

SURVEILLANCE REPORT

Weekly influenza surveillance overview

18 December 2009

Main surveillance developments in week 50/2009 (7–13 December)

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

- Most countries are witnessing medium influenza intensity with only five reporting high to very high levels. In the majority of countries, activity is still widespread.
- Nineteen countries reported decreasing rates of influenza-like illness or acute respiratory infection for at least the last two weeks.
- While the proportion of influenza-positive sentinel samples continued to decline, the 2009 pandemic influenza A(H1N1) virus still accounted for 99% of all subtyped viruses in sentinel patients and for 97% in SARI patients.
- Approximately one third of reported SARI patients were known to have required ICU admission.

Sentinel surveillance of influenza like-illness (ILI)/ acute respiratory illness (ARI): In week 50/2009, Lithuania reported very high intensity. Estonia, Greece, Poland and Sweden reported high intensity and the remaining 20 countries reported medium intensity. Twenty-two countries indicated a stable or decreasing trend. For more information, [click here](#).

Virological surveillance: Sentinel physicians collected 2374 respiratory specimens, of which 844 (36%) were positive for 2009 pandemic influenza A(H1N1) virus. This proportion has now decreased for the third consecutive week. Of the 13 961 viruses detected and subtyped within sentinel networks and subtyped since week 40/2009, 13 821 (99%) were the pandemic influenza virus. For more information, [click here](#).

Aggregate numbers of 2009 pandemic influenza (H1N1) deaths: For more information, [click here](#).

Hospital surveillance of severe acute respiratory infection (SARI): During week 50/2009, 317 SARI cases were reported, 113 (36%) of which were known to have required ICU admission, with 2 patients requiring ventilatory support. Of the 315 influenza viruses subtyped in week 50, 307 (97%) were the pandemic virus. For more information, [click here](#).

Qualitative reporting: For more information, [click here](#).

Sentinel surveillance (ILI/ARI)

Weekly analysis – epidemiology

In week 50/2009, 25 countries reported epidemiological data. For the activity intensity indicator—a comparison with baseline national network levels for ILI and/or ARI—Lithuania reported very high intensity. Estonia, Greece, Poland and Sweden reported high intensity and the remaining 20 countries reported medium intensity (Map 1, Table 1).

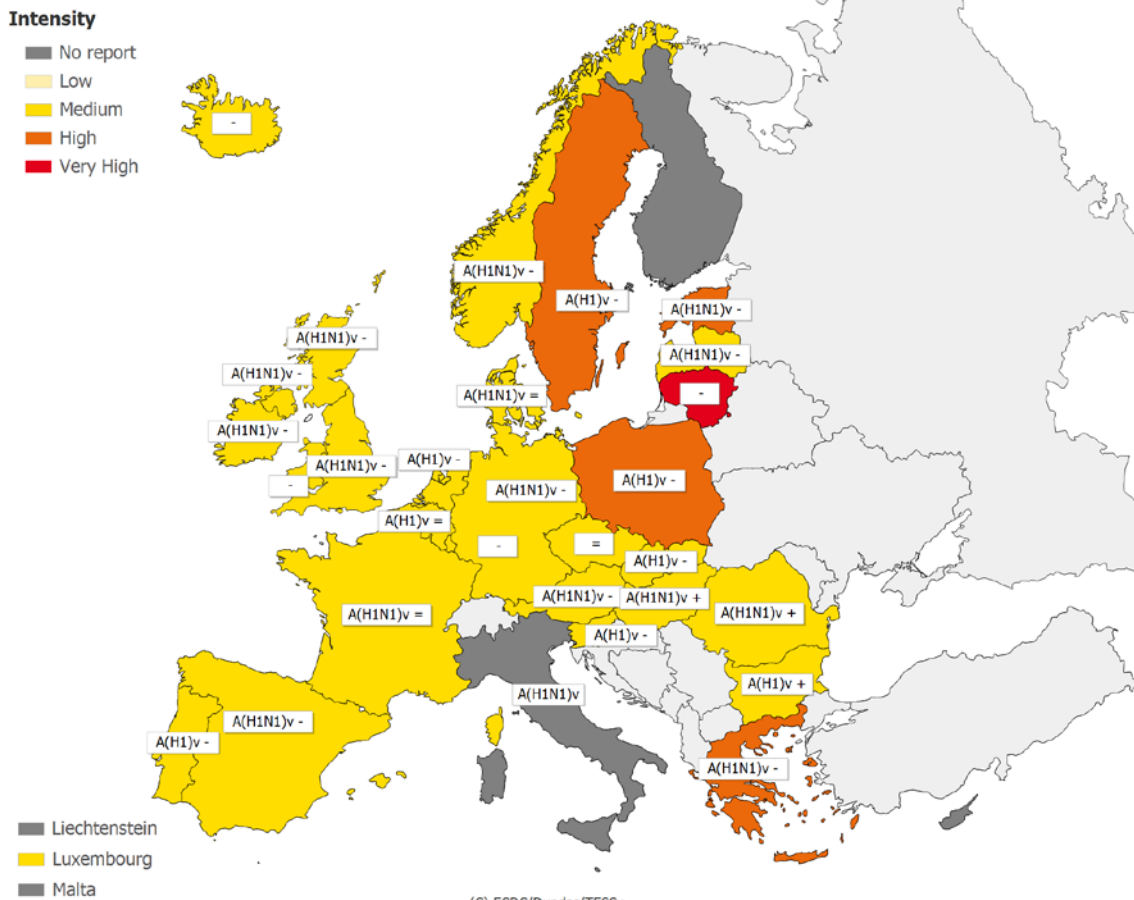
For the geographic spread indicator, 15 countries (Belgium, Denmark, Estonia, France, Greece, Hungary, Latvia, Lithuania, Luxembourg, the Netherlands, Norway, Poland, Portugal, Slovenia and Sweden) and the UK (Wales) reported widespread activity. Six countries and the UK (England and Scotland) reported regional activity, and three countries and the UK (Northern Ireland) reported local or sporadic activity (Map 2, Table 1).

Bulgaria, Hungary and Romania reported an increasing trend, while 18 countries reported a decreasing trend and four indicated stable activity (Table 1). For definitions of the intensity and geographic spread indicators, [click here](#).

Since week 40/2009, all countries reporting data to EISN have experienced influenza activity above baseline levels. Austria, Belgium, Denmark, Germany, Greece, Iceland, Ireland, Latvia, Lithuania, Luxembourg, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Spain, Sweden and the UK (England and Northern Ireland) observed decreasing ILI/ARI rates for at least the last two weeks, with Belgium, Iceland, Ireland, Spain and the UK (Northern Ireland) reaching levels below those registered in week 40.

During the 2009/10 season, most countries started to report influenza activity above baseline levels earlier than in recent seasons. In addition, peak incidences of ILI/ARI have generally been higher this season. In all countries collecting information on the age of the patients, individuals younger than 15 years are the most affected age group.

Map 1: Intensity for week 50/2009

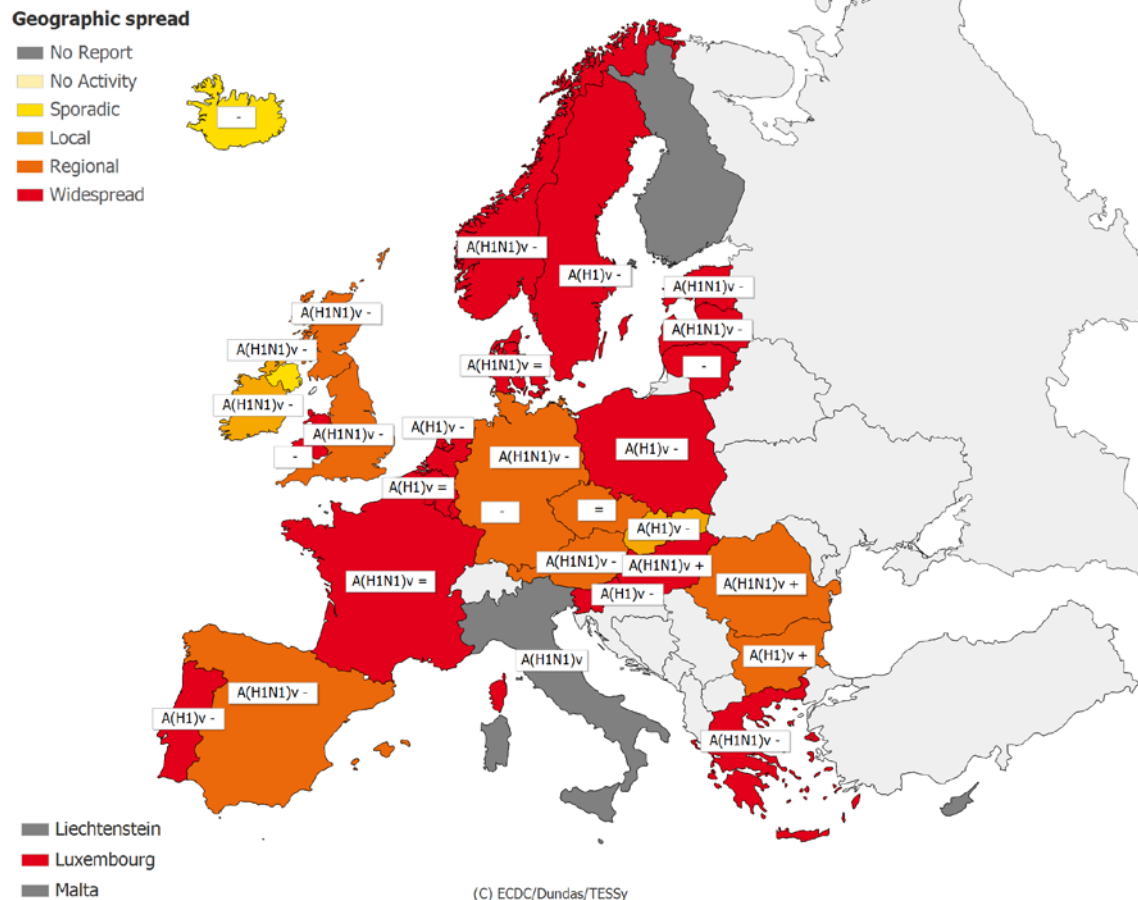


* A type/subtype is reported as dominant when > 40 % of all samples are positive for the type/subtype.

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(H1)v	Type A, Subtype H1v
		A(H1N1)v	Type A, Subtype H1N1v

Map 2: Geographic spread for week 50/2009



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

Legend:

<p>No activity No evidence of influenza virus activity (clinical activity remains at baseline levels)</p> <p>Sporadic Isolated cases of laboratory confirmed influenza infection</p> <p>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)</p> <p>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)</p> <p>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)</p>	<p>- Decreasing clinical activity</p> <p>+ Increasing clinical activity</p> <p>= Stable clinical activity</p> <p>A(H1)v Type A, Subtype H1v</p> <p>A(H1N1)v Type A, Subtype H1N1v</p>
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Table 1: Epidemiological and virological overview by country

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	Medium	Regional	Decreasing	21	A(H1N1)v	57.1	-	27.6	Graphs	Graphs
Belgium	Medium	Widespread	Stable	47	A(H1)v	29.8	143.1	1702.9	Graphs	Graphs
Bulgaria	Medium	Regional	Increasing	0	A(H1)v	-	-	901.8	Graphs	Graphs
Cyprus				0	-	-	-	-		
Czech Republic	Medium	Regional	Stable	0	-	-	273.9	1463.9	Graphs	Graphs
Denmark	Medium	Widespread	Stable	7	A(H1N1)v	57.1	205.9	0.0	Graphs	Graphs
Estonia	High	Widespread	Decreasing	56	A(H1N1)v	25.0	56.0	638.7	Graphs	Graphs
Finland				0	-	-	-	-		
France	Medium	Widespread	Stable	618	A(H1N1)v	51.3	-	2798.7	Graphs	Graphs
Germany	Medium	Regional	Decreasing	175	A(H1N1)v	45.7	-	1168.6	Graphs	Graphs
Greece	High	Widespread	Decreasing	52	A(H1N1)v	75.6	354.4	-	Graphs	Graphs
Hungary	Medium	Widespread	Increasing	58	A(H1N1)v	31.0	458.2	-	Graphs	Graphs
Iceland	Medium	Sporadic	Decreasing	20	None	10.0	18.2	-	Graphs	Graphs
Ireland	Medium	Local	Decreasing	49	A(H1N1)v	12.2	51.4	-	Graphs	Graphs
Italy				23	A(H1N1)v	26.1	-	-	Graphs	Graphs
Latvia	Medium	Widespread	Decreasing	0	A(H1N1)v	-	138.0	1196.8	Graphs	Graphs
Lithuania	Very High	Widespread	Decreasing	14	None	28.6	124.2	706.2	Graphs	Graphs
Luxembourg	Medium	Widespread	Decreasing	0	-	-	3648.1	22103.0	Graphs	Graphs
Malta				0	-	-	-	-		
Netherlands	Medium	Widespread	Decreasing	25	A(H1)v	20.0	56.8	-	Graphs	Graphs
Norway	Medium	Widespread	Decreasing	10	A(H1N1)v	20.0	128.8	-	Graphs	Graphs
Poland	High	Widespread	Decreasing	317	A(H1)v	26.8	202.2	-	Graphs	Graphs
Portugal	Medium	Widespread	Decreasing	28	A(H1)v	28.6	61.7	-	Graphs	Graphs
Romania	Medium	Regional	Increasing	137	A(H1N1)v	46.7	3.9	1309.2	Graphs	Graphs
Slovakia	Medium	Local	Decreasing	5	A(H1)v	60.0	377.7	2032.9	Graphs	Graphs
Slovenia	Medium	Widespread	Decreasing	47	A(H1)v	48.9	158.3	1124.9	Graphs	Graphs
Spain	Medium	Regional	Decreasing	200	A(H1N1)v	25.0	76.5	-	Graphs	Graphs
Sweden	High	Widespread	Decreasing	35	A(H1)v	8.6	8.6	-	Graphs	Graphs
UK - England	Medium	Regional	Decreasing	223	A(H1N1)v	28.0	29.7	494.9	Graphs	Graphs
UK - Northern Ireland	Medium	Sporadic	Decreasing	51	A(H1N1)v	5.9	60.3	460.9	Graphs	Graphs
UK - Scotland	Medium	Regional	Decreasing	156	A(H1N1)v	21.8	21.2	286.3	Graphs	Graphs
UK - Wales	Medium	Widespread	Decreasing	0	-	-	44.2	-	Graphs	Graphs
Europe				2374		35.6			Graphs	Graphs

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 Cyprus and 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 50/2009, 24 countries reported virological data. Sentinel physicians collected 2374 respiratory specimens, of which 844 (36%) were positive for influenza virus (Tables 1 & 2). This proportion has now decreased for the third consecutive week (Figure 3). In addition, 4991 non-sentinel source specimens (e.g. specimens collected for diagnostic purposes in hospitals) were reported positive for influenza virus. Of the 13 961 viruses detected and subtyped within sentinel networks and subtyped since week 40/2009, 13 821 (99%) were the pandemic virus. Table 2 shows the distribution of sentinel and non-sentinel specimens by type and subtype; Figures 1–3 show the temporal trends of virus detections.

Based on the reported antigenic/genetic characterisation of 770 influenza viruses from week 40/2009 to week 50/2009, 766 (99%) were A/California/7/2009 (H1N1)v-like and four (<1%) as A/Brisbane/10/2007 (H3N2)-like. Figure 4 shows the results of antigenic characterisation of sentinel and non-sentinel viruses since week 40/ 2009.

All A(H1N1)v viruses tested so far have been resistant to M2 inhibitors. To date, Oseltamivir resistance was detected in 13 of the 913 viruses tested and reported to EISN, whereas resistance to zanamivir was not detected in any of the 291 strains tested (Table 3).

Since November 2009, a mutation in the haemagglutinin HA1 gene at amino acid position 222 (225 in H3 numbering) from aspartic acid (D) to glycine (G) has been detected in pandemic viruses isolated from some patients with severe disease in a number of European countries. Investigations of a possible causal relationship between this mutation and disease severity are ongoing. As yet, there is no evidence of human-to-human transmission of pandemic virus carrying this mutation.

Sentinel and non-sentinel specimens have been tested for respiratory syncytial virus (RSV) in 11 countries reporting to EISN. Overall RSV detections are increasing (Figure 5) as expected at this time of the year and countries should be on the alert for this virus.

Table 2: Weekly and cumulative influenza virus detections by type, subtype and surveillance system, weeks 40/2009-50/2009

Virus type/subtype	Current Week		Season	
	Sentinel	Non-sentinel	Sentinel	Non-sentinel
Influenza A	844	4988	14545	72493
A (pandemic H1N1)	807	4505	13821	63079
A (subtyping not performed)	37	480	630	8953
A (not subtypable)	0	0	50	278
A (H3)	0	1	4	26
A (H1)	0	2	40	157
Influenza B	0	3	46	61
Total Influenza	844	4991	14591	72554

Note: A(pandemic H1N1), A(H3) and A(H1) includes both N-subtyped and not N-subtyped viruses

Figure 1: Number of sentinel specimens positive for influenza, by type, subtype and by week of report, weeks 40/2009–50/2009

Sentinel data of number of specimens positive for influenza viruses A and B

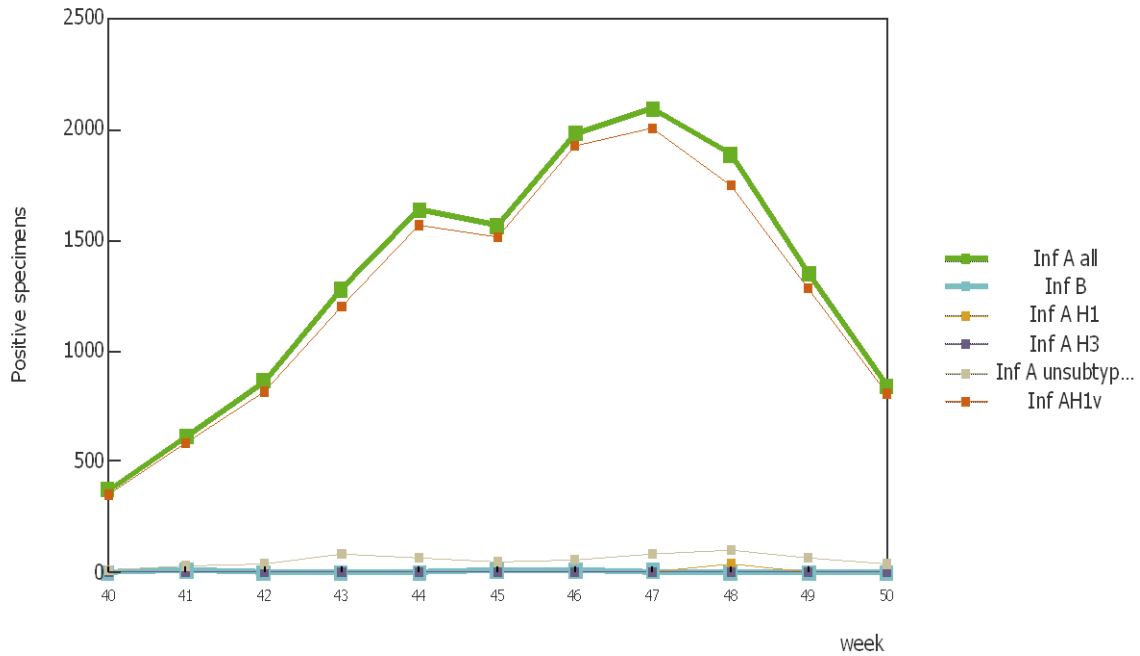


Figure 2: Number of non-sentinel specimens positive for influenza by type, subtype and week of report, weeks 40/2009–50/2009

Non-sentinel data of number of specimens positive for influenza viruses A and B

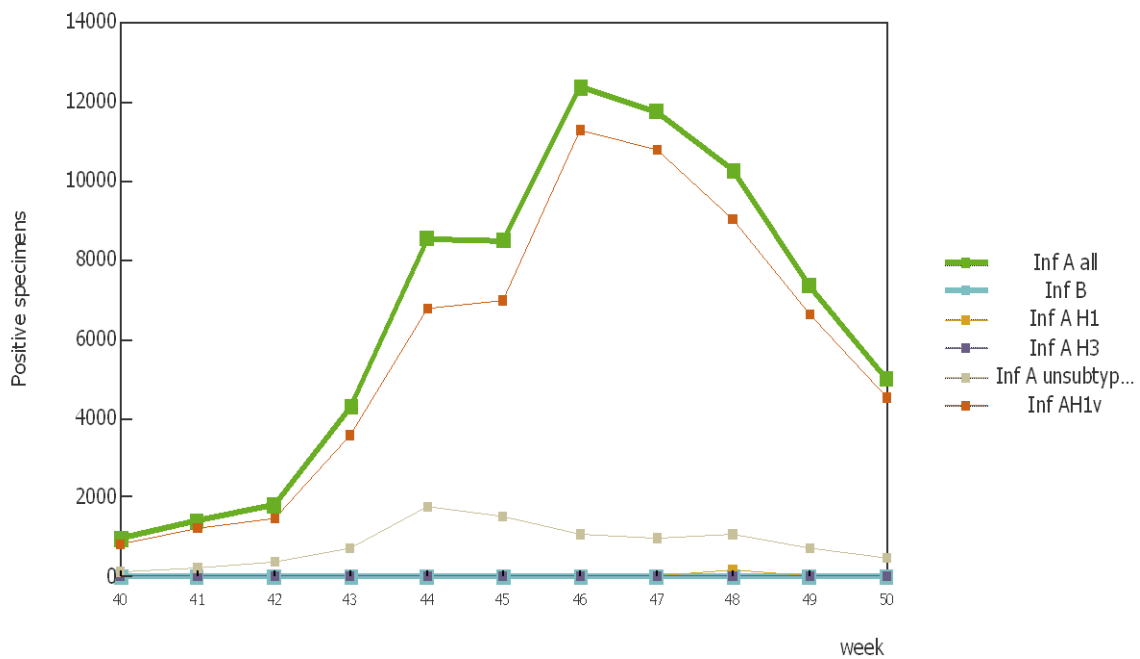


Figure 3: Proportion of sentinel samples positive for influenza, weeks 40/2009–50/2009

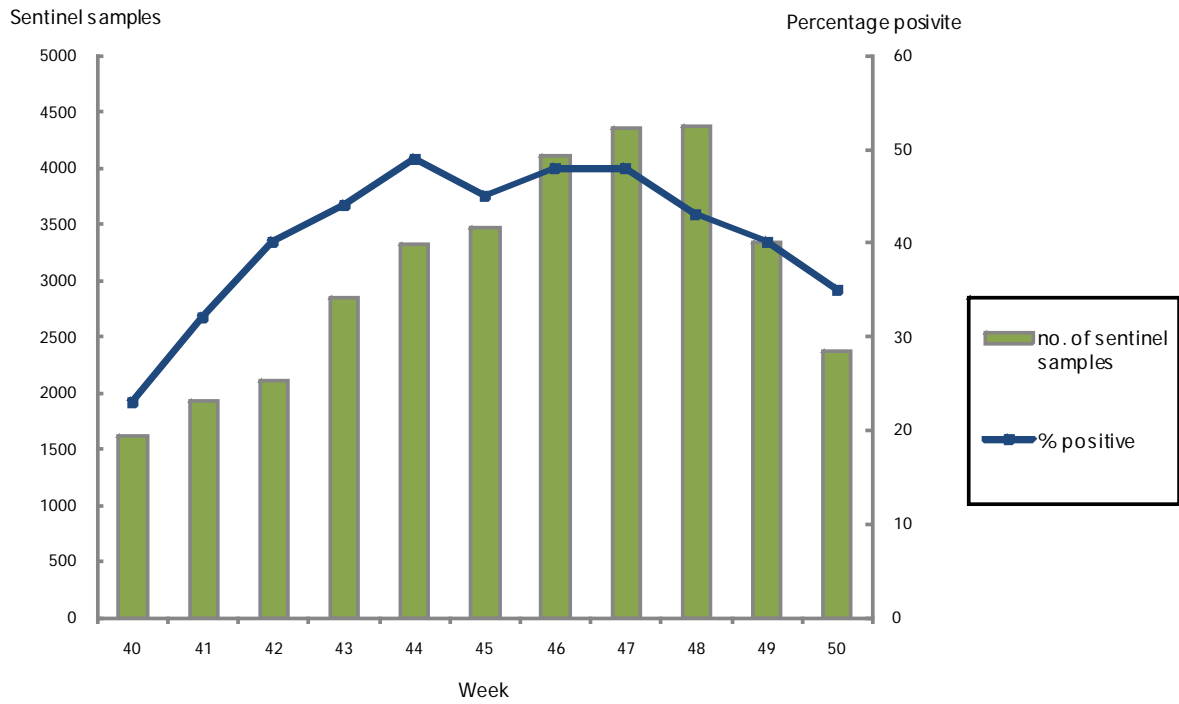


Figure 4: Results of antigenic characterisation of sentinel and non-sentinel influenza viruses since week 40/2009

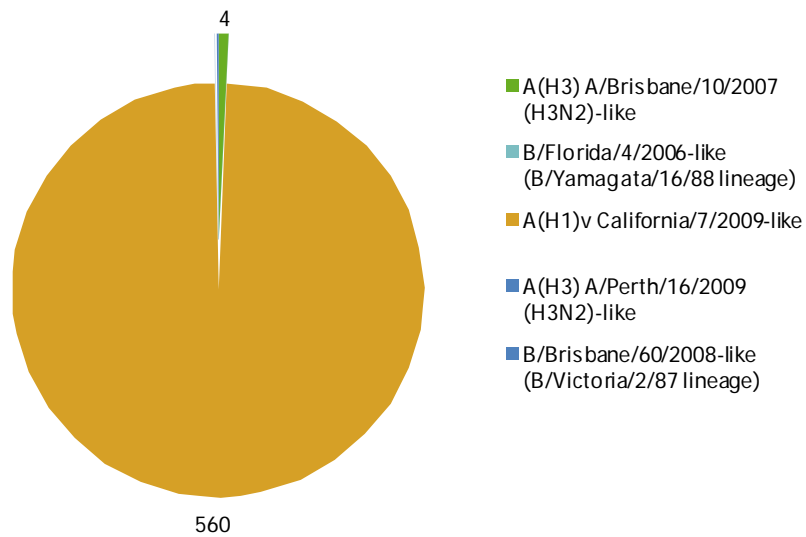
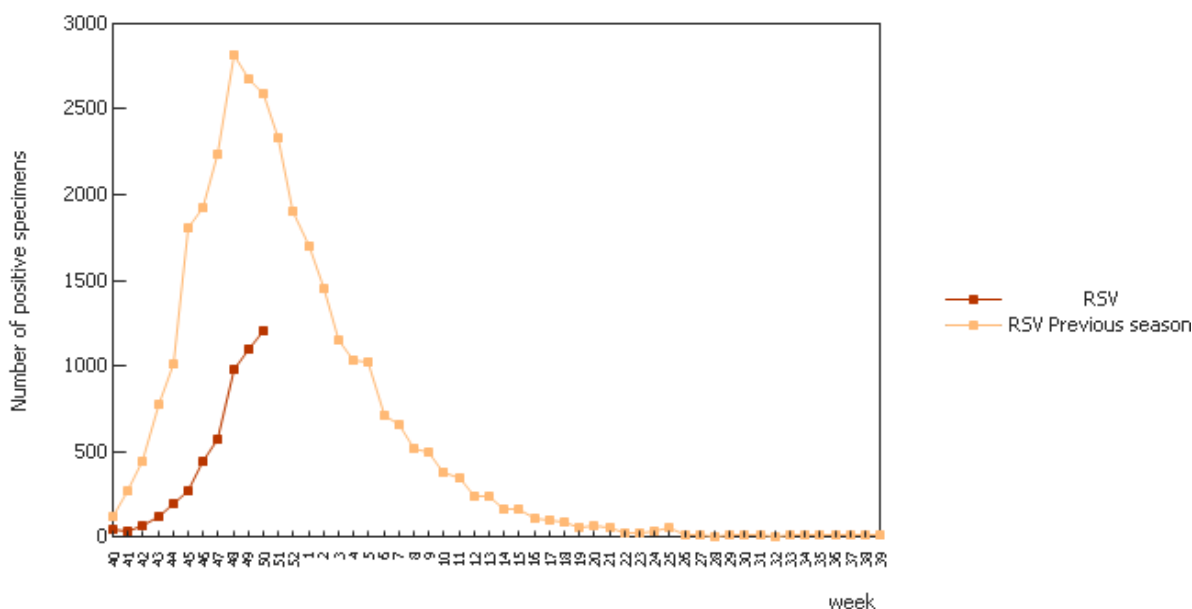


Table 3: Antiviral resistance by influenza virus type and subtype, weeks 40/2009–50/2009

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)	0	0	0	0	0	0
A(H1N1)	0	0	0	0	0	0
A(H1N1)v	913	13 (1%)	291	0	64	64 (100%)
B	0	0	0	0		

Figure 5: Respiratory syncytial virus (RSV) detections (sentinel and non-sentinel), weeks 40/2009–50/2009



Comments on virological data provided by countries in week 50/2009

The Netherlands By week 50 in the Netherlands, 11 patients were diagnosed with a mixture of oseltamivir resistant and wild-type A(H1N1)v influenza viruses in one respiratory specimen during oseltamivir therapy, indicating resistance emerged during therapy and not by infection with a resistant virus. Nine of the patients were immunosuppressed due to chemotherapy/immunosuppressive therapy, of which four died. Contact tracing identified no cases of onward transmission of the oseltamivir-resistant viruses.

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](#).

Aggregate numbers of pandemic (H1N1) 2009 deaths

Weekly analysis — deaths

In week 50/2009, 12 countries reported 92 new deaths. Since the beginning of the pandemic, 803 deaths have been reported.

Table 4: Aggregate numbers of pandemic (H1N1) 2009 deaths

Country	Deaths reported in week 50	Cumulative deaths since start of season
Austria	-	0
Belgium	-	0
Bulgaria	3	32
Cyprus	-	0
Czech Republic	-	27
Denmark	-	0
Estonia	2	5
Finland	-	0
France	24	150
Germany	13	119
Greece	16	49
Hungary	13	36
Iceland	0	2
Ireland	2	22
Italy	-	1
Latvia	-	13
Lithuania	4	10
Luxembourg	-	2
Malta	0	3
Netherlands	7	54
Norway	1	29
Poland	-	9
Portugal	-	0
Romania	6	18
Slovakia	-	0
Slovenia	-	10
Spain	-	4
Sweden	1	19
United Kingdom	0	155
Total	92	769

Countries shaded with grey are not recommending laboratory tests for all suspect cases, therefore comparisons in time or between these countries should not be made at present. Fatal cases are reported in the country where the death occurred.

Description of the system

Aggregate numbers of both probable and laboratory-confirmed cases of pandemic influenza and deaths due to pandemic influenza are reported by countries still collecting this data. As countries are retrospectively updating their weekly numbers of deaths and the system calculates the cumulative values based on the current status, weekly numbers of deaths published in previous WISO editions may not always add up to the cumulative totals.

Hospital surveillance – severe acute respiratory infection (SARI)

Weekly analysis – SARI

During week 50/2009, 317 SARI cases were reported of which 206 (65%) had symptom onset during the same week. This proportion increased from 17% in week 49, indicating much more timely reporting. Since the beginning of this surveillance, seven EU countries have reported 3027 SARI cases including 154 fatalities (Table 5).

Of the 315 viruses subtyped in week 50, 307 (97%) were the 2009 pandemic influenza virus (Table 7). Of the 317 SARI cases, 113 (36%) were known to have required ICU admission and 2 patients received ventilatory support (Table 9). Thirty-eight SARI cases (12%) were known not to have had any underlying condition (Figure 7).

Detailed information on SARI cases reported during week 50 can be found in Tables 6–12.

Table 5: Cumulative number of SARI cases, weeks 40/2009–week 50/2009

Country	Number of SARI 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	180		9		
Belgium	1445	13.5			10666866
Cyprus	9		1		
France	733		117		
Malta	40	9.7			413609
Netherlands	555	3.4	24	0.1	16521505
Romania	65	5.1	3	0.2	1268418
Total	3027	7.3*	154	0.2*	16521505

* Based on countries that reported both numerator and denominator.

Figure 6: Number of SARI cases by week of onset, week 50/2009

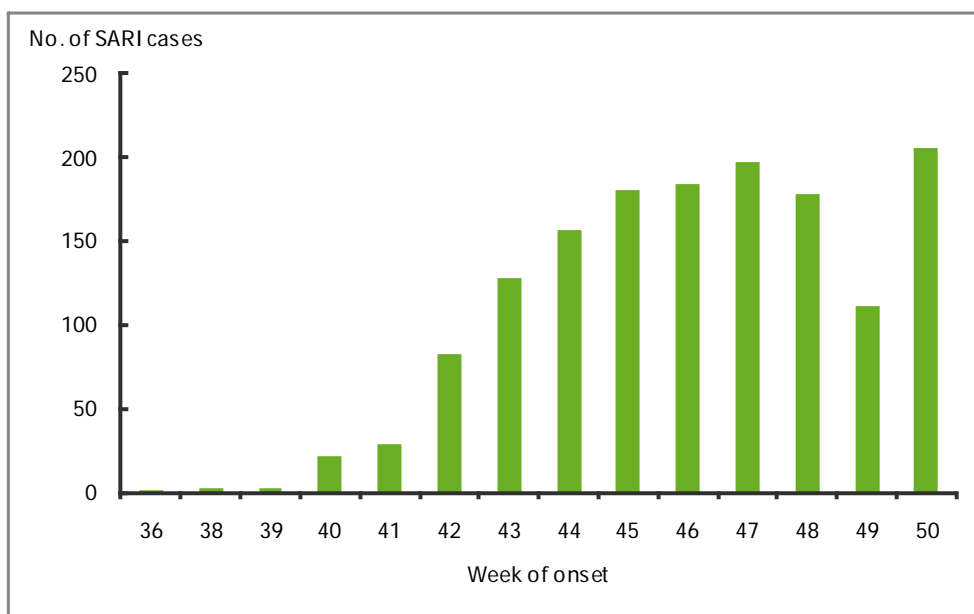


Table 6: Number of SARI cases by age and gender, week 50/2009

Age groups	Male	Female	Total
Under 2	16	13	29
2-17	32	39	71
18-44	48	45	93
45-59	37	24	61
>=60	33	29	62
Unknown		1	1
Total	166	151	317

Table 7: Number of SARI cases by influenza type and subtype, week 50/2009

Virus type/subtype	Number of cases (and percentage) during current week	Cumulative number of cases (and percentage) since the start of the season
Influenza A	309 (97.5 %)	1520 (50.2 %)
A (pandemic H1N1)	307 (96.8 %)	1500 (49.6 %)
A(subtyping not performed)	2 (0.6 %)	7 (0.2 %)
A(H3)		
A(H1)		13 (0.4 %)
A(H5)		
Influenza B		
Unknown	8 (2.5 %)	1507 (49.8 %)
Total	317	3027

Table 8: Number of SARI cases by antiviral treatment, week 50/2009

Antiviral treatment	Number of patients who received prophylaxis	Number of patients who received antiviral treatment
Oseltamivir		55
Zanamivir		2
Oseltamivir and Zanamivir		1
Other (or any other combination)		3
Unknown	296	250
None	21	6
Total	317	317

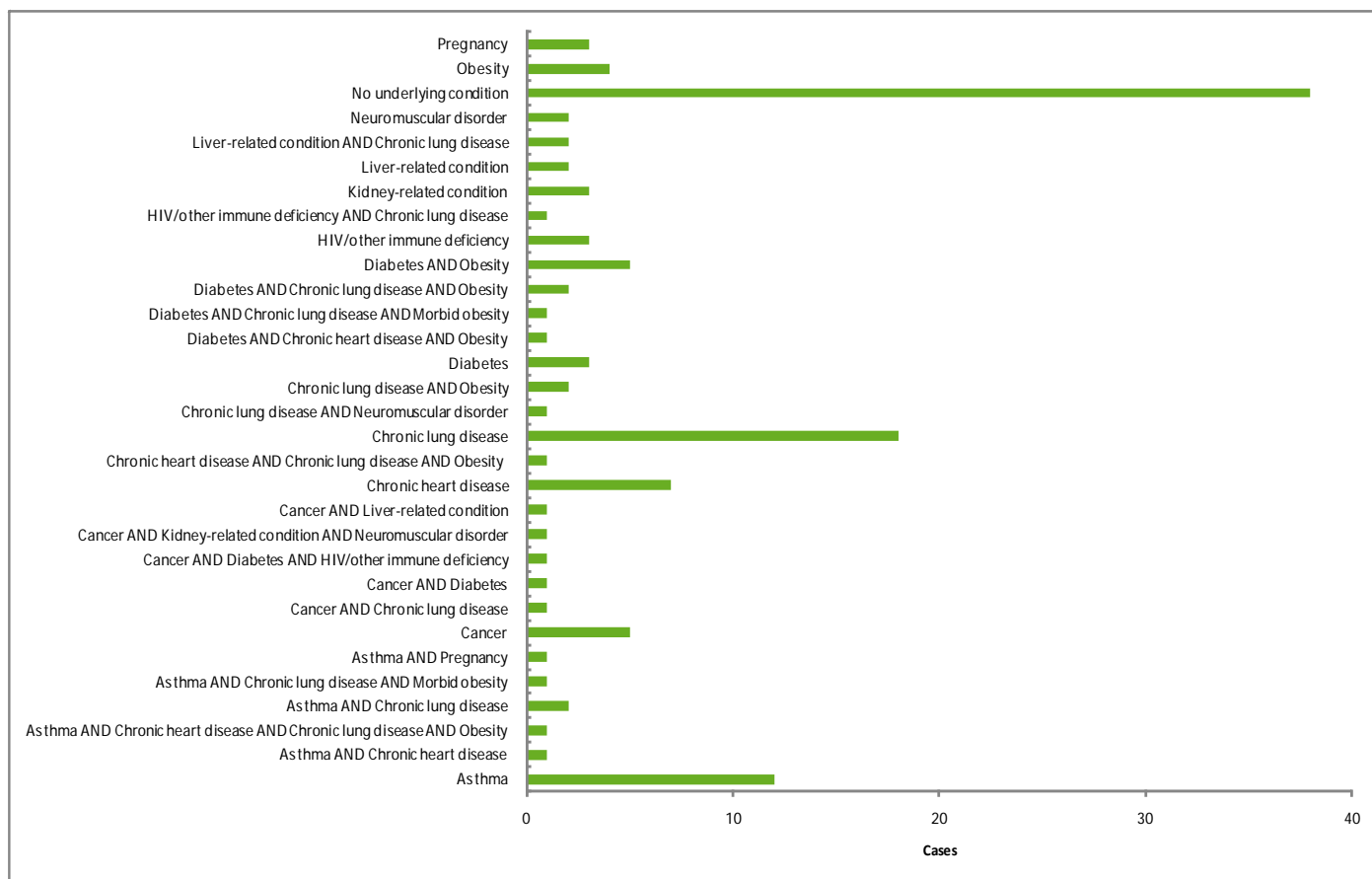
Table 9: Number of SARI cases by level of care and respiratory support, week 50/2009

Respiratory support	ICU	Inpatient ward	Other	Unknown
No respiratory support necessary		10		
Oxygen therapy	94	16		2
Respiratory support given unknown	17			176
Ventilator	2			

Table 10: Number of SARI cases by vaccination status, week 50/2009

Vaccination Status	Number Of Cases	Percentage of cases
Both, seasonal and pandemic vaccination	1	0.3
Not full pandemic vaccination	0	0
Not vaccinated	45	14.2
Pandemic vaccination	1	0
Seasonal vaccination	13	4.1
Unknown	257	81
TOTAL	317	

Figure 7: Number of SARI cases by underlying condition, week 50/2009



Obesity: Body mass index 30.1 – 40
 Morbid obesity: Body mass index > 40

Table 11: Number of underlying conditions in SARI cases by age group, week 50/2009

Underlying condition/risk factor	Infant below 2 years Numbers and percentage	2-17 years Numbers and percentage	18-44 years Numbers and percentage	45-59 years Numbers and percentage	>=60 years Numbers and percentage
Asthma		3	8	6	1
Cancer			1	4	7
Diabetes			1	5	7
Chronic heart disease			1	1	6
HIV/other immune deficiency	1		4	1	1
Kidney-related condition			1	1	2
Liver-related condition	1			3	1
Chronic lung disease	2		2	13	15
Neuromuscular disorder	1	1			1
No underlying condition	8	6	12	6	6
Obesity			2	7	7
Morbid obesity				1	1
Pregnancy			4		
Underlying condition unknown	18	61	59	28	25

Note: Obesity is considered an underlying condition only if no other underlying conditions are present. One case can have more than one underlying condition.

Table 12: Additional clinical complications in SARI cases by age group, week 50/2009

Additional clinical complications	Infant below 2 years Numbers and percentage	2-17 years Numbers and percentage	18-44 years Numbers and percentage	45-59 years Numbers and percentage	>=60 years Numbers and percentage
Acute respiratory distress syndrome	1	1	8	5	11
Myocarditis			1	1	
None	1	4	3	2	3
Other			2		1
Pneumonia	1	5	7	4	3
Sepsis/Multi-organ failure				3	1
Unknown	26	61	72	48	43

Note: One case can have more than one complication.

Description of the system

A number of Member States carry out hospital-based surveillance of severe acute respiratory infection (SARI) exhaustively or at selected sentinel sites. SARI surveillance serves to monitor the trends in the severity of influenza and potential risk factors for severe disease to help guide preventive measures and health care resource allocation.

Qualitative reporting

Qualitative monitoring will be an acceptable replacement for the quantitative monitoring when reliable numbers are no longer available for reporting due to overburdened surveillance systems. The qualitative components will give some indication of influenza intensity, geographic spread, trend and impact.

The report text was written by an editorial team at the [European Centre for Disease Prevention and Control](#) (ECDC): Flaviu Plata, Phillip Zucs, Bruno Ciancio and Rene 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, Alan Hay and Maria Zambon. On behalf of the EISN members the bulletin text was reviewed by Joan O'Donnell (Health Protection Surveillance Centre, Ireland) and Katarina Prosenec (National Institute of Public Health, Slovenia).

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All data published in the WISO are up-to-date on the day of publication. Past this date, however, published data should not be used for longitudinal comparisons as countries tend to retrospectively update their numbers in the database.

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