

ECDC SURVEILLANCE REPORT

Pandemic (H1N1) 2009: Analysis of individual case reports in EU and EEA countries

7 August 2009

Data for this report were provided by ECDC's national contact points for surveillance and the Early Warning and Response System of the EU/EEA countries.

ECDC wishes to acknowledge the continuing commitment and efforts of a wide variety of international partners which ensure the timely reporting of valid individual data from their countries.

Latest developments

- Individual data were reported on 9 750 confirmed cases of influenza A(H1N1)v infection by 28 EU/EEA countries up to 7 August 2009 (62 % reported by the United Kingdom).
- The mean notification rate in 26 EU/EEA countries was estimated to 5.3 per 100 000 population (ranging from 0.2 to 19.5) over a period of three months (May–July).
- There is an association between receiving treatment and hospitalisation, RR=1.29 (1.15–1.26).
- The proportion of hospitalised cases is higher among patients who have developed complications than among patients reported without any complication, RR=5.67(3.45–9.32).
- In countries with a low proportion of hospitalisation, patients with underlying conditions are more likely to be hospitalised. RR=1.5 (1.07–2.17).

Number of cases, association with travel, and hospital admissions

As published earlier (ECDC situation report, 3 August 2009), a total of 26 893 confirmed cases of influenza A(H1N1)v were reported as aggregated case reports by 29 of the 30 EU/EEA countries (no cases reported by Liechtenstein as of 3 August 2009). The mean notification rate in 27 EU/EEA countries is 5.3 per 100 000 population, ranging from 0.2 per 100 000 population in Poland to 19.5 per 100 000 population in the United Kingdom. Notification rates from Cyprus and Malta are not shown in Table 1 as the population of these two islands largely increases during holiday season and rates would probably be over-estimated.

Out of these, a total of 9 750 confirmed cases of influenza A(H1N1)v were reported as individual case reports through the Early Warning and Response System by 28 of the 29 affected EU/EEA countries by 3 August 2009

(Table 1). Several country-specific publications and weekly bulletins on A(H1N1)v are available [1-9]. The UK accounts for 62% of all individual case reports (n=9 750)

The number of travel-related cases (case was out of the country of notification during the incubation period) is 2 727 (29%), out of a total of 9 488 A(H1N1)v cases with available information on travel (unknown cases excluded). Among the 2 633 travel-related cases with available information, 1 375 (52%) returned from North America, 930 (35%) have travelled to another EU/EEA country, 124 (5%) have travelled to South America, 115 (4%) to Asia, 84 (3%) to Oceania, two to a non-EU/EEA European country and three to an African country.

The information on hospital admission was available for 9 092 cases reported from 27 countries. Among these, 1 076 cases (12%) were reported having been admitted to hospital. The proportion of reported cases that have been hospitalised varies by country from 0% to 94% (Austria). Two categories of countries can be distinguished: the ones with a large number of cases hospitalised for isolation purposes (e.g. Austria, France), and other countries with a low proportion of cases reported with hospital admission. In particular, only 2% of cases have been reported admitted to hospital in the United Kingdom, while that country accounts for two thirds of the total cases.

Table 1. Reported number of cases of influenza A(H1N1)v infection, association with travel, and hospital admission, 29 EU/EEA countries, as of 7 August 2009

Country	Aggregated case reports ^(a)		Individual case reports			
	Cumulative number of confirmed cases	Mean notification rate (per 100 000)	Total number of confirmed cases ^(b)	Number of travel-related cases ^(b)	Number of hospitalised cases ^(b,c)	Percentage hospitalised cases*
Austria	153	1.8	153	127	131	94%
Belgium ^(d)	126	1.2	124	72	12	10%
Bulgaria	36	0.5	34	26	24	71%
Cyprus ^(d)	297	—	205	12	46	23%
Czech Republic ^(d)	116	1.1	98	87	20	20%
Denmark ^(d)	254	4.6	97	53	10	14%
Estonia ^(d)	42	3.1	40	26	12	30%
Finland ^(d)	189	3.6	179	147	19	11%
France ^(d)	719	1.1	553	314	225	57%
Germany	6 800	8.3	704	312	100	17%
Greece ^(d)	730	6.5	—	—	—	—
Hungary	99	1.0	85	55	10	12%
Iceland	51	16.3	4	3	0	0%
Ireland ^(d)	276	6.3	154	131	10	9%
Italy	975	1.6	134	118	35	27%
Latvia	19	0.8	18	11	13	72%
Lithuania	22	0.7	15	12	3	20%
Luxembourg	61	12.6	54	48	2	4%
Malta ^(d)	157	—	105	29	6	6%
Netherlands ^(d)	517	3.2	246	159	2	1%
Norway ^(d)	471	9.9	60	51	4	7%
Poland	93	0.2	66	53	53	91%
Portugal	342	3.2	149	123	95	69%
Romania	178	0.8	133	87	122	92%
Slovakia	58	1.1	46	43	24	55%

Slovenia	136	6.7	7	7	0	—
Spain ^(d)	1 538	3.4	113	74	—	—
Sweden ^(d)	526	5.7	172	131	8	6%
United Kingdom ^(d)	11 912	19.5	6 002	416	90	2%
TOTAL	26 893	5.3	9 750	2 727	1 076	12%

* Of the number of cases with available information on hospitalisation.

(a) Reported daily through epidemic intelligence.

(b) Reported as individual data.

(c) Some hospitalisations were for isolation purposes.

(d) Countries that have either announced a mitigation control strategy (as of 3 August 2009) or are not recommending laboratory tests for all suspect cases.

— No information available.

Epidemic curves

Figure 1 compares the distribution of A(H1N1)v influenza cases by week of onset from the individual case reports (n=6 994) with the weekly notification rate of A(H1N1)v cases from the aggregated case reports (n=26 163) from 13 April (week 16) to 2 August (week 31) 2009 (28 EU/EEA countries).

The decreasing figure in the individual case reports is probably due to the fact that 15 countries shifted to a mitigation strategy and there is a reporting delay (between onset and report). No individual data on A(H1N1)v cases have been reported from the United Kingdom since week 27. This can explain the decline of the epidemic curve over the past weeks. The mean notification rate (based on daily aggregate reports) constantly increased until week 26. The sudden decrease in week 27 can be explained by successive batches reported from the United Kingdom in week 26 and week 28. The decrease in the notification rate in weeks 29 and 31 can be explained by recent changes in testing strategies for A(H1N1)v.

Figure 1. Distribution of number of confirmed cases of A(H1N1)v infection by week of onset (n=6 994) and notification rate (per 100 000) by reporting week (n=26 163), 28 EU/EEA countries, as of 7 August 2009

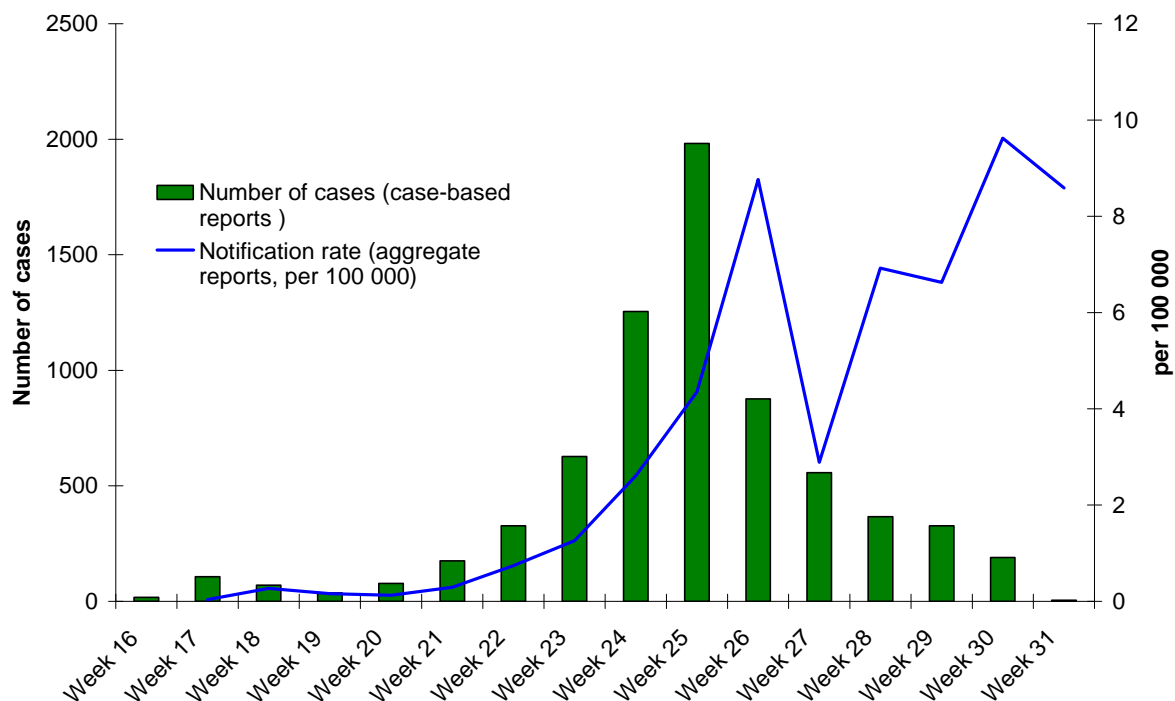
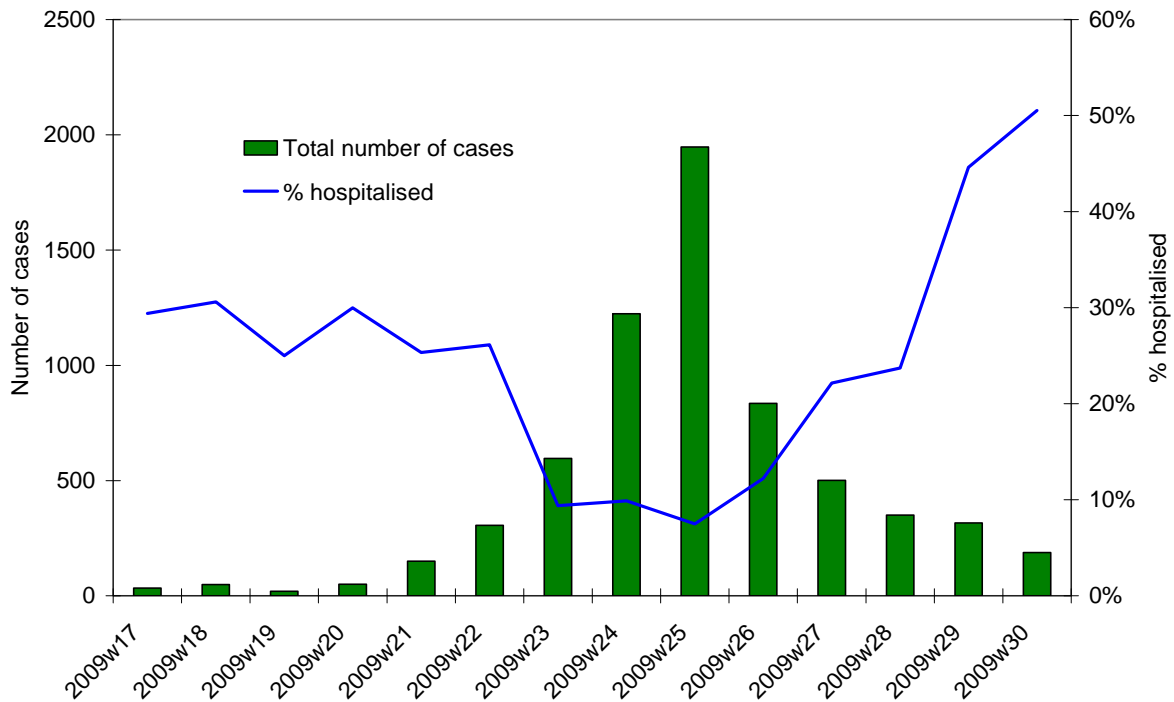


Figure 2 shows the proportion of hospitalised cases among the total number of A(H1N1)v cases reported in 27 EU/EEA countries, by week of onset from 20 April (week 17) to 26 July 2009 (week 30). Information was available for 6 567 reported cases. A reverse trend can be observed: the proportion of hospitalised cases was the lowest at the peak of the total number of reported cases in week 25. This can be explained by the large number reported by the United Kingdom with a low proportion of hospitalised cases. In the past five weeks, the proportion of hospitalised cases has increased, while the number of reported cases has decreased. However, the decrease in the number of cases is due to a reporting effect as some countries have stopped reporting cases.

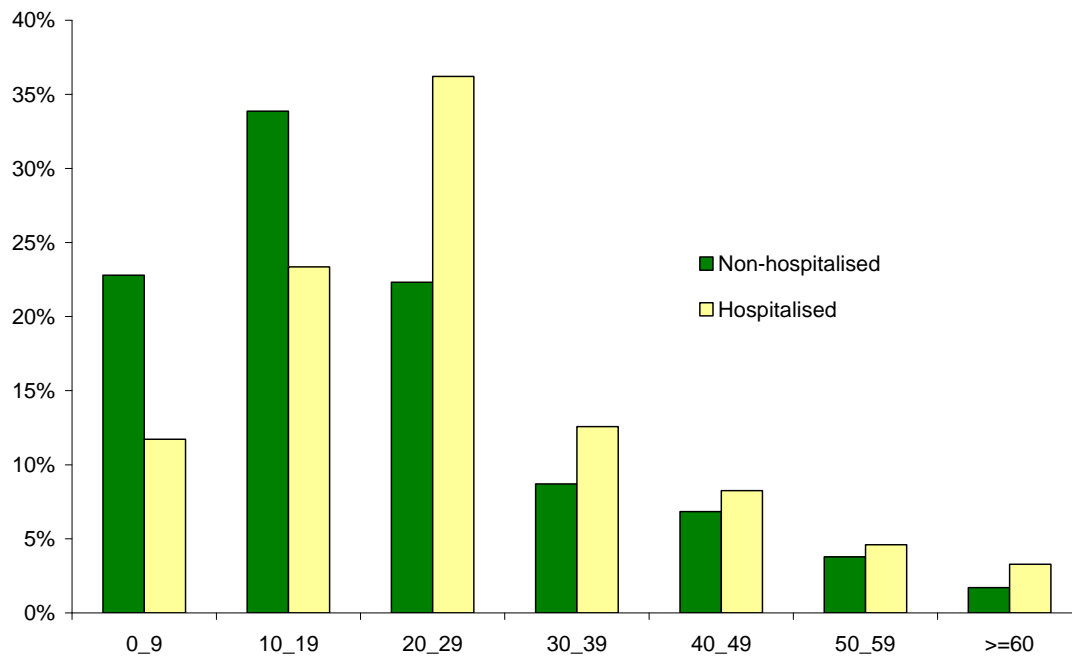
Figure 2. Proportion of hospitalised cases of influenza A(H1N1)v among the total number of cases reported in 27 EU/EEA countries, by week of onset 20 April – 26 July 2009 (n=6 567)



Distribution by age group

In hospitalised cases, the highest proportion (34%) is found in the age category 20–29 (Figure 3). The proportion of hospitalised cases is significantly higher among adults older than 20 than among children (below 20) $\chi^2 = 170$, $p < 0.001$.

Figure 3. Age distribution among hospitalised and non-hospitalised cases, among A(H1N1)v cases reported in 27 EU/EEA countries (n=8 974)



Characteristics of hospitalised cases

The purpose of this analysis is to compare the proportion of hospitalised cases by age groups, gender, frequencies of symptoms, prophylaxis, treatment, underlying conditions and complications. Data on hospitalisation were available from 27 countries. As symptoms were not reported by Belgium and Slovenia, these two countries were excluded from the analysis. In the data from the United Kingdom, information on symptoms was available for most of the symptoms in the first 301 reported cases. A first analysis was performed on 3 261 cases reported by 25 EU/EEA countries (including the first 300 cases reported by the United Kingdom).

In this selected dataset (n=3 261), the mean hospitalisation rate is 30% with a confidence interval varying from 12% to 48%. Two groups of countries can be distinguished: countries with 30% or less of cases hospitalised (Estonia, Italy, Cyprus, Czech Republic, Lithuania, Germany, Denmark, Hungary, Finland, Ireland, Norway, Sweden, the United Kingdom, Malta, Luxembourg, the Netherlands and Iceland) and countries with more than 30% of cases hospitalised (Austria, Romania, Poland, Latvia, Belgium, Portugal, France and Slovakia).

Figure 4 shows the age distribution in countries with low (n=2 629) and high hospitalisation rates (n=1 118). The mean age is not significantly different in countries with high hospitalisation rates (24.7, CI=23.8–25.6) from that in countries with a low hospitalisation rates (25.7, CI=25.2–26.3).

Figure 4. Age distribution in countries with low (n=2 629) and high hospitalisation rates (n=1 118)

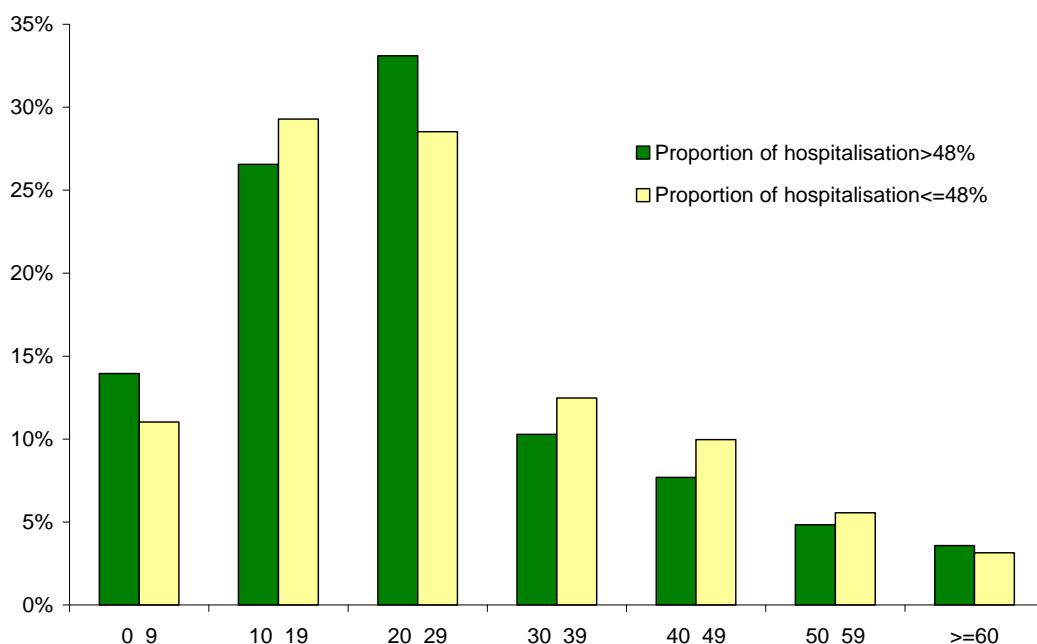


Table 2 shows the probability of being in hospital (based on relative risk and confidence intervals of relative risks) according to characteristics of A(H1N1)v cases reported in 25 EU/EEA countries (n=3 261).

The proportion of hospitalised cases is significantly lower among cases reported with gastro-intestinal symptoms than among cases reported without gastro-intestinal symptom RR=0.81 (0.68-0.97), as well as among patients who received prophylaxis compared with those who did not, RR=0.55 (0.34-0.89).

We verified that there is an association between receiving treatment and hospitalisation, RR=1.29 (1.15-1.26).

The proportion of hospitalised cases is higher among patients who have developed complications than among patients reported without any complication, RR=5.67 (3.45-9.32).

As the proportion of hospitalised case varies considerably between countries, the analysis displayed in Table 2 was also performed in 17 selected countries (n=2 303) with a low hospitalisation rate (30% or less). In this sub-group of patients, the proportion of hospitalisation was found to be higher among patients with underlying conditions, than those without any underlying conditions RR=1.5 (1.07-2.17).

Table 2. Probability of being in hospital according to characteristics of A(H1N1)v cases reported in 25 EU/EEA countries (n=3 805)

	Category	Number of hospitalised cases	Total number of cases	Percentage hospitalised	RR	RR lower limit	RR upper limit	p
Age	<29	701	2 268	31%	0.92	0.82	1.03	NS
	≥30	276	971	28%				
Gender	Male	526	1 756	30%	1.01	0.93	1.09	NS
	Female	450	1 484	30%				
General symptoms	No	64	183	35%	0.99	0.97	1.01	NS
	Yes	876	2 798	31%				
Fever	No	128	377	34%	0.98	0.95	1.01	NS
	Yes	812	2604	31%				
Respiratory symptoms	No	168	498	34%	0.98	0.94	1.01	NS
	Yes	772	2 483	31%				
Gastro	No	797	2 456	32%	0.81	0.68	0.97	0.02
	Yes	143	525	27%				
Other symptoms	No	648	1 946	33%	0.85	0.76	0.95	<0.01
	Yes	292	1 035	28%				
Prophylaxis	No	680	1 916	35%	0.55	0.34	0.89	0.01
	Yes	21	92	23%				
Treatment	No	119	613	19%	1.20	1.15	1.26	<0.001
	Yes	615	1752	35%				
Underlying condition	No	901	3 005	30%	1.15	0.89	1.47	NS
	Yes	85	256	33%				
Vaccination	No	521	1 929	27%	1.23	0.92	1.64	NS
	Yes	61	192	32%				
Complication	No	499	1 740	29%	5.67	3.45	9.32	<0.001
	Yes	52	73	71%				

Conclusion

This weekly report on analysis of individual A(H1N1)v cases is probably the last of the summer 2009 as more and more countries stop reporting to this system. An overview of the surveillance activities to monitor the A(H1N1) pandemic through the fall is described in the report of the fourth meeting of ECDC's surveillance and studies in a pandemic that was held in Stockholm on 14–15 July 2009. Individual case-reporting will be continued through hospital-based systems of Severe Acute Respiratory Illness.

The average notification rate calculated in 26 EU/EEA countries is probably an under-estimation of the 'real' situation as not all cases were tested, under-reporting is expected and focused testing is now current practice in more than half of the countries. This rate should be interpreted with caution and should be compared to information obtained through modelling.

The analysis on hospitalisation shows that treatment and complication are more likely to occur among hospitalised cases, based on the analysis performed in 25 EU/EEA countries. In selected countries with a proportion of hospitalised cases less than 30%, patients with underlying conditions are more likely to be in hospitals, compared to patients without any underlying conditions. This analysis could be better documented by the date when countries stopped hospitalisation for isolation purposes. This analysis should be completed by stratification on age groups and eventually by country. This will allow a better characterisation of severity of persons who have been infected by the A(H1N1)v virus.

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