6	11
Unknown	150	613
Total	467	1119

Table 7: Number of SARI cases by antiviral treatment, weeks 40/2010–1/2011

Antiviral treatment	Number of patients who received prophylaxis	Number of patients who received anti-viral treatment
Oseltamivir	1	328
Zanamivir		7
Other (or combinations with other)	2	3
Unknown	1013	739
None	132	71
Total	1148	1148

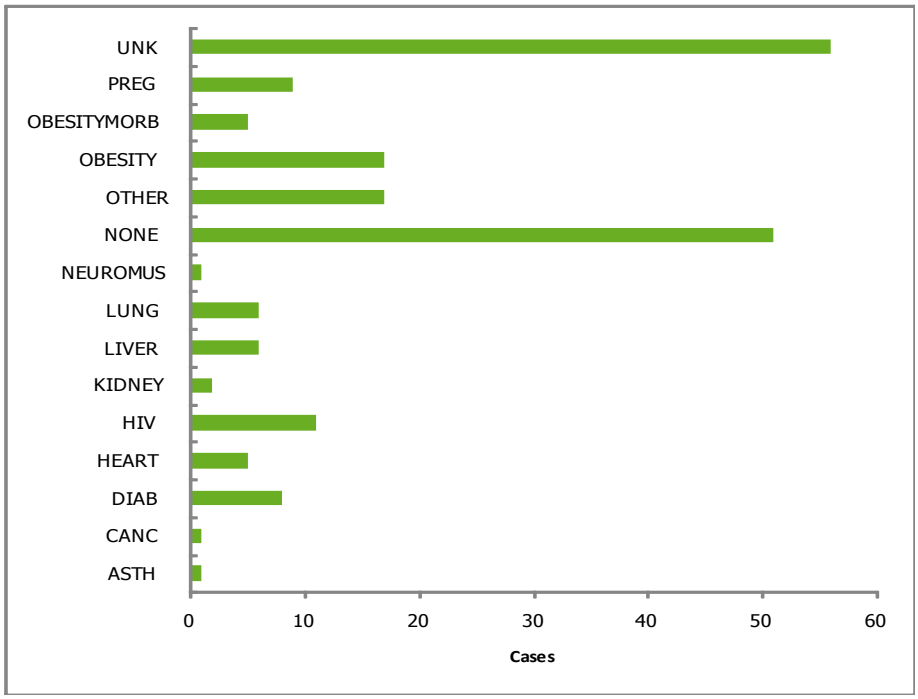
Table 8: Number of SARI cases by level of care and respiratory support, weeks 40/2010–1/2011

Respiratory support	ICU	Inpatient ward	Other	Unknown
No respiratory support available		1		
No respiratory support necessary	44	35	245	
Oxygen therapy	40	40	195	
Respiratory support given unknown	131	4	135	83
Ventilator	187	2	5	1
Total	402	82	580	84

Table 9: Number of SARI cases by vaccination status, week 1/2011

Vaccination Status	Number Of Cases	Percentage of cases
Both, monovalent 2009 pandemic H1N1 and seasonal 2010 vaccination	6	3.1
Monovalent 2009 pandemic H1N1 vaccinati	3	2
Not vaccinated	79	40.3
Seasonal 2010 vaccination	11	6
Unknown	97	49.5
TOTAL	196	

Figure 7: Number of SARI cases by underlying condition, week 1/2011



Note: The data is collected for asthma, cancer, diabetes, chronic heart disease, HIV/other immune deficiency, kidney-related conditions, liver-related conditions, chronic lung disease, neurocognitive disorder (including seizure), neuromuscular disorder, obesity (BMI between 30 and 40), morbid obesity (BMI above 40), pregnancy, other, underlying condition unknown and for no underlying condition.

Table 10: Number of underlying conditions in SARI cases by age group, weeks 40/2010–1/2011

Underlying condition/risk factor	0-11 months	1-4 y	5-14 y	15-24 y	25-64 y	>=65 y
Asthma		1	1	1	1	
Cancer		1			2	2
Diabetes					36	15
Chronic heart disease	4				25	15
Chronic lung disease	2	1		1	14	6
Pregnancy				6	22	
Underlying condition unknown	15	23	8	14	157	26
Other (including all other conditions)	201	144	50	11	243	96

Table 11: Additional clinical complications in SARI cases by age group, weeks 40/2010–1/2011

Additional clinical complications	0-11 months	1-4 y	5-14 y	15-24 y	25-64 y	>=65 y
Acute respiratory distress syndrome	24	23	7	13	129	23
Bronchiolitis	1				1	
Pneumonia (secondary bacterial infection	11	15	5	11	190	35
Sepsis/Multi-organ failure						1
None	3	4		3	16	9
Other					3	
Unknown	183	128	47	6	161	92

Country comments

Czech Republic: During the last week, three new SARI cases with laboratory-confirmed pandemic strain were reported, all at intensive and/or resuscitation care units: 29-year-old male with no risk condition; 48-year-old female with diabetes and obesity; 54-year-old male with abdominal sepsis.

Spain: In Spain the information of severe illness due to influenza infection admitted to hospitals comes from a surveillance system developed during the 2009/2010 pandemic season for reporting severe hospitalised confirmed influenza cases. From week 40/2010 to week 01/2011, 245 severe hospitalised confirmed influenza cases have been reported. Those severely affected are mostly young adults, some without underlying conditions (16%). Most of the severe cases and deaths have been associated with A(H1N1)2009 and have not previously been vaccinated.

Ireland: As of week 48/2010, 71 confirmed cases of influenza A(H1N1) 2009 have been admitted to intensive care in Ireland.

Malta: Situation unchanging.

United Kingdom (England): Due to bank holidays in weeks 52/2010 and 1/2011, general practitioner (GP) surgeries were only open for three and four days respectively, impacting GP consultation rates; as such data should be interpreted cautiously. A similar dip and subsequent increase in consultation rates is often seen at this time of year. The following is a list of the number of patients in England with confirmed or suspected influenza in critical care beds by age of patient: for the week ending 15 Dec 2010, <5=10, 5–15=9, 16–64=141, >65=22, total=182; week ending 23 Dec 2010, <5=26, 5-15=17, 16-64=366, >65=51, total=460; week ending 30 Dec 2010, <5=42, 5–15=24, 16–64=586, >65=86, total=738; week ending 6 Jan 2010, <5=30, 5–15=17, 16–64=640, >65=96, total=783. The overall number of severely ill patients with confirmed or suspected flu in critical care has continued to rise. As of 06 January 2011, there were 783 patients with confirmed or suspected influenza in NHS critical care beds in England. These patients occupied 22.5 % of available critical care beds nationally. These levels are higher than any seen in the 2009 pandemic. As of 5 January 2011, 50 fatal cases have been verified by the Health Protection Agency (HPA) as related to influenza infection. Of these cases, 45 have been associated with H1N1 (2009) infection and five with influenza B infection. The deaths have been mainly in younger adults and children, with five cases younger than 5 years of age, eight cases from 5 to 14 years, 33 cases from 15 to 64 years and four cases older than 64 years. Thirty-three of 48 (69%) fatal cases with available information were in one of the CMO-defined clinical risk groups for vaccination. The leading reported clinical risk factors were underlying neurological disease (n=11) and respiratory disease including asthma (n=13). Of cases with available information on immunisation history, 36 of 39 cases had not received 2010/11 trivalent influenza vaccine more than two weeks before illness onset. Thirty-three of 34 cases had not received monovalent pandemic influenza vaccination last season. For further information see http://winterwatch.dh.gov.uk/health-data-6-jan-2011/ and the HPA output at http://www.hpa.org.uk/web/HPAwebFile/HPAweb_C/1287148330414.

In addition, communications were received from Belgium, Denmark and Norway for week 2 and will be added next week.

The report text 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, The Netherlands) and Thedi Ziegler (National Institute for Health and Welfare, Finland). Finally, it was reviewed by WHO/Europe.