

Wednesday 12 August 2009 Time: 12.00 Hrs SITREP Number: 6 (3 - 10 August 2009)

There is evidence that Influenza A H1N1v is continuing to circulate in Scotland. Overall levels of illness which may be due to this virus are showing another small decrease this week in Scotland as a whole. Consultation rates have fallen for both the 0-4 years and over 65 years age groups and levelled in the 5-14 years age group since the beginning of July and in the 15-64 years age group over the last two weeks. In the east of the country rates of clinical presentation remain at increased levels compared to Scotland over the last week. The estimate of H1N1v positivity in samples from sentinel practices submitted this week is similar to last week. A small number of cases continue to be hospitalised although there is no evidence of any significant increase in either the number or in the severity of their condition. The situation is being closely monitored.

Key Points for the period covering midday Monday 3 August to midday Monday 10 August 2009

- The current all Scotland consultation rate for all age groups has decreased slightly to 44.4 per 100,000 which is a further decrease from last week's rate of 48.4.
- Within Scotland, consultation rates in NHS Tayside, and also to a lesser degree in NHS Grampian, continue to be higher than the overall Scottish rate and those reported by sentinel practices within other NHS boards. However there has been a decrease in both areas relative to last week.
- Compared to last year (2007/08), GP consultation rates have not shown the normal decline over the summer and within this past week GP consultation rates show a continued higher level than the same week last year.
- Consultation rates have fallen in the age range 0-4 years and the over 65 years and remain level in both the 5-14 years, 15-64 years age groups. The consultation rates remain highest in the 0-4 year age groups.
- There was a higher than expected proportion of calls to NHS 24 made by those with cold/flu across most of Scotland. This decreased to 8.8% over the past week. During the last week in NHS Borders, NHS Forth Valley, NHS Lanarkshire, NHS Lothian and NHS Tayside the proportion of calls to NHS 24 mentioning cold/flu was around 11%.
- This week, based on samples submitted from sentinel practices for H1N1v testing, the estimate of H1N1v positivity among those consulting their GPs was 9.5%. This compares to 8.4% last week.
- Data from sentinel GP practices suggest an estimated 218 cases of H1N1v cases per day (1088 over the working week) consulted with their GP. Since not all people will consult their GP, we estimate that the total number of people in Scotland who have contracted H1N1v over the past week is 3107 (95% confidence intervals 1200, 6792). While the number of estimated cases this week is similar to last week (3009 cases), this should be interpreted with caution and will be kept under review over the coming weeks.

- Only a small number of people (14 in total) confirmed as having Influenza A H1N1v infection, have required hospital admission in the last week bringing the overall total of laboratory confirmed hospitalised cases to 94. Of the four who remain in hospital, one is being managed outside Scotland for specialist treatment, one is in an intensive care unit and three are within general wards. A notable proportion of hospitalised confirmed cases had a recognised risk factor (40%).
- There has been one death reported since the previous report. This patient was being managed in high dependency in Greater Glasgow and Clyde and had underlying medical conditions. There has been a total of five deaths (as at midday Monday 10th August) among Influenza A H1N1v cases in Scotland.
- The number of deaths from all causes reported during the week is consistent with the levels expected from historical figures, giving no cause for concern.
- There is currently no evidence of antiviral resistance in Scotland.

Introduction

This weekly situation report contains summary epidemiological information on Influenza A H1N1v in Scotland. The purpose of this report is to inform the Scottish response to the current Influenza A H1N1v outbreak.

A variety of surveillance systems are in place which aim to:

- inform on the extent of illness presenting as influenza infection and its distribution within the population;
- estimate the proportion of influenza-like illness in the community due to Influenza A H1N1v;
- report the severity of illness due to Influenza A H1N1v infections;
- identify potential changes to the virus including its susceptibility to antiviral drugs.

1. Extent of illness presenting as influenza-like illness and its distribution within the population

1a. GP consultation rates for influenza-like illness (ILI) and acute respiratory illness (ARI)

This section presents an estimate of the proportion of the Scottish population consulting with their GP because of ILI, either face to face or by telephone. The proportion is expressed as a rate of consultations per 100,000 population.

During August, it is intended that all practices in Scotland will send information on ILI consultations to HPS. Until then, data is being received by HPS from a proportion of general practices called sentinel practices. For seasonal influenza, information is routinely received from 37 practices (covering 4% of the total Scottish population). For monitoring trends in the pandemic, additional practices have been recruited. As of the date of this report, there are now 58 representing 6.8% of the population of Scotland. This enables us to provide a more representative picture of the distribution of consultation rates within Scotland.

The calculation of the overall Scottish consultation rate and the rate for each NHS board is now based on data received from these 58 practices. However, monitoring trends requires data from previous years which are only available from the practices which have participated in the seasonal influenza surveillance.

In this report therefore information on GP consultation rates for ILI and ARI in Scotland is presented as it relates to:

- Overall Scottish rate and rates for each NHS board (based on 58 practices covering 6.8% of the population);
- Trends in the Scottish rate and age specific rates (based on 37 practices covering 4% of the population).

The overall Scottish rate calculated from these 58 practices is higher than that obtained from the 37 practices. The former is a more accurate indicator of the actual rates.

It should be noted that the population size of some of the participating practices is relatively small. The rates of individual NHS boards may therefore be based on relatively few patients. To indicate the reliability of the estimated rate, confidence intervals are used. They show the range of values which are likely to include the “true” rate; the wider the interval, the greater the degree of uncertainty about the “true” rate. As more practices are recruited, the confidence intervals will narrow.

Table 1 shows the GP consultation rates for ILI and ARI by NHS board from 3-7 August. The rates presented are calculated as a weekly average of the daily consultation rate based on a 5 day week. The daily average GP consultation rate for Scotland was 44.4 per 100,000 (with a 95% confidence interval of 37.9 to 51.7) in the week ending 7 August. This represents a small reduction in consultation rate compared with last week (48.4/100,000). While the rate has fallen this week compared to last week this should be interpreted with caution and will be kept under review over the coming weeks.

With the exception of NHS Tayside and NHS Grampian, the confidence intervals for all the other NHS boards span the average for Scotland of 44.4 per 100,000. In NHS Tayside the rate is 116.5 per 100,000 with a 99% confidence interval of 66.2 to 204.9 and in NHS Grampian the rate is 63.7 per 100,000 with a 99% confidence interval of 38.7 to 104.8. Both these rates have fallen from last week (146.7 per 100,000 in Tayside and 83.1 in Grampian for last week).

The consultation rates reported by the sentinel practices within Tayside and Grampian remain higher than the overall Scottish rate and those reported by sentinel practices within other NHS boards. This cannot necessarily be attributed to a higher consultation rate for flu-like symptoms as there are differences between the Grampian and Tayside practices and the other sentinel practices in their use of software packages to record data.

Table 1: Average daily GP consultation rates (based on a 5 day week) for ILI and ARI from all sentinel GP practices by NHS board for the period 3-7 August 2009

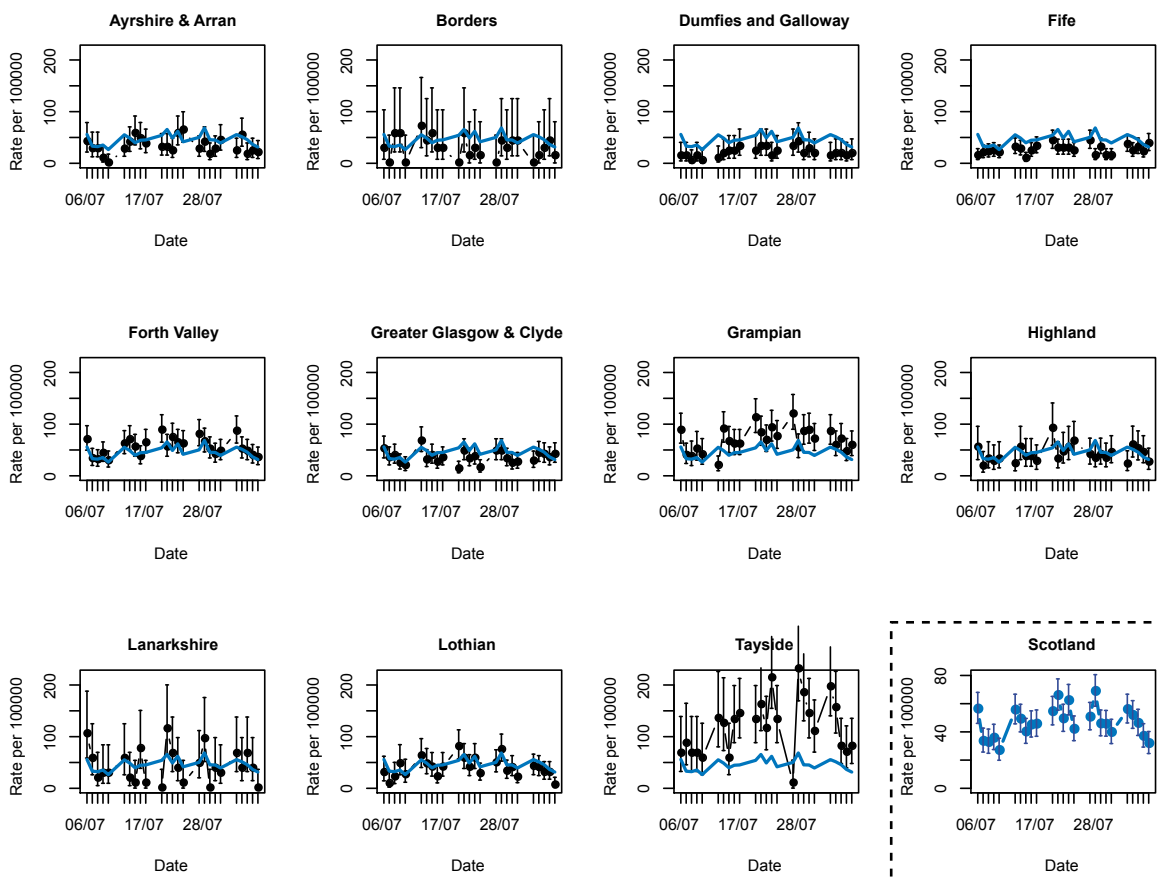
NHS board	Number of practices	Population	Consultation rate per 100,000	Lower confidence limit	Upper confidence limit
Ayrshire & Arran	5	29752	27.6	11.5	65.9
Borders	2	7042	19.9	3.0	130.8
Dumfries & Galloway	2	21797	17.4	5.0	60.2
Fife	5	55688	30.5	16.5	56.5
Forth Valley	7	48980	52.3	31.6	86.5
Greater Glasgow & Clyde	10	46458	37.9	20.7	69.3
Grampian	5	41138	63.7	38.7	104.8
Highland	5	27026	40.7	19.1	86.9
Lanarkshire	3	10470	40.1	12.3	131.3
Lothian	7	43037	32.1	16.2	63.3
Orkney	1	7077	19.8	3.0	130.2
Shetland	2	2156	27.8	2.1	360.1
Tayside	3	17346	116.5	66.2	204.9
Western Isles	1	7162	5.6	0.3	103.4
Scotland	58	365129	44.4	38.1	51.8

The confidence intervals presented here relate to the 99% confidence interval for individual boards (to take account of multiple testing), and 95% confidence interval for all Scotland.

Technical note: Population is the average population size per day. Variations in the population sizes quoted may occur because not all practices report every day each week

Trend data from the sentinel scheme

Figure 1: GP consultation rate for ILI and acute ARI by NHS board from 6 July to 7 August 2009



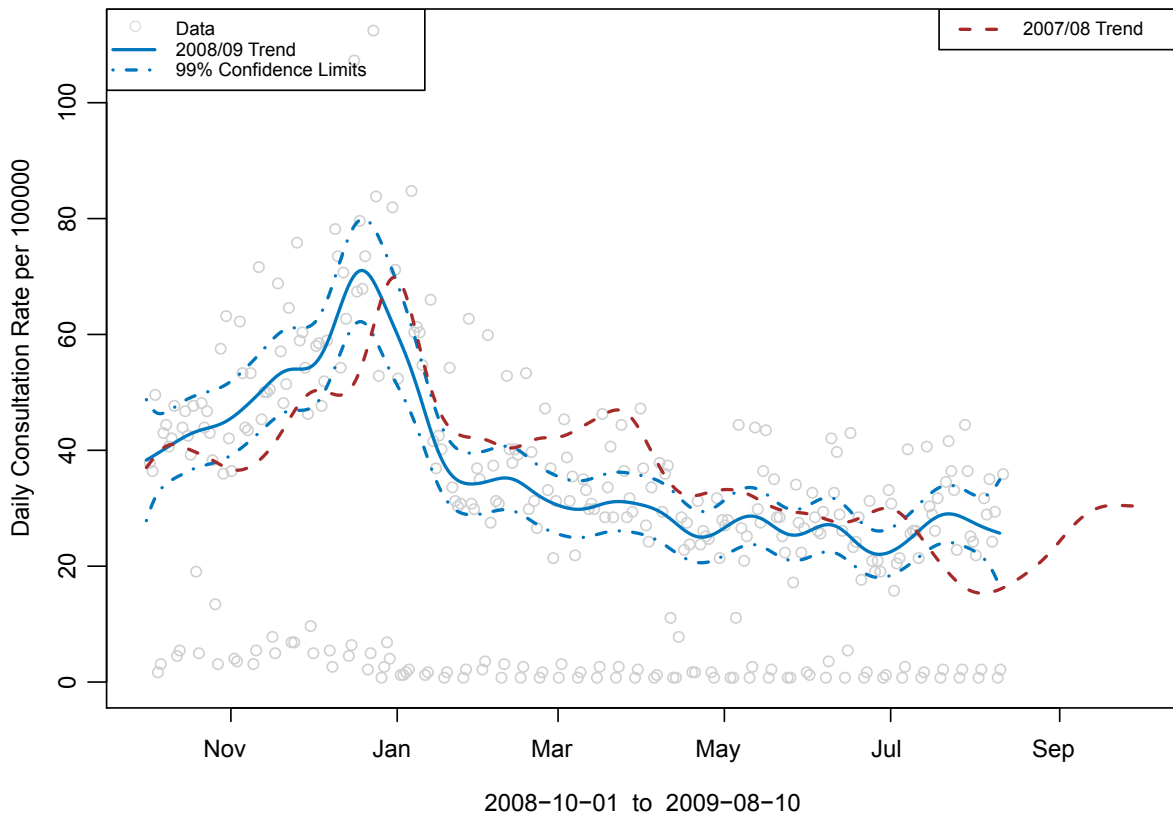
Technical Note: It should be noted that there are several limitations with this data.

1. It is based on a small number of practices within each NHS board.
2. The population of the sentinel practices may not be representative of the total population in an NHS board area.
3. There may be difficulties over the timeliness of the data recorded in each practice reflecting batch entry of consultation data.
4. There may be difficulties in validating the clinical data.
5. There may be differences in coding of diagnoses between the PIPeR and non PIPeR sentinel practices.

Figure 1 shows GP consultation rates for ILI and ARI by NHS board from 6 July to the 7 August 2009. The data used in this figure are from all the current the sentinel practices. These data are therefore **not** directly comparable with the rates and trends presented in Figures 2 and 3, based on the 37 seasonal flu surveillance practices only. The individual graphs show the daily consultation rates for the sentinel practices based in the specific NHS board, together with a 95% confidence interval. The blue line represents the overall Scottish rates for all participating practices.

Consultation rates are higher on a Monday and decline slightly throughout the week. There is no evidence of different trends in the consultation rates over the practices in the different NHS boards, with the exception of Grampian and Tayside.

Figure 2 GP consultation rate for ILI and ARI until the 10 August (2008/9 influenza season), showing the 2007/8 trend for comparison, all Scotland, all ages.



Technical note: The smoothed trend is estimated using a statistical model based upon a generalised additive, over dispersed, Poisson regression model, with adjustments made for day of the week and holidays. The smooth trend for the current year is shown in a solid line (blue) and its confidence interval which represents the range of natural variability in the daily consultation rates are shown in a dotted line (blue). The historical trend for previous years is also shown for comparison as a dashed line (red).

Figure 2 shows the daily consultation rates in the period October 2008 to date with the smooth trend for the current year (solid line in blue), and its confidence interval which represents the range of natural variability in the daily consultation rates (dotted blue). The historical trend for previous years is also shown for comparison (dashed line in red).

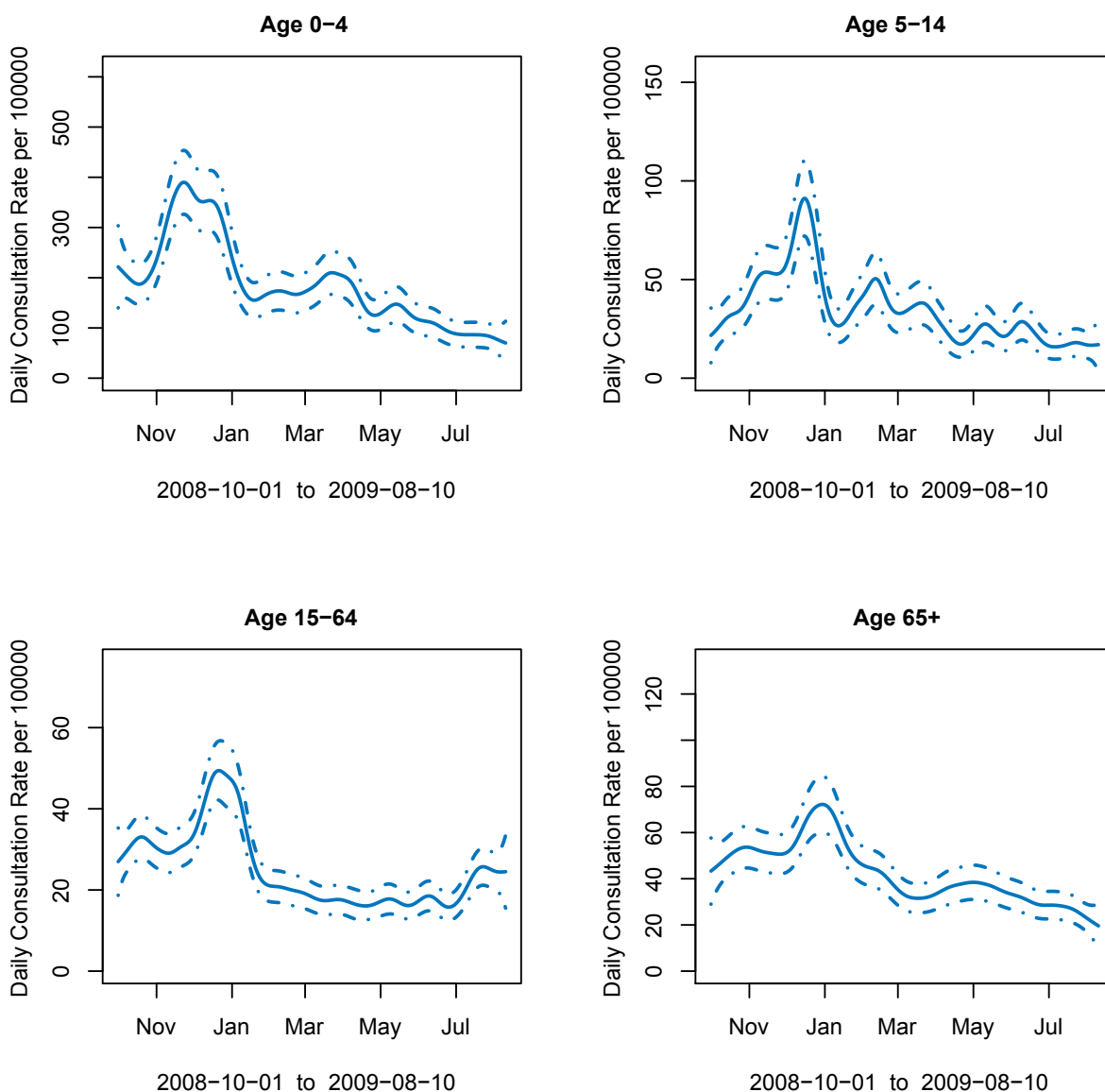
Since the end of April when Influenza A H1N1v first reported in Scotland, overall consultation rates have not demonstrated any marked increase. Recent fluctuations in the daily consultation rates over the period May to July are all within the natural variation expected, with the consultation rates being around 20 to 30 per 100,000. Last year the consultation rate decreased sharply from the end of June to the middle of August, coinciding with school holidays. This year this decrease was not observed in July however the consultation rate has decreased over the past on two weeks. Currently the weekly average consultation rate remains as last week at 29 per 100,000 compared to 15.8 per 100,000 at the same time last year.

Figure 3 shows smoothed trends in the daily consultation rates in the period October 2008 to date by age group, and the expected range in the daily consultation rates (dotted blue). The data come from the 37 PIPeR practices with a population of 220,000 patients.

Consultation rates remain highest in the age range 0-4 years, with the average daily consultation rate for weekdays in the week ending 7 August being 76 per 100,000, compared to 17 per 100,000 in the 5-14 year olds, which is the age group with the lowest consultation rate, 26 per 100,000 in the 15-64 years age group and 23 per 100,000 in the 65+ age group. Consultation rates have fallen for both the 0-4 years and over 65 years age groups and levelled in the 5-14 years age group since the beginning of July and in the 15-64 years age group over

the last two weeks.

Figure 3: GP consultation rate for ILI and ARI by age group until 10 August 2009



Technical Note: The smoothed trend is estimated using a statistical model based upon a generalised additive, over dispersed, Poisson regression model, with adjustments made for day of the week and holidays. Smoothed trends in daily consultation rates are shown as a solid line (blue). The expected range in the daily consultation rates are shown as dotted lines (blue). These data come from the 37 PIPeR practices.

1b. NHS 24: rate of calls associated with respiratory symptoms suggestive of influenza

Information is routinely collected on calls made to NHS 24 where the caller mentions amongst the reasons for calling that they have symptoms that may be attributable to a cold/flu. This provides information of use in estimating the level of ILI illness in the community and thus informs the interpretation of findings from the GP sentinel surveillance system.

Figure 4 shows the daily proportion of all calls in Scotland to NHS 24 which mention cold/flu for the period October 2008 to the last week. The blue line represents the smoothed trend and the dotted blue line is the confidence interval which represents the expected variability.

Over the winter season 2008/09, the percentage of calls to NHS 24 associated with cold/flu was

about 2%, ranging from 1% to 4%. This dropped to 1% in the period March to April 2009. Since then there has been an increase in the proportion of flu related calls, with just under 4% of all calls to NHS 24 concerned with cold/flu. This proportion has remained relatively stable in the period up to July 2009. Throughout July this proportion steadily increased which can be seen clearly in the overall smoothed trend, for the entire time frame considered.

For last week, 3 - 9 August, the actual proportion of calls related to cold/flu fell slightly from 10.2% last week to 8.8% this week. The proportion of cold/flu calls to NHS 24 is lower at weekends compared to weekdays. On week days over the last three weeks the proportion has been about 12-13%. There is some evidence of a slight decrease in the last week compared to the previous week.

There was a fall in the total number of calls to NHS 24 this week. The actual number of calls fell for cold/flu slightly from 3390 to 2656.

Figure 4: Proportion of cold/flu calls to NHS 24 for all Scotland from October 2008 to date

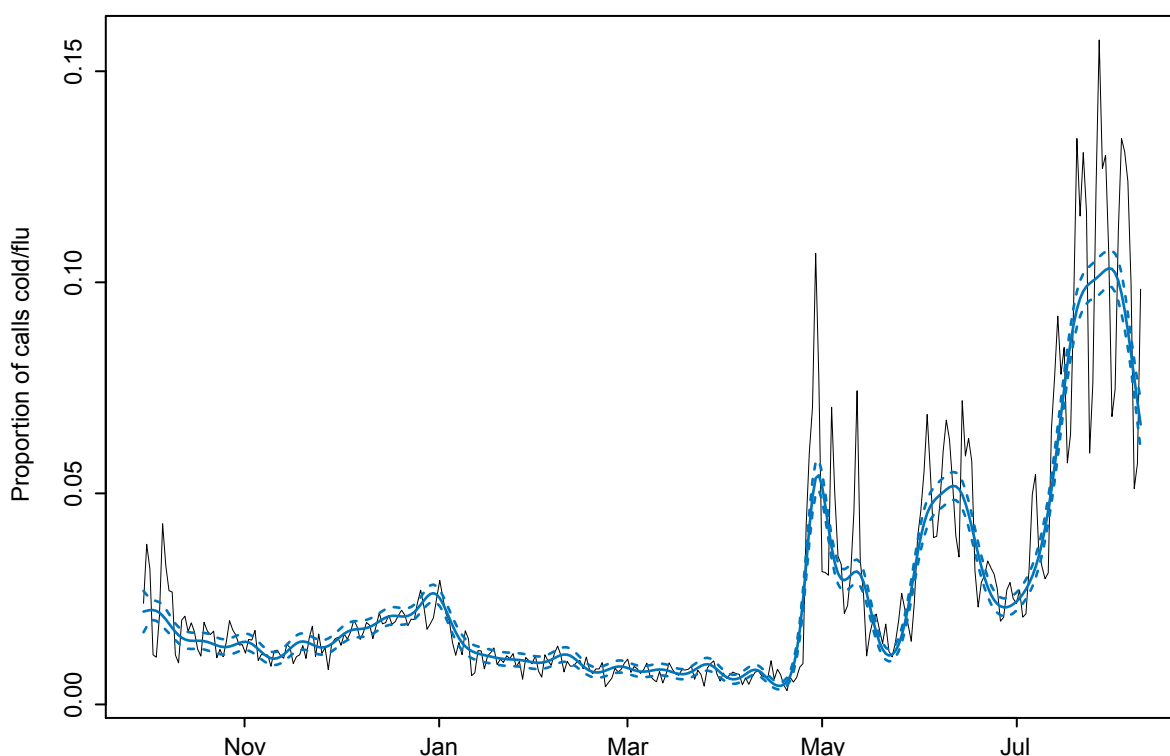
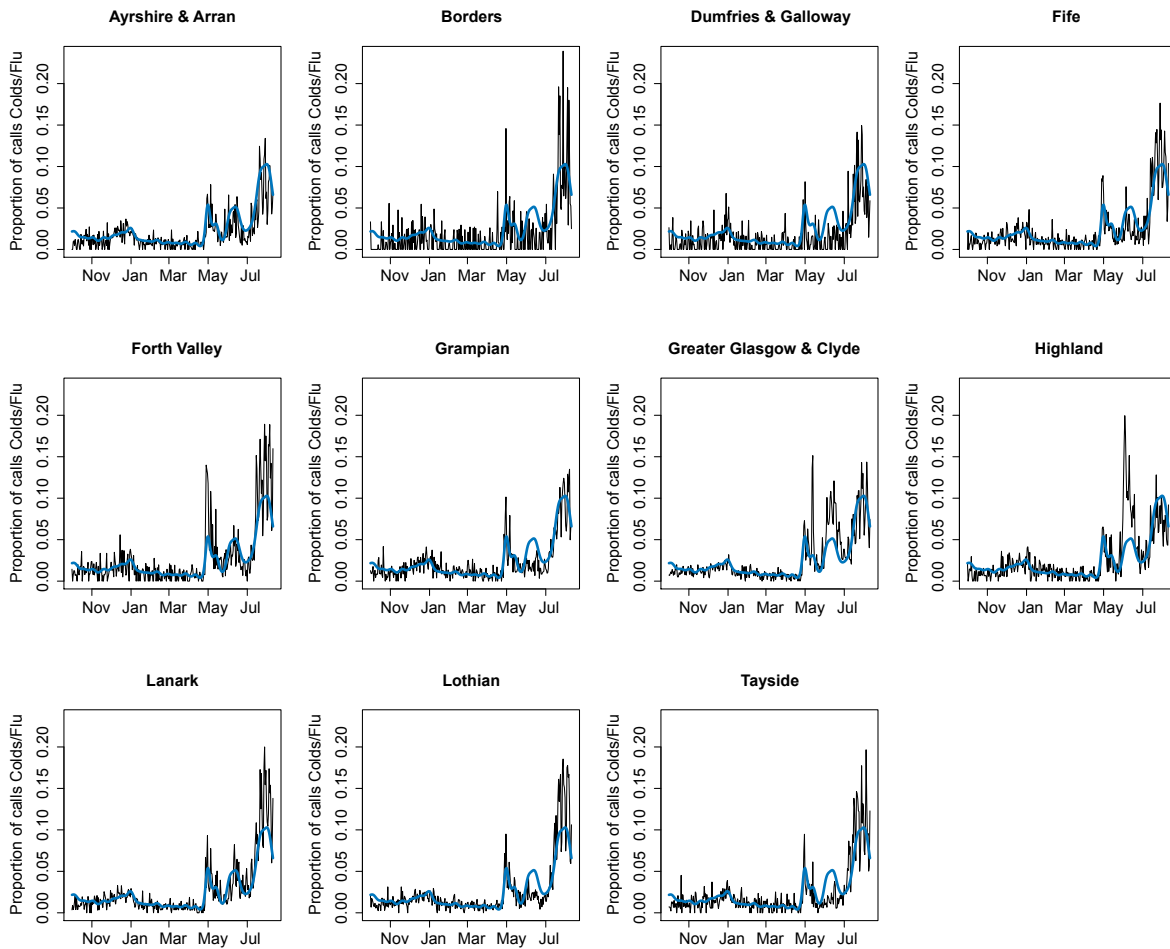


Figure 5 shows the proportion of cold/flu calls to NHS 24 by NHS board for the period October 2008 to date. These individual NHS board plots also show the overall trend for Scotland in blue.

As noted above, there has been a higher than expected proportion of calls to NHS 24 for cold/flu across most of Scotland for this time of year. Most of the NHS boards show similar trends to the national trend. There were marked increases in the number of calls in most NHS boards associated with the reports of the initial cases of Influenza A H1N1v infection at the end of April. Since then the spikes in call proportions specific to each NHS board have generally been associated with local clusters of cases: in NHS Highland at the end of May/June, in NHS Greater Glasgow and Clyde during June and in NHS Lanarkshire in late June into July. During the last week in NHS Borders, NHS Forth Valley, NHS Lanarkshire, NHS Lothian and NHS Tayside the proportion of calls to NHS 24 mentioning cold/flu is around 11%.

Figure 5: Proportion of cold/flu calls to NHS 24 by NHS board compared to all Scotland from October 2008 to date



Technical note: The trend is obtained from a generalised additive binomial model. The solid line (blue) represents the smoothed trend and the dotted line (blue) is the confidence interval which represents the expected variability. The individual NHS board plots also show the overall trend for Scotland as a solid line (black).

2 Extent of illness caused by Influenza A H1N1v

2a. Proportion of GP consultations with ILI and ARI caused by Influenza A H1N1v

Those sentinel practices which take part in the surveillance system have been requested to take swabs from patients consulting them with ILI/ARI. This enables an estimation of the proportion of individuals consulting their GP with ILI/ARI who have Influenza A H1N1v infection. Together with the data on consultation rates, this informs estimates of the extent and distribution of H1N1v infection within the population.

At present the scheme is still at an early stage. The number of samples which have been submitted from participating sentinel practices has increased, however there is still insufficient data available to enable a full comparison of the GP consultation rates with the proportion of positive Influenza A H1N1v laboratory samples. It is anticipated that more complete data will be available in coming weeks.

Information on swabs submitted from non-sentinel practices is currently only available on clinical samples submitted to the West of Scotland Specialist Virology Centre (WoSSVC). This is due to technical difficulties in accessing the data from other laboratories within Scotland. This issue is currently being addressed and we hope to provide more complete data as soon as possible.

In the sentinel GP practices 95 swabs were taken from patients who had consulted about acute respiratory symptoms of which nine were positive for Influenza A H1N1v, representing a positivity rate of 9.5% (95% CI 5.1% to 17.0%). Although still based upon small numbers this percentage is consistent with rates from the previous three weeks (10.6%, 10.0% and 8.4%, respectively).

Data were also reported from clinical specimens submitted to the West of Scotland Specialist Virology Centre from mainly non-sentinel practices. Twenty-six patients were confirmed with H1N1v from 334 non sentinel swabs representing a positivity rate of 7.8% (95% confidence interval of 5.4% to 11.2%).

The positivity rate from both sentinel and non-sentinel GP practices was comparable over the last week with overlapping confidence intervals.

2b. Estimated total number of those in Scotland infected with Influenza A H1N1v in the week ending Monday 10 August 2009.

Overall in Scotland we estimate that the consultation rate is 44.4 per 100,000 (95% confidence interval 37.9, 51.7). Assuming that the consultations where a swab is taken is a representative sample of all consultations then we estimate that the daily consultation rate for H1N1v is 4.2 per 100,000 (95% confidence interval 1.8, 7.1) amounting to an estimated 218 cases of H1N1v who consult their GP per day (95% confidence interval 92, 369), and 1088 over a working week (95% confidence interval 459, 1844). This compares to 1053 last week.

Not all people with H1N1v will consult their GP and estimates of the percentage who will consult range from 20% to 50%. With the mid-range estimate of 35% we estimate that the total number of people in Scotland who have contracted H1N1v over the last week is 3107 (95% confidence intervals 1200, 6792). This compares to 3009 last week. The point estimates for a 50% and 20% consultation rate ranges from 1088 to 5438 new infections in Scotland over the last week.

The number of estimated cases this week has increased slightly (86 cases) on last week's estimate. This has occurred due to a slight increase in the swab positivity despite a slight reduction in consultation rates, both of which are within the limits of natural statistical variation. Consequently, this change in the number of estimated cases should not be interpreted as evidence of a real increase in cases.

At present these are unreliable estimates as

- the numbers of swabs are low and
- we are not able to check if the consultations from which the swabs were taken are representative of all consultations in the sentinel practices.

3. Severity of illness due to Influenza A H1N1v infections

3a. Confirmed cases admitted to hospital

Although this infection has been relatively mild in most individuals, a small number have required hospitalisation. To monitor the clinical severity of these patients HPS have introduced an enhanced surveillance system collecting detailed daily clinical information on laboratory confirmed cases requiring hospitalisation. This data allows us to monitor the clinical presentation of these patients, identify risk factors, and the clinical outcome.

There have been 94 individuals admitted to hospital (Table 2) as at midday 10 August. The majority of these (33/94; 35%) have been admitted in the NHS Greater Glasgow and Clyde area (Table 3). The majority of patients presented with respiratory illness (most commonly chest infections).

A high proportion of patients admitted to hospital (38/94; 40%) were known to have underlying diseases including chronic respiratory disease, diabetes or immunosuppression. The majority of cases have now been discharged (89/94; 95%). Of the five who remain in hospital, one is being managed out with Scotland for specialist treatment, one in an intensive care unit and three in general wards.

The age and sex profile is available for 98% (92/94) of patients admitted to hospital. The majority of these were female (51/92; 55%) and 23 % (21/92) were aged 15-24 years as shown in Figure 6. There has been one death reported since the previous report. This patient was being managed in high dependency in Greater Glasgow and Clyde and had underlying medical conditions. The total number of deaths in Scotland as of midday 10 August is five.

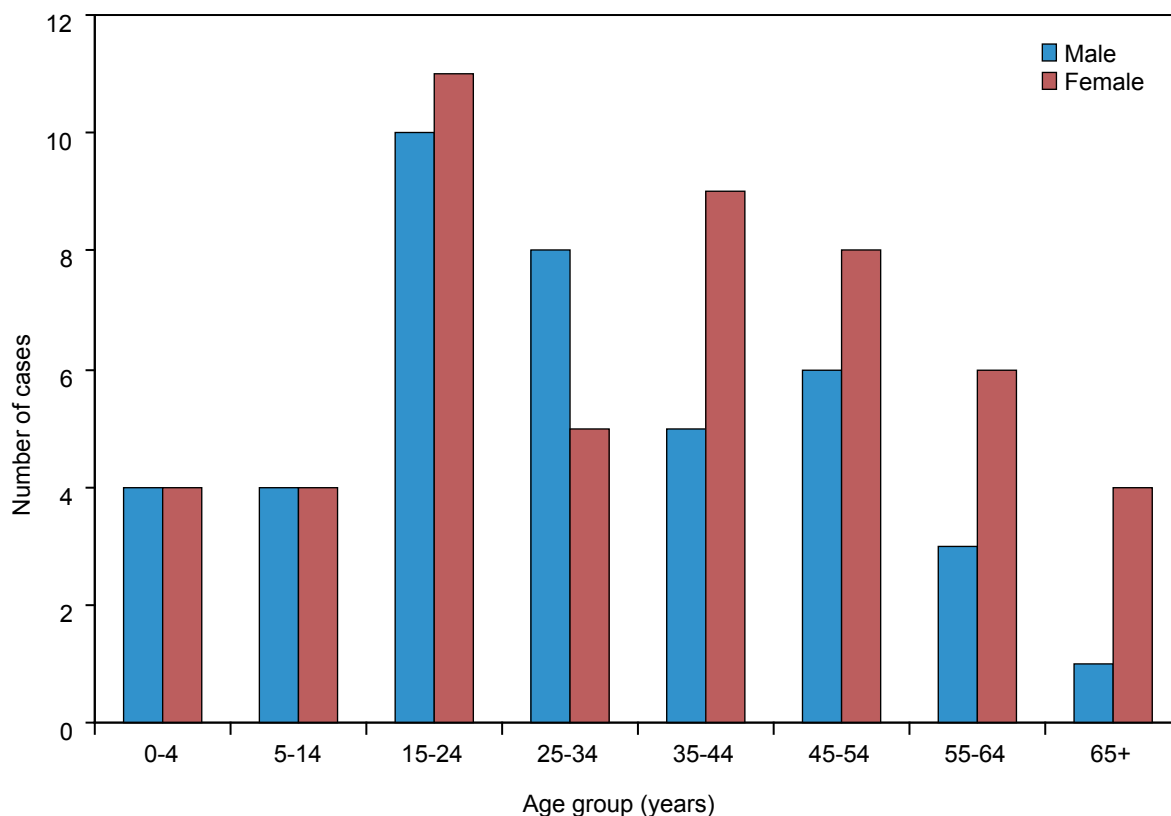
Table 2: Cumulative number of hospitalisations and deaths in Scotland up to midday 10 August 2009

Week number	Cumulative number of hospitalisations	Cumulative number of deaths
Week 27 (week ending 6 July)	40	2
Week 28 (week ending 13 July)	44	2
Week 29 (week ending 20 July)	51	3
Week 30 (week ending 27 July)	65	4
Week 31 (week ending 3 August)	80	4
Week 32 (week ending 10 August)	94	5

Table 3: New and cumulative number of laboratory confirmed cases from swabs taken from hospitalised cases by NHS board until midday 10 August 2009.

NHS board of residence	Number ever hospitalised				Deaths
	ICU	HDU	General Ward	Total hospitalised	
Ayrshire & Arran	1	0	6	7	0
Borders	0	0	0	0	0
Dumfries & Galloway	0	0	3	3	0
Fife	0	0	11	11	0
Forth Valley	1	0	2	3	0
Grampian	0	2	6	8	0
Greater Glasgow & Clyde	5	3	25	33	4
Highland	1	0	0	1	1
Lanarkshire	0	0	5	5	0
Lothian	1	1	7	9	0
Orkney	0	0	0	0	0
Shetland	0	0	0	0	0
Tayside	0	0	14	14	0
Western Isles	0	0	0	0	0
Total	9	6	79	94	5

Figure 6: Cases of laboratory confirmed hospitalised Influenza A H1N1v by age group and sex, 10 August 2009 (n= 92)



3b. Mortality data

Please note that these figures are based on data supplied by GRO (Scotland) and do not form part of an official national statistical release.

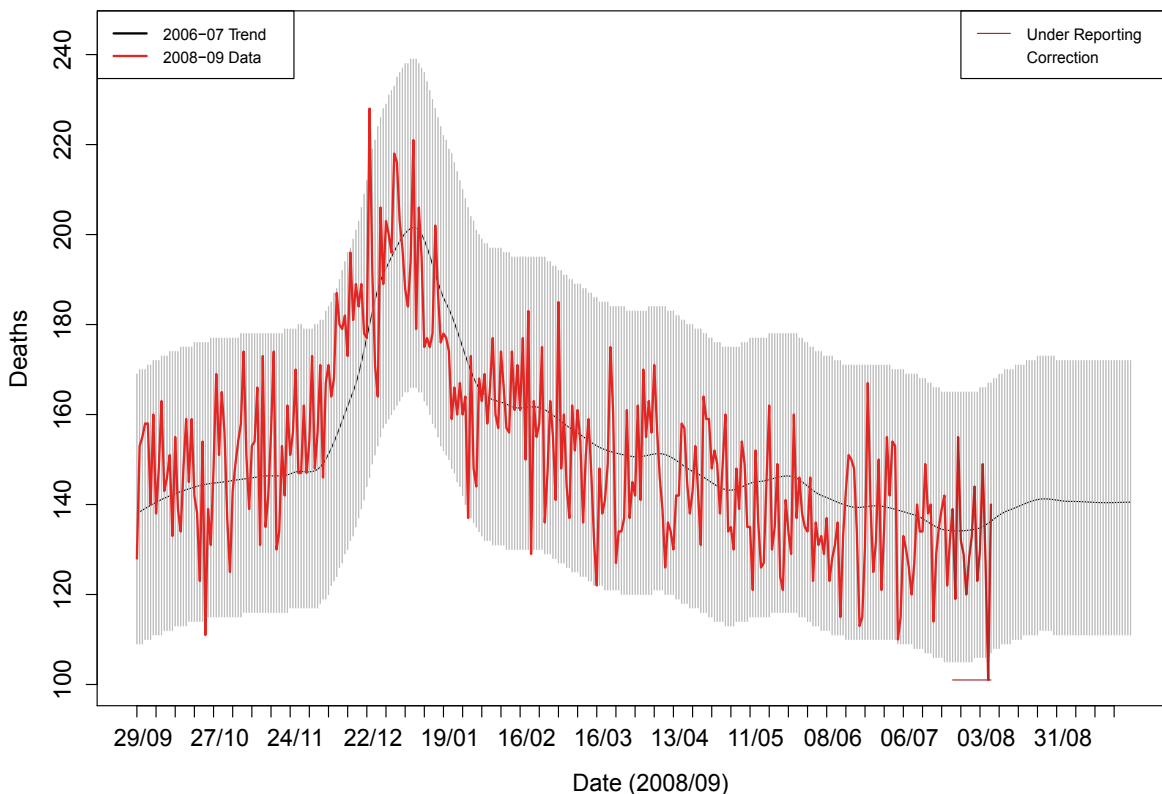
Information on mortality is used to monitor whether there are any excess deaths which may be attributed to ILI. Data presented relates to all causes of death (not specifically to influenza related deaths).

Over the whole year about 160 people die per day in Scotland and the range from 130 to 190 is associated with natural variation. There is variation in the trend of deaths during the year, with slightly more people dying each day in winter; around 170 per day (with a range of 140 to 210). In summer this drops to around 140 (ranging from 110 to 170). Over the course of the year, most of the observed numbers of people dying per day have fallen within the range of expectation.

Analysis of the GRO(S) data supplied to HPS (Figure 7) suggests that currently there is no cause for concern in the current daily reporting pattern. Numbers of deaths are consistent with historical figures for this time of year.

There is commonly a delay in the registration of deaths with only about 20-25% of deaths registered on the day of death. However, more than 95% of deaths are registered within 15 days of death. Consequently the recent data have been adjusted for this projected under reporting.

Figure 7: Expected versus observed deaths by all causes to 10 August 2009



Technical note: Trend is from a generalised additive Poisson regression model and confidence intervals from a Poisson distribution. The figure shows the number of people dying in Scotland from any cause per day (shown in red). The black line on this graph represents the expected number of people dying per day assuming that the trends observed in October 2007 to September 2008 are applied to the current period (October 2008 to date). The shaded grey area represents the confidence limits for this prediction and shows the anticipated ranges for the numbers dying per day which might be expected due to natural variation.

4 Potential changes to Influenza A H1N1v virus

4a Virological surveillance: genetic changes and antiviral resistance

Viral characteristics (including antiviral susceptibility) (as at 12 August 2009): This is currently provided by the Respiratory Virus Unit, Centre for Infections, Colindale as a UK service.

Please note that the following figures are provisional.

Six hundred and fifty-eight viruses have been analysed for the marker commonly associated with resistance to oseltamivir in seasonal influenza (H274Y); none were found to carry this marker. In addition, 132 of these have been fully tested for susceptibility; all 132 were found to be sensitive to oseltamivir and zanamivir. No additional samples from Scotland were tested last week (21 samples have been tested to date).

5 International Summary

Total of Cases Confirmed by WHO http://www.who.int/csr/don/2009_08_12/en/index.html (does not include latest updates from the UK)

Table 4: Total number of countries, territories and areas with confirmed cases until 6 August

Region	Cumulative total as of 6 August 2009	
	Cases*	Deaths
WHO Regional Office for Africa (AFRO)	591	1
WHO Regional Office for the Americas (AMRO)	102905	1274
WHO Regional Office for the Eastern Mediterranean (EMRO)	2346	7
WHO Regional Office for Europe (EURO)	over 32000	53
WHO Regional Office for South-East Asia (SEARO)	11432	83
WHO Regional Office for the Western Pacific (WPRO)	28120	43
Total	177457	1462

*Given that countries are no longer required to test and report individual cases, the number of cases reported actually understates the real number of cases.

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