Surveillance of influenza in Northern Ireland 2019/2020

HSC Public Health Agency

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Seasonal influenza activity

The 2019/20 influenza season was characterised by an earlier peak and moderate levels of activity in the community and hospitals compared with 2018/19. Trends observed after week 10, 2020 through syndromic surveillance systems should be interpreted with caution due to the impact of the COVID-19 pandemic.

- GP consultation rates for 'flu/flu-like-illness' ('flu/FLI') increased in week 46, 2019, peaking in week 49 at 29.2 per 100,000 population. A second peak in week 11, 2020 occurred which is likely due to COVID-19 activity.
- The Northern Ireland standardised threshold for influenza intensity[1] (low intensity; equal to or greater than 14.7 per 100,000) was exceeded for six weeks, again earlier than previous seasons but also later in the season due to COVID-19 activity.
- Highest 'flu/FLI' consultation rates were seen in 5-14 year olds in week 48 (62.4 per 100,000).
- Influenza A(H3) was the predominant circulating virus this season (75% of influenza isolates).
- There were nine confirmed influenza outbreaks reported this season, occurring across care homes, hospitals and other settings. 102 confirmed COVID-19 outbreaks were reported later in the season, with the majority being reported in a care home setting.
- There were 67 admissions to Intensive Care Units/High Dependency Units (ICU/HDU) with confirmed influenza in 2018/19. 11 deaths were reported in ICU/HDU patients who had laboratory confirmed influenza, giving a case fatality rate of 16%.
- Excess all-cause mortality was calculated for 12 weeks during the season (weeks 49-51, 2-3 and 13-19). The later increases in the season were due to COVID-19 activity.

[1] The Northern Ireland baseline Moving Epidemic Method (MEM) threshold is described later in this report under the enhanced influenza systems.

- The principal activity period for Respiratory Syncytial Virus (RSV) occurred from week 42, 2019 to week 51, with the proportion of positive samples peaking at 18% in week 47, again earlier than previous seasons.

Seasonal influenza vaccine uptake

- Influenza vaccine uptake in 2019/20 was higher across the majority of the target cohorts within the public and HSCW campaigns compared with 2018/19. Notable exceptions were the nurses/midwives and SCWs.
- Vaccine uptake rates in adults were: 74.8% in those 65 years and older; 58.9% in under 65 years in clinical “at risk” groups; 46.3% in pregnant women and 26.1% for individuals with a BMI greater than 40 kg/m^2 without other co-morbidities.
- Vaccine uptake rate in children were: 48.5% in pre-school children aged two to four years old; 74.9% of all eligible primary school children.
- Vaccine uptake increased in all frontline health and social care workers (HSCWs) to 36.8% (compared with 35.4% in 2018/19). Uptake in frontline HCWs (excluding social care workers), increased from 39.5% in 2018/19 to 41.2% in 2019/20, and for social care workers (SCWs) increased slightly from 22.5% to 22.8%.

Introduction

In Northern Ireland, surveillance of influenza and other respiratory viruses is carried out by the Influenza Surveillance Team at the Health Protection Directorate of the Public Health Agency (PHA).

Data are collated from a number of surveillance systems to provide information on the type of influenza strains circulating in the region, the timing of influenza activity, the burden of influenza on the community and health services, the degree of excess mortality and the uptake of influenza vaccine.

Outputs from the surveillance activities are used to produce timely reports that are distributed to the Department of Health (DoH), Health and Social Care Board (HSCB), Health and Social Care Trusts (HSCTs), health professionals, the media, and the public.

Surveillance is carried out all year, with output reports published weekly or fortnightly from week 40, 2019 (commencing 30 September 2019) to week 20, 2020 (ending 17 May 2020).

SARS-CoV-2, which causes COVID-19, emerged in China in December 2019. Since December, the virus spread worldwide and a pandemic was declared by the World Health Organisation (WHO) on 11 March 2020. To monitor epidemiological trends in this new and emerging virus, PHA has created new surveillance systems and adapted existing influenza surveillance systems and began publishing daily surveillance reports from March 2020 (week 13) to April 2020 (week 16)[2], then a monthly epidemiological COVID-19 bulletin from May 2020 (week 21)[3]. COVID-19 has impacted on various influenza indicators presented in this report, particularly in the latter part of the season. Data presented in this report should therefore be interpreted with caution.

This report describes the influenza activity in Northern Ireland for the 2019/20 season from week 40, 2019 to week 20, 2020.

[2] https://www.publichealth.hscni.net/publications/covid-19-surveillance-reports
[3] https://www.publichealth.hscni.net/publications/coronavirus-monthly-epidemiological-bulletin

Enhanced influenza surveillance systems

In-hours GP practice surveillance

Since 2017/18, in-hours GP Practice surveillance has been reported from 98% of the population (315 GP practices) instead of 11% of the population from the sentinel GP scheme (36 GP practices).

The system automatically extracts the number of clinical consultations for confirmed influenza and 'flu/FLI' from GP practices on a daily basis, facilitated by Apollo, Wellbeing Software. Denominator data for each GP practice population was provided by the Business Services Organisation (BSO) at the beginning of the season using 2019 mid-year population registrations for each GP practice. These allowed for combined 'flu/FLI' GP consultations rates per 100,000 population to be calculated.

The Northern Ireland Enhanced Surveillance of Influenza programme has been running since 2000 and in 2019/20 36 GP practices participated in the sentinel GP scheme. The sentinel practices obtain nose and throat swabs to enable community virological surveillance.

Every year the baseline MEM threshold for 'flu/FLI' GP consultation rates in Northern Ireland is calculated to standardise reporting of seasonal influenza activity. Further thresholds are also calculated for low, moderate, high and very high activity[4]. The threshold is used by the European Centre for Disease Prevention and Control (ECDC) and has been adopted by the United Kingdom (UK) devolved administration schemes to standardise reporting of influenza activity across the UK and Europe. Further details of the method have been previously described (Vega et al, 2012).

GP out-of-hours surveillance

The GP Out of Hours (OOH) surveillance system automatically extracts the number of clinical consultations for 'flu/FLI' from all GP OOH Centres in Northern Ireland (n=5) on a weekly basis. Combined 'flu/FLI' GP consultations rates per 100,000 population are calculated, similar

[4]2019/20 MEM thresholds: baseline is 14.7 per 100,000 population. Low activity is 14.7 to <23.9, moderate activity 23.9 to <73.9, high activity 73.9 to <121.7 and very high activity is >121.7.

to the in-hours GP practice surveillance, using 2019 mid-year population registrations for each GP practice provided by BSO at the beginning of the season.

Virological surveillance

The Regional Virology Laboratory (RVL) tests respiratory samples that are submitted from the sentinel GP scheme, and from HSCT hospitals, GP practices outside the sentinel GP scheme and care home outbreaks (latter known as “non-sentinel” sources).

Swabbing from the sentinel GP scheme runs throughout the normal influenza season and provides information on circulating community flu and feeds into the national Vaccine Effectiveness work. HSCT hospitals and GP practices submit respiratory samples from patients if clinically recommended on the basis of presenting symptoms.

All respiratory samples are tested by real-time polymerase chain reaction (RT PCR) for influenza A, Influenza B and RSV. Samples that are positive are tested with H1(A(H1N1)pdm09) and H3 assays. Depending on clinical details, ward of origin and laboratory capacity at point in time, respiratory samples may be tested for other respiratory targets using RT PCR including: Mycoplasma pneumoniae, Legionella pneumophila and Chlamydophila pneumoniae, Bordetella pertussis, Pneumocystis jirovecii, metapneumovirus, respiratory adenovirus, coronavirus, parainfluenza viruses and rhinovirus. It is not useful to report on other respiratory viruses due to the variation in testing methods from year to year.

This season four HSCT laboratories also conducted influenza testing for patients where the clinician suspects flu. Respiratory samples are tested for influenza A, B and RSV. Samples positive for influenza A are sent to RVL for confirmation and further characterisation.

The influenza team collects and collates the number of patients tested, along with their results for influenza and RSV viruses from RVL and the four local HSCT laboratories. The number and proportion of samples positive for influenza and RSV are reported on a weekly basis.

De-duplication of respiratory samples is undertaken for surveillance purposes because an individual may be tested on numerous occasions over a short period of time. An episode of influenza is based on a six week interval while other respiratory diseases are based on a two

week interval. De-duplication ensures multiple samples from the same individual are not recorded. Their positive result may also not come from their first sample. National guidelines specify that a positive result overrides previous negative results. Total tests undertaken for both influenza and RSV will differ due to this de-duplication interval.

Outbreak surveillance

Respiratory-related outbreaks in institutional settings (e.g. care homes, hospitals, and schools etc.) are reported to the PHA Health Protection duty room. The duty room collects epidemiological data using a standardised proforma at the beginning, during, and at the end of each influenza outbreak. Respiratory sampling and testing is recommended for all outbreaks, with samples sent to RVL. The influenza team collates and reports aggregate data on the number of outbreaks and other relevant epidemiological and virological information.

ICU / HDU surveillance

Since 2011/12, Northern Ireland has participated in the UK Severe Influenza Surveillance System (USISS). This is a national collection that collects the weekly number of laboratory confirmed influenza cases admitted to ICU/HDU and the number of confirmed influenza deaths in ICU/HDU.

Epidemiological information on laboratory confirmed cases of influenza admitted to ICU/HDU are collected and collated weekly, in collaboration with the Critical Care Network for Northern Ireland (CCaNNI). Aggregate data on the number of cases, deaths and other relevant epidemiological information are reported weekly.

Mortality surveillance

The Northern Ireland Statistics and Research Agency (NISRA) provide data to the influenza team on the number of all-cause and selected respiratory infection death registrations by registration week. Selected respiratory infections are obtained by searching death certificates for keywords associated with influenza, including; bronchiolitis; bronchitis; influenza; and pneumonia. The number and proportion of selected respiratory infection death registrations are reported weekly. Due to delays in death registrations, the number of registered deaths in a week will not equal the number of deaths that actually occurred that week.

In addition, PHA calculates excess mortality using the Mortality Monitoring in Europe (EuroMOMO) model. EuroMOMO is a project coordinated by the Statens Serum Institut in Denmark to provide a common approach to analysing mortality data and comparing across the UK and Europe. The model produces weekly expected and observed number of deaths, corrected for reporting delay and standardised for the population by age group and region. Excess mortality is reported if the number of observed deaths exceeds the number of expected deaths. Despite delay correction, reported mortality data is still provisional due to the time delay in registration and observations which can vary from week to week.

Vaccine uptake surveillance

Every year, policy for the Seasonal Flu Vaccination Programme is set by DoH in line with recommendations from the Joint Committee on Vaccination and Immunisation (JCVI), including regional targets for immunisation uptake, which are based on the World Health Organisation (WHO) recommendations.

The Seasonal Flu Vaccination Programme consists of the public (children and adults) campaign and the frontline HSCW campaign.

Whilst the policy recommendation is for flu vaccine to be offered to all frontline HSCWs that work in Northern Ireland, vaccine uptake surveillance is currently only carried out for those that are HSCT-employed. This includes both Health Care Workers (HCWs) and Social Care Workers (SCWs) which differs to elsewhere in the UK, where equivalent NHS Trust employed staff are only HCWs.

This year and last vaccine uptake surveillance of independent sector care home HSCWs was piloted by the flu surveillance team. Evaluation will inform publication of these figures in the future.

In 2019/20, the following flu vaccines and targets were recommended.

Adjuvanted Trivalent Inactivated Vaccine (aTIV):

- All individuals aged 65 years and older (target 75%)

Quadrivalent Inactivated Vaccine (egg-based) (QIVe):

- Individuals aged six months to two years and 18 to 65 years in a clinical “at risk” group (75%), including pregnant women (60%)
- Frontline Health Care Workers (50%)
- Frontline Social Care Workers (40%)

Quadrivalent Live Attenuated Influenza Vaccine (LAIV):

- All pre-school children aged two years or older on 1 September 2019 (60%)
- All primary school aged children, four to 11 years of age (75%)
- Post-primary school aged children (11 to 17 years of age) in a clinical “at risk” group, unless contraindicated

Quadrivalent Inactivated Vaccine (cell-based) (QIVc):

- Individuals with severe egg allergy i.e. those who have previously suffered anaphylaxis requiring intensive care admission.

The flu surveillance team collects data on the number vaccinated in each target group at regular intervals between the start and end of the season. Vaccine uptake rates are calculated using age-specific denominators and presented for Northern Ireland and by HSCT.

Data is collected from different data sources depending on the target group, including GP practices via electronic software (Apollo, Wellbeing Software), GP claim numbers from HSCB, HSCTs, School Nursing and Occupational Health Departments.

Observations

Primary care syndromic surveillance

Trends observed after week 10, 2020 through syndromic surveillance systems should be interpreted with caution due to the impact of the COVID-19 pandemic.

COVID-19 caused an increase in the use of ILI codes and other similar codes, particularly in the early stages of circulation in Northern Ireland. This caused a rapid increase in activity in many of the syndromic respiratory indicators, followed by a rapid decrease in rates in some systems as COVID-19 specific codes were introduced into health care IT systems and changes were made to the way potential COVID-19 patients were managed.

The weekly GP consultation rate for 'flu/FLI' started to increase from pre-season levels in week 46, 2019 (November), rising from 6.9 to a peak of 29.2 per 100,000 population in week 49. This peak was reached much earlier than in previous seasons.

From week 49, the rate decreased to 10.4 per 100,000 in week 52 before increasing again to 15.9 per 100,000 the following week. This rate then decreased to below the baseline MEM threshold[5] until a second peak in week 11, 2020 which is likely due to COVID-19 activity (Figure 1).

Age-specific GP consultation rates fluctuated in all age groups throughout this season, with the peak rates among all age groups being higher than in 2018/19, and with a second peak similar to overall rate due to COVID-19 activity. The highest level of influenza activity was most frequently seen in the those aged under 44 years old; peaking in week 48, 2019 at 41.3 per 100,000 for those 0-4 years and 62.4 per 100,000 in those 5-14 years; peaking in week 49 at 32.3 per 100,000 for those 15-44 years and 24.7 per 100,000 for those 45-64 years; and peaking in week 51 for those 65 years and older at 22.5 per 100,000 (Figure 2).

[5] Equal to or greater than 14.7 per 100,000

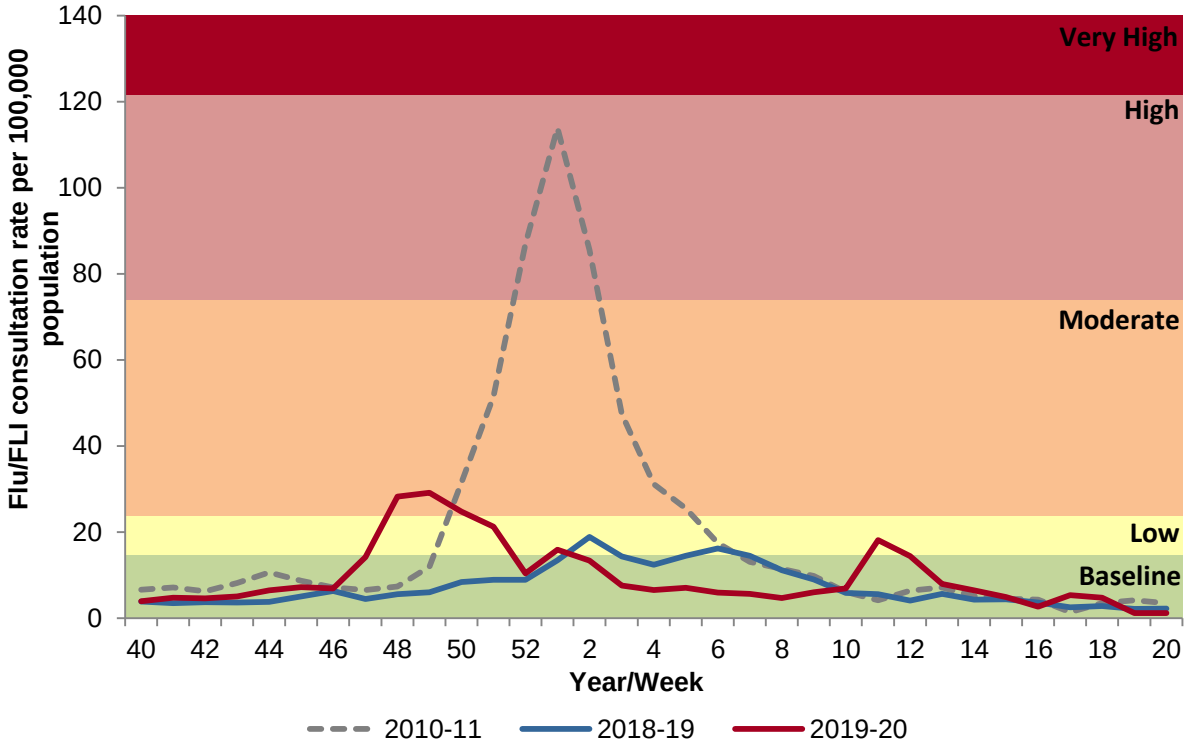

Figure 1: Northern Ireland GP consultation rate per 100,000 population for combined flu and flu-like-illness, 2018/19 – 2019/20, including 2010-11 for comparison

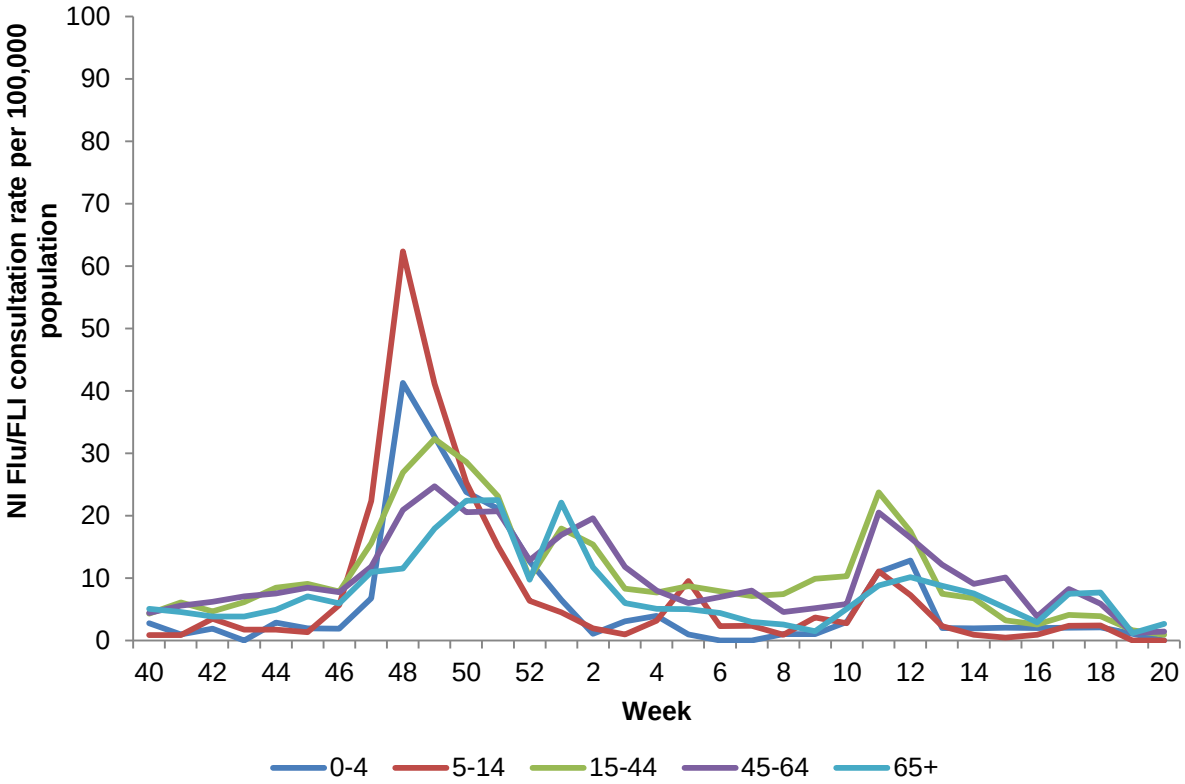

Figure 2: Northern Ireland GP age-specific consultation rates per 100,000 population for combined flu and flu-like-illness, weeks 40 - 20, 2019/20

GP OOH ‘flu/FLI’ consultation rates began to increase earlier than previous seasons in week 46, 2019, peaking in week 49, 2019 (early December) at 19.3 per 100,000 population. This compares to a peak of 14.7 per 100,000 in 2018/19. From week 1, 2020 OOH consultation rates decreased and remained stable until a second larger peak in week 11 (24.8 per 100,000) but this again was likely due to COVID-19 activity (Figure 3).

The proportion of ‘flu/FLI’ calls to total calls was higher this season compared to last season, peaking at 3.1% in week 49, 2019 (early December) then 4.5% in week 11, 2020 (due to COVID-19 activity). This compares to a peak of 1.7% in week 1, 2018/19.

By age group, the highest OOH consultation rates were reported in those aged 0-4 years, peaking at 48.1 per 100,000 in week 49, 2019, with a second peak due to COVID-19 activity for those aged 15-44 years in week 11, 2020 (48.6 per 100,000) (Figure 4).

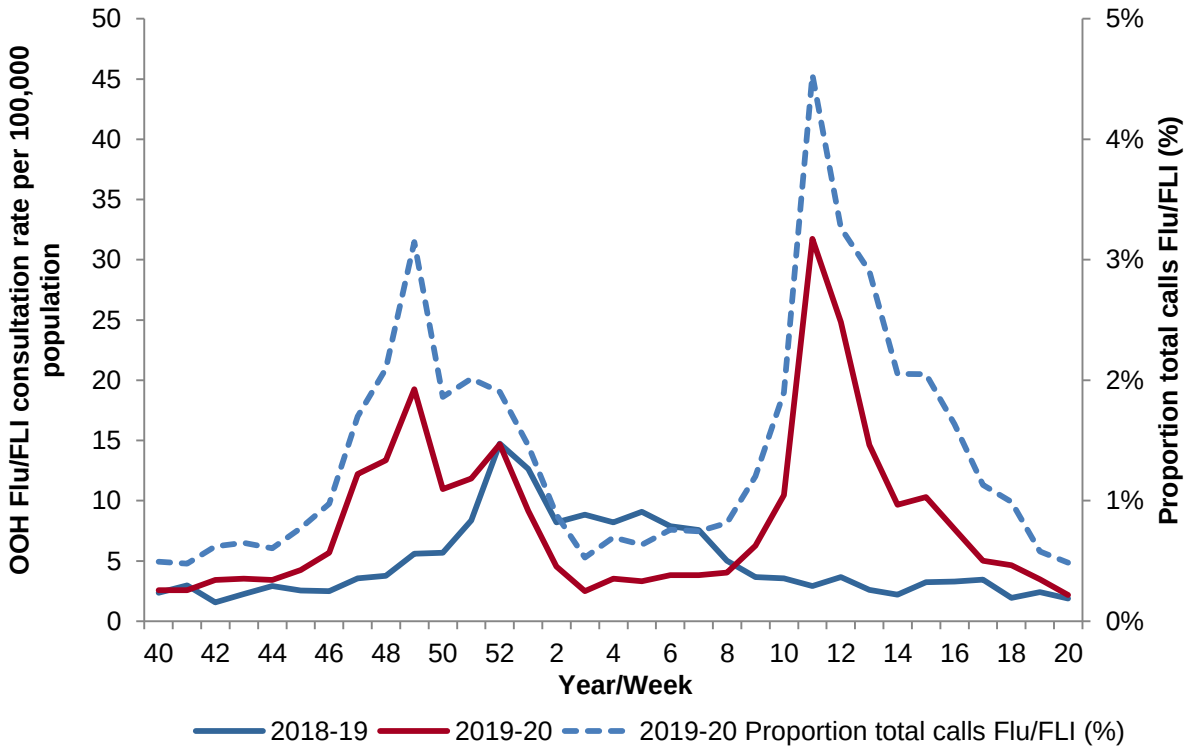

Figure 3: OOH consultation rate per 100,000 population and proportion of total OOH calls for combined flu and flu-like-illness, 2018/19 – 2019/20

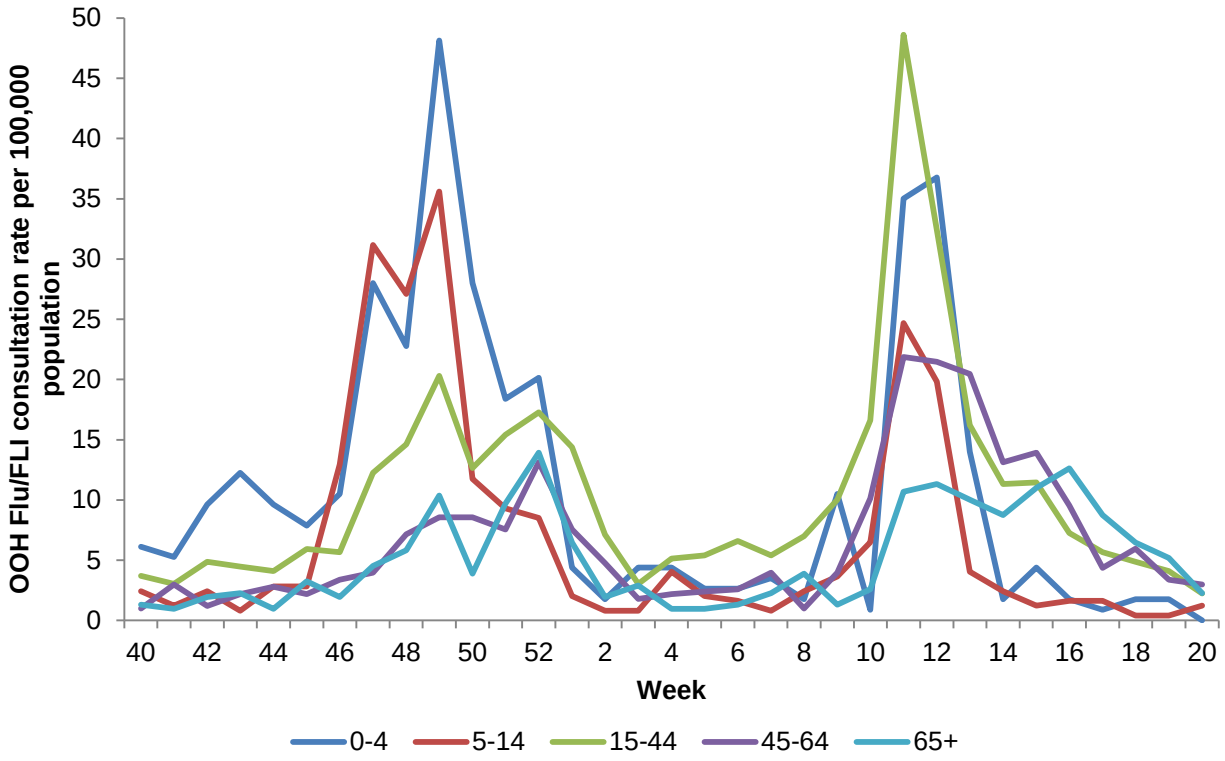

Figure 4: OOH consultation rates per 100,000 population for combined flu and flu-like-illness, by age-group for weeks 40- 20, 2019/20

Virological activity

Across Northern Ireland, 15,475 respiratory samples from any source were tested (336 sentinel GP scheme; 15,139 non-sentinel sources). Overall, 17% (2,660/15,475) of samples were positive for influenza virus. The proportion of positive influenza samples from the sentinel GP scheme was 43% (146/336) and 17% (2,514/15,139) from non-sentinel sources.

Influenza A(H3) was the predominant circulating virus throughout the majority of the season, accounting for 75% (1,998/2,660) of influenza isolates. Influenza A(H1N1)pdm09 and influenza B each accounted for 9% of influenza isolates, with influenza A(untyped) accounting for 7%. The relative proportion of influenza isolates followed a similar pattern in GP sentinel and non-sentinel samples (Table 1).

Table 1: Number and proportion of influenza strains to positive influenza samples according to sample source, during weeks 40-20 2018/19

	Sentinel sources	Non-sentinel sources	All sources
Flu A(H1N1)pdm09	13 (9%)	219 (9%)	232 (9%)
Flu A(H3)	122 (84%)	1876 (75%)	1998 (75%)
Flu A(untyped)	0 (0%)	194 (8%)	194 (7%)
Flu B	11 (8%)	225 (9%)	236 (9%)
Total positive	**146 (5%)**	**2514 (95%)**	**2660 (100%)**

The distribution of influenza positive detections compared to the previous two seasons is shown in Figure 5. The figure illustrates an earlier increase in GP 'flu/FLI' consultation rates and an increase in total positive detections compared to 2018/19.

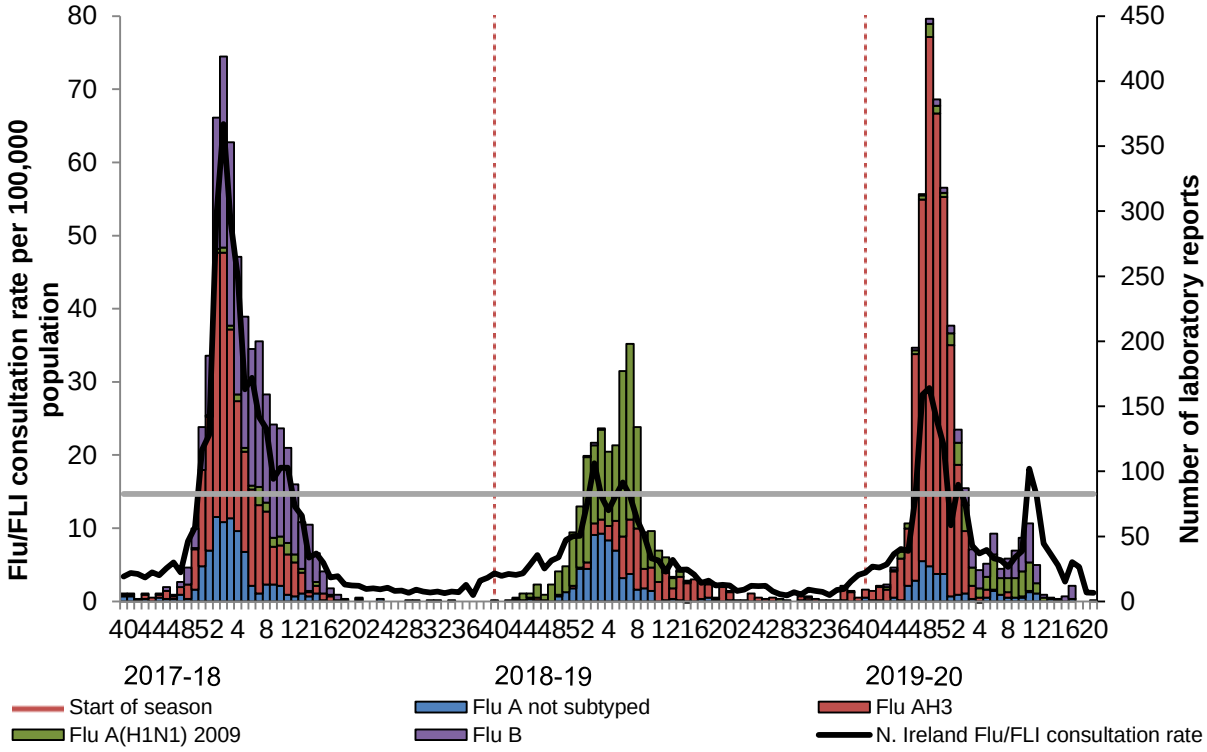

Figure 5: Northern Ireland GP consultation rate for combined flu and flu-like-illness and number of influenza positive detections 2018/19 – 2019/20

The first detection of influenza A(H3) was reported in week 40, 2019, followed by the first influenza B detection in week 42, 2019. Influenza A(H1N1)pdm09 was first detected in week 43, 2019. The proportion positivity for all samples began to increase in week 44, 2019 and peaked in week 49 (448/1073; 42%). This is earlier than in previous seasons (Figure 6).

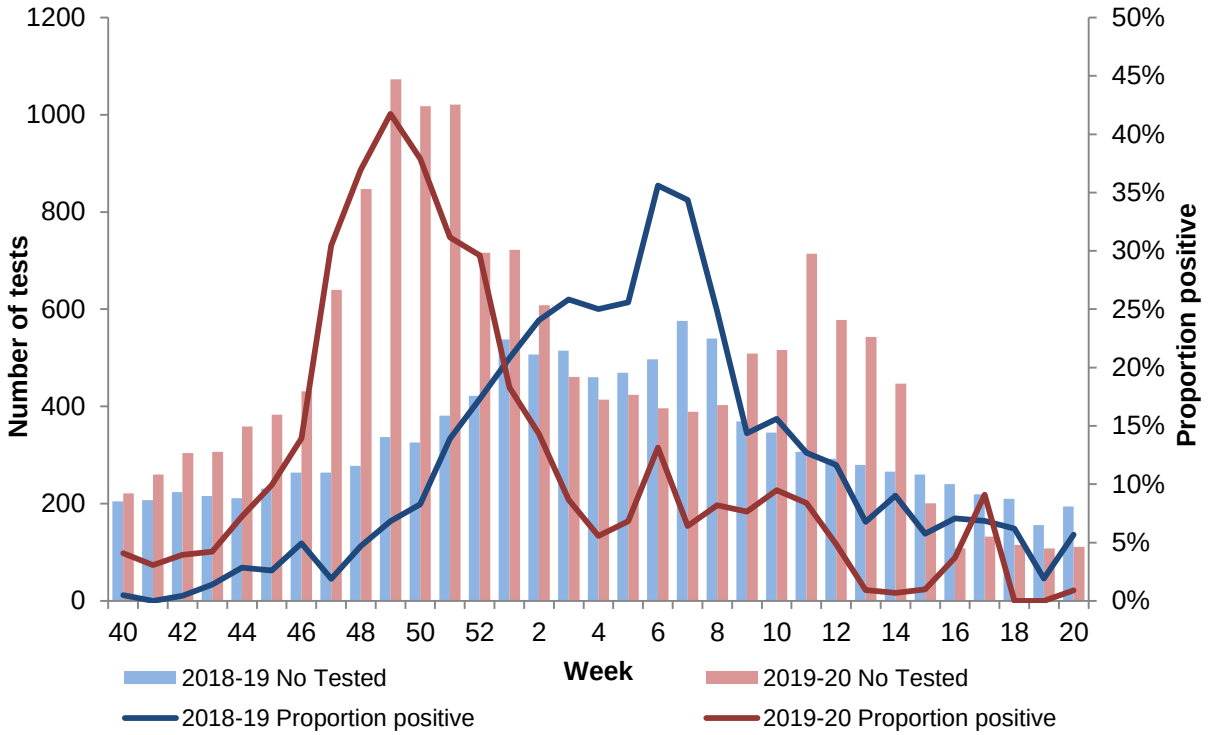

Figure 6: The number of samples tested (all sources) for influenza in Northern Ireland from weeks 40-20, 2018/19 and 2019/20 with the proportion positive

Overall, the highest proportion positivity for all samples was observed in those aged 65 years and older (31%), with influenza A(H3) most frequently reported in this age group (84%). This strain was the predominant strain across all age groups (Table 2).

Table 2: Proportion of positive influenza samples by age group, all sources, during weeks 40-20 2018/19

	0-4 years	5-14 years	15-44 years	45-64 years	≥65 years
Flu A(H1N1)pdm09	35 (9%)	68 (10%)	65 (15%)	8 (3%)	56 (7%)
Flu AH3	298 (76%)	459 (66%)	318 (73%)	240 (77%)	683 (84%)
Flu A(untyped)	27 (7%)	42 (6%)	34 (8%)	29 (9%)	60 (7%)
Flu B	32 (8%)	124 (18%)	20 (5%)	34 (11%)	17 (2%)
Total positive*	**392 (15%)**	**693 (26%)**	**437 (16%)**	**311 (12%)**	**816 (31%)**

**total positive = 2660 (11 unknown age)*
Due to rounding, total percentages may not add up to 100%

Respiratory Syncytial Virus

Across Northern Ireland, 13,384 respiratory samples from all sources were tested for respiratory syncytial virus (RSV), with overall RSV positivity of 7.5% (1,000/13,384). RSV activity occurred earlier than in 2018/19, with the proportion of positive samples peaked in week 47, 2019 at 18% (103/582) (Figure 7).

The majority (581/1,000; 58%) of RSV detections were in the 0-4 year age group. This is higher than the proportion seen in this age group for 2018/19 (53%).

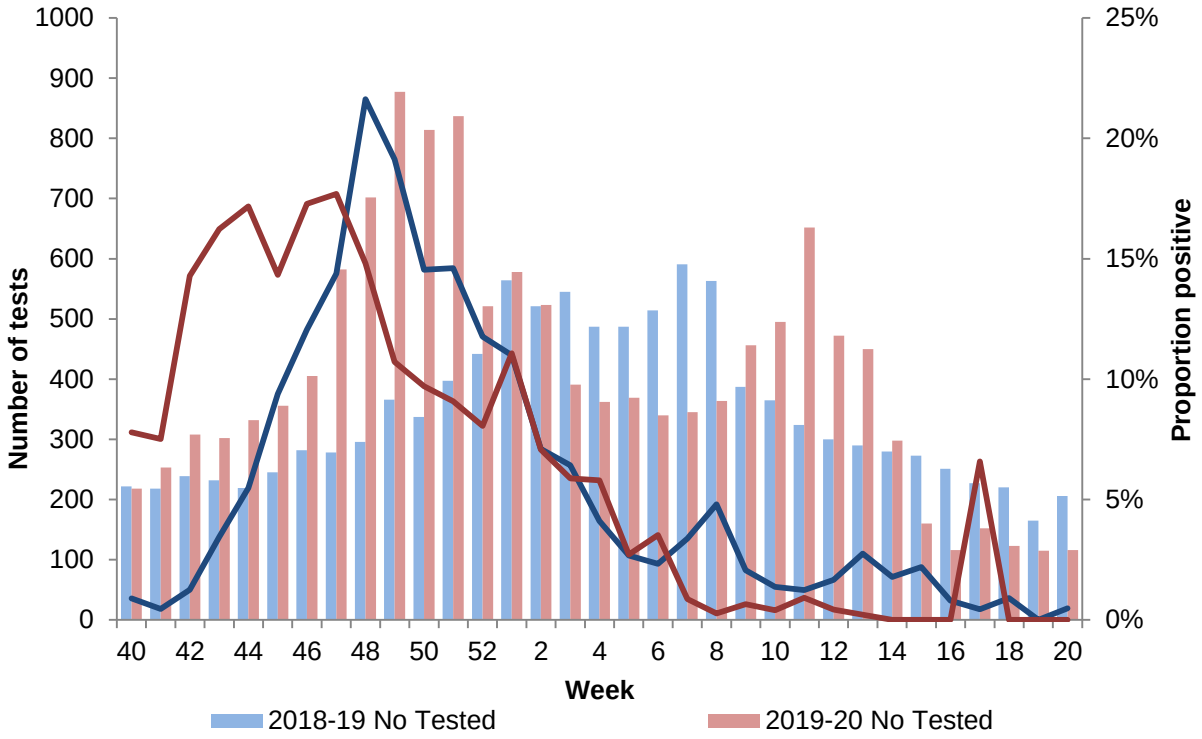

Figure 7: Number of samples tested for RSV and proportion positive in Northern Ireland 2018/19 and 2019/20

Respiratory outbreaks

A total of 176 respiratory-related outbreaks were notified to the PHA duty room this season (week 40, 2019 to week 20, 2020).

The vast majority of these outbreaks occurred from week 11, 2020 onwards and were COVID-19 related (161/176; 91%). The highest numbers of COVID-19 outbreaks per week (n=25) were notified in weeks 14 and 15, 2020 (Figure 8). Of the 161 COVID-19 outbreaks reported, 102 (63%) were laboratory confirmed, of which the majority were notified in a care home setting (98/102; 96%).

Influenza/FLI outbreaks were notified to the PHA between weeks 44, 2019 and week 6, 2020 (15/176; 9%). The highest numbers of outbreaks per week (n=3) were notified in weeks 49 and 50, 2019 (Figure 8). Of the 15 influenza/FLI outbreaks notified, nine (60%) were laboratory confirmed influenza. All of the confirmed influenza outbreaks in 2019/20 were caused by influenza A, with the exception of one outbreak which was caused by influenza B. Of the nine laboratory confirmed influenza outbreaks, four were notified in a care home setting (4/9; 44%), and the other five were hospital or other settings.

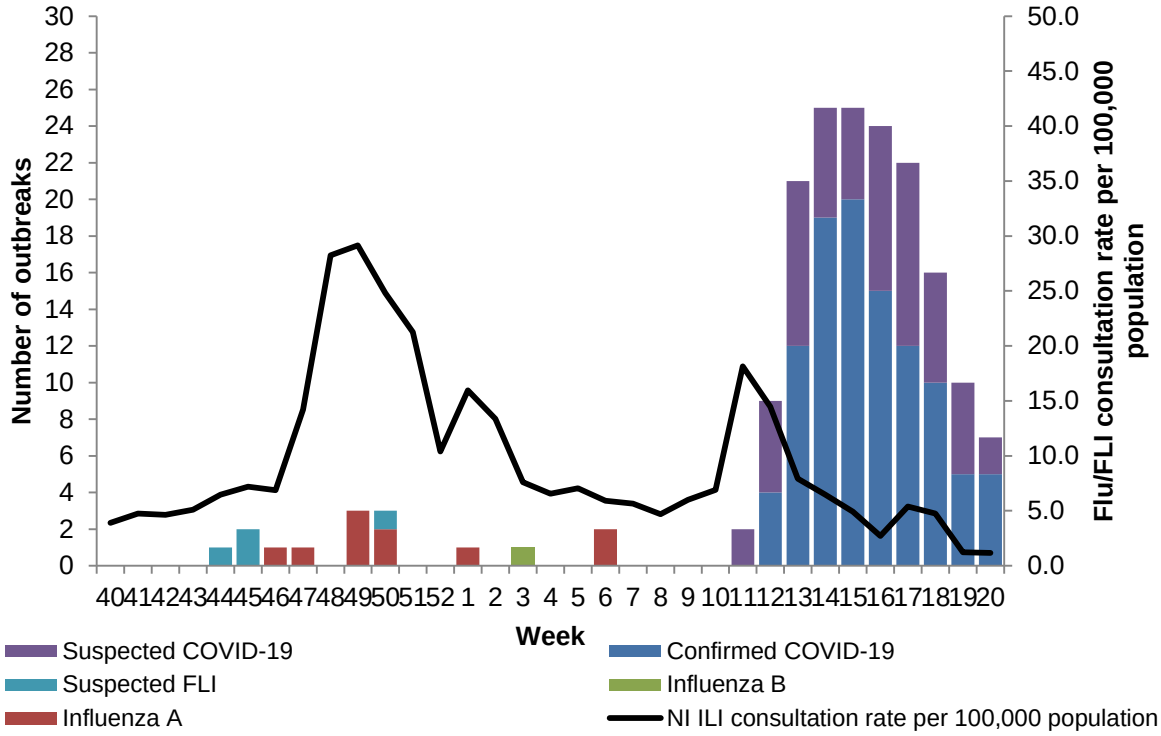

Figure 8: GP consultation rate for combined flu and flu-like-illness with number of respiratory outbreaks, by subtype, by week, 2019/20

ICU / HDU surveillance

The number of laboratory confirmed influenza cases in ICU/HDU was 67, similar to 2018/19. However, the predominant strain this season was influenza A(H3) (51/67; 76%). The remaining virus strains included influenza A(H1N1)pdm09 (7/67; 10%), influenza A(untyped) (5/67; 7%), influenza B or dual infection (4/67; 6%) (Figure 9). The highest number of confirmed influenza cases in ICU/HDU was reported in week 49, 2019 (18/67; 27%), of which the majority (13/18; 72%) were reported as influenza A(H3).

The median age of cases admitted to ICU/HDU was 57 years old (range <1 year to 86 years). The majority of cases were reported in those aged 65 years and over (25/67; 37%) which is higher this season compared with 2018/19 (13%). The majority of positive influenza A(H3) cases were also reported among those aged 65 years and over (23/51; 45%).

This season, 73% (49/67) of cases were recorded as having a co-morbidity, which was a higher proportion than 2018/19 (55%). Of the 49 eligible cases for the influenza vaccination,

43% (21/49) received the vaccine in 2019/20. The majority of those reporting a co-morbidity were aged 65 years and over (22/49; 45%).

The Case Fatality Rate (CFR) of ICU/HDU cases was 16% (11 deaths/67 cases), compared with 10% (7 deaths/67 cases) in 2018/19. The deaths occurred in patients aged five years and older. 64% (7/11) of these patients were eligible for influenza vaccination, with 57% (4/7) having received the 2019/20 vaccine. It should be noted that deaths in critical care patients who have confirmed influenza are reported, however these deaths may not necessarily be due to influenza.

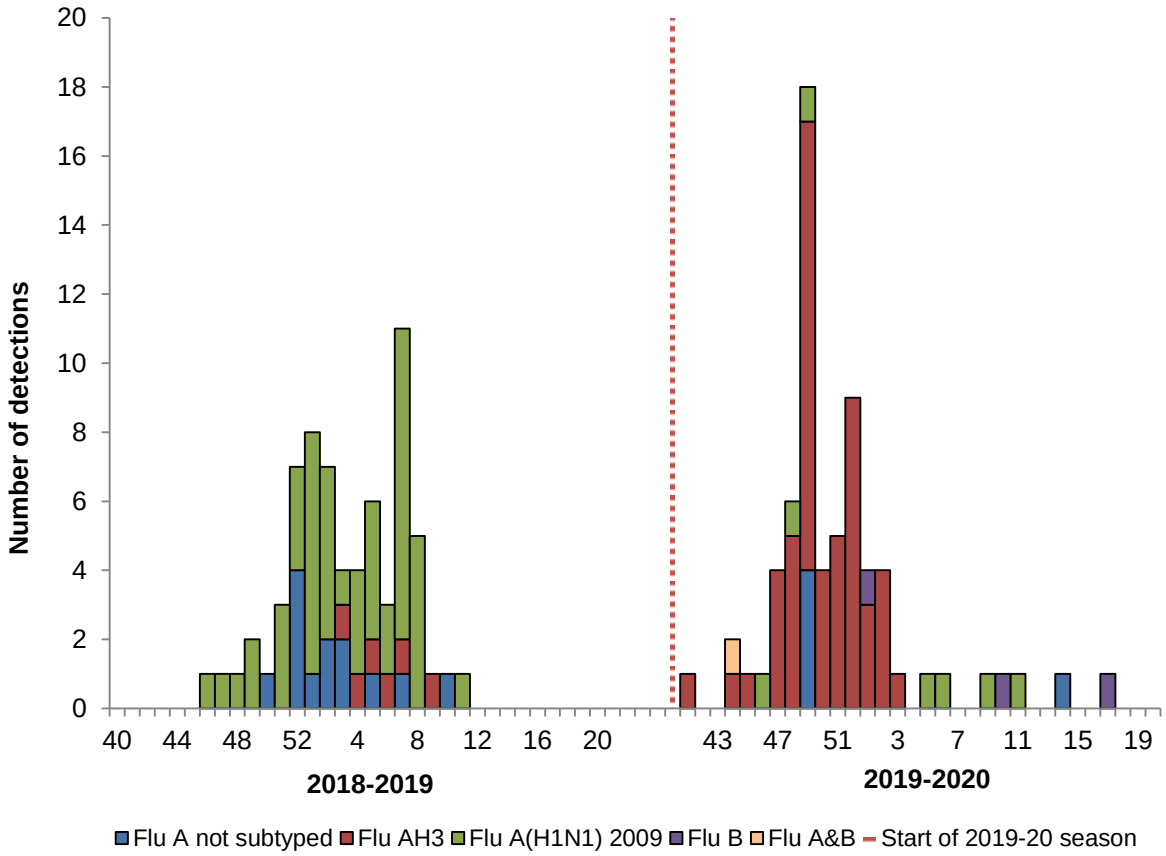

Figure 9: Confirmed ICU/HDU influenza cases by week of specimen, with GP consultation rate for combined flu and flu-like-illness, 2018/19 – 2019/20

Mortality

The proportion of registered deaths with respiratory keywords (associated with influenza, including; bronchiolitis; bronchitis; influenza; and pneumonia) to all-cause death registrations was 28% (3,157/11,262), similar to 2017/18 (28%). The proportion of weekly registered deaths with respiratory keywords peaked at 35% (125/353) in week 1, 2020, compared to 36% in week 7, 2018/19 (Figure 10).

Excess all-cause mortality for all ages was calculated for 12 weeks during the season (weeks 49-51, 2-3 and 13-19), compared to two weeks in 2018/19 (Figure 11). Excess all-cause mortality was reported later in the season; this increase in deaths happened outside the influenza season and at a time when we know flu was not circulating. This suggests the excess mortality was likely driven by COVID-19 deaths. Excess deaths were mainly in those aged 65 years and over, which is in line with the age profile of COVID-19 deaths.

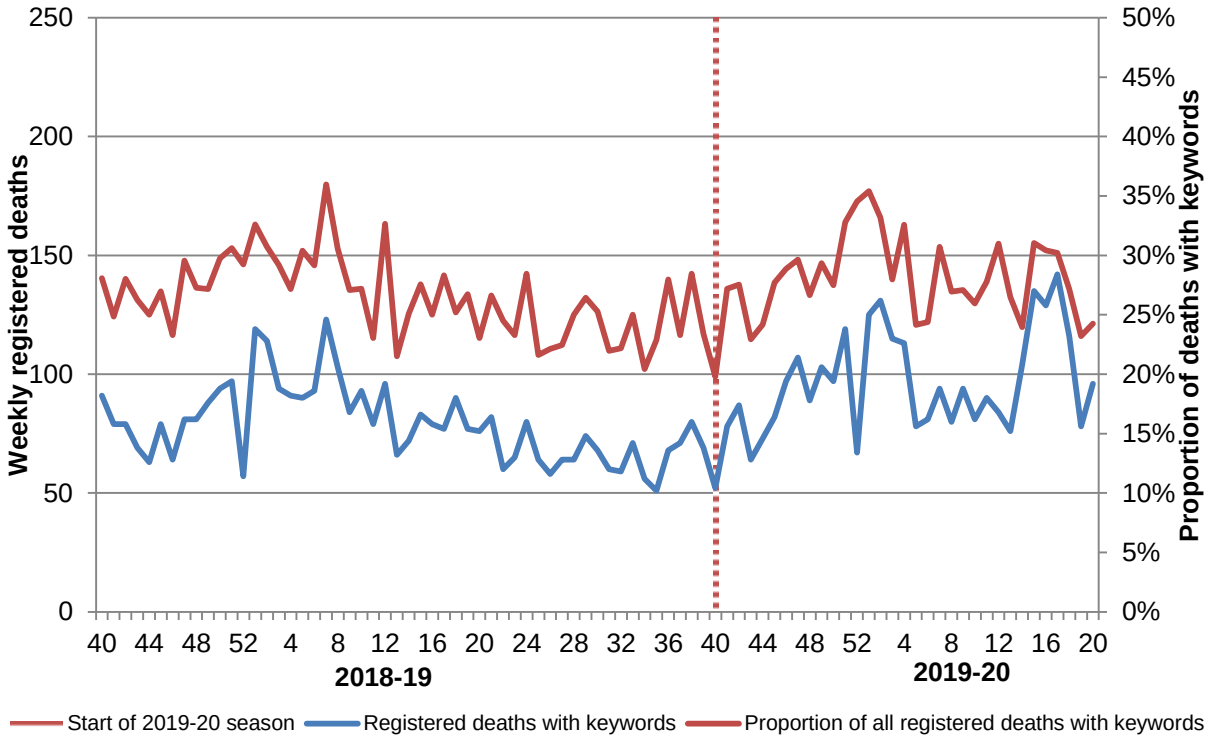

Figure 10: Weekly registered deaths and proportion of all deaths with keywords, by week of registration, week 40, 2018 to week 20, 2020

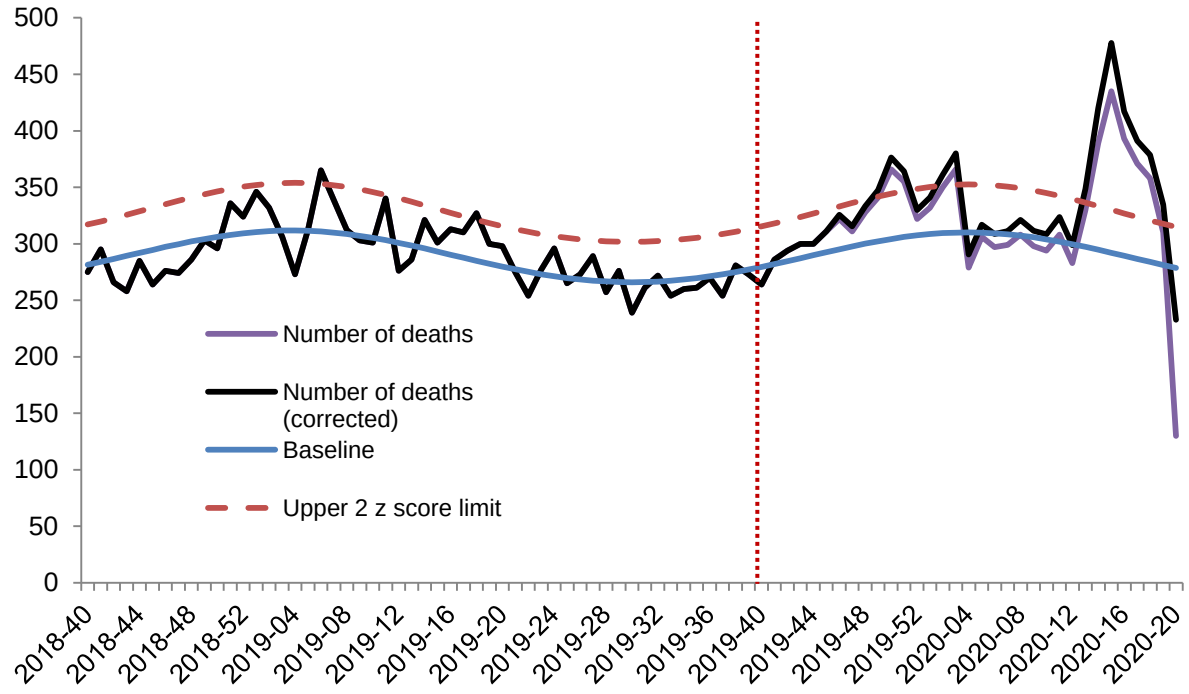

Figure 11: All age excess all-cause mortality by week of death, from week 40, 2018 to week 20, 2020 (calculated using the standardised EuroMOMO algorithm)

Seasonal influenza vaccine uptake

Public campaign

The 2019/20 end of season influenza vaccine uptake rates in adults were: 74.8% in those 65 years and older; 58.9% in under 65 years in clinical “at risk” groups and 46.3% in pregnant women. Uptake rates are collected separately for individuals with a BMI greater than 40 kg/m^2 without other co-morbidities; uptake for this group was 26.1%.

The 2019/20 end of season influenza vaccine uptake rates in children were: 48.5% in pre-school children aged two to four years old and 75.4% in primary school children who were offered and accepted the vaccine (Figure 12). The total number of primary school children (denominator) was provided for October 2019 (n=173,856). Therefore, 74.9% of all primary school children eligible had received the influenza vaccine in 2019/20 (Figure 13).

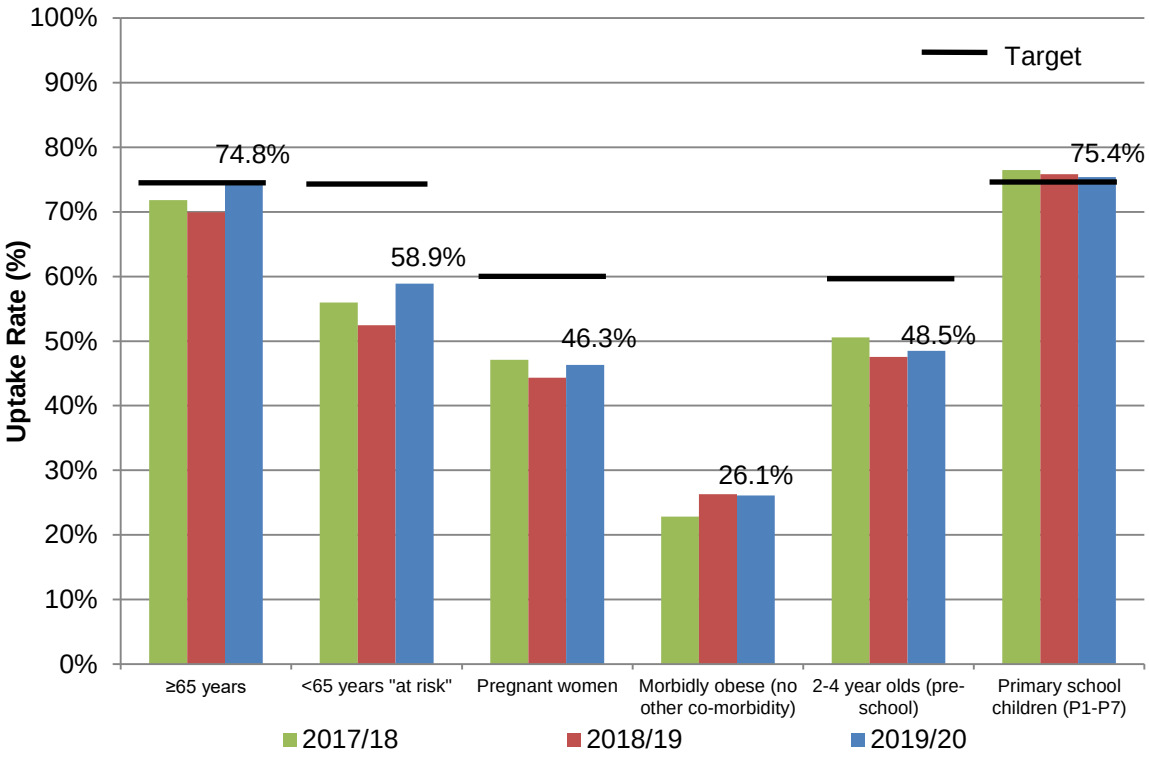

Figure 12: Influenza vaccine uptake rates in population target groups 2017/18 – 2019/20

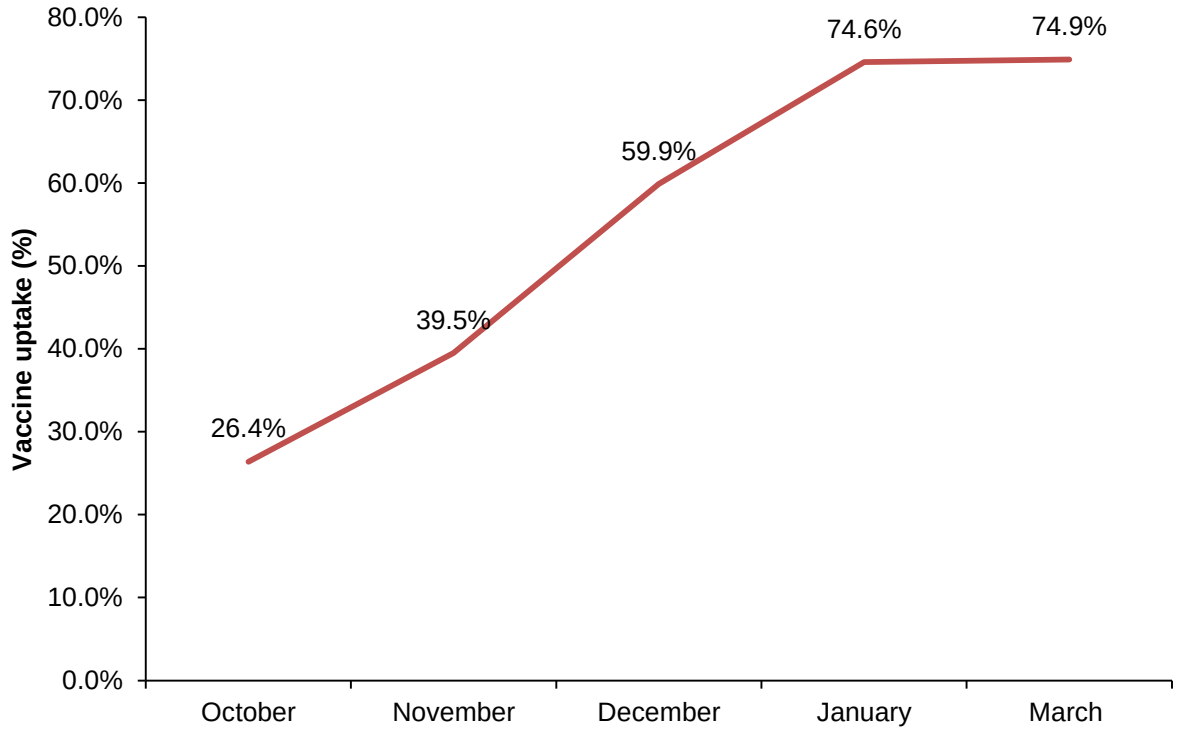

Figure 13: Cumulative monthly influenza vaccine uptake by all primary school children, 2019/20. This is based on a total population of 173,856 in October 2019.

Every year the seasonal flu vaccine programme officially commences on 1st October and is delivered by primary care, the Trust school nursing service (in school) and the Trust health and social care worker (HSCW) flu campaign. This year, the children's programme has been impacted on by temporary delays in the manufacturing of the flu vaccine given to pre-school children. Whilst the end of season uptake for the children's programme was largely the same compared to the previous year, the increase was slower over time (Figure 14).

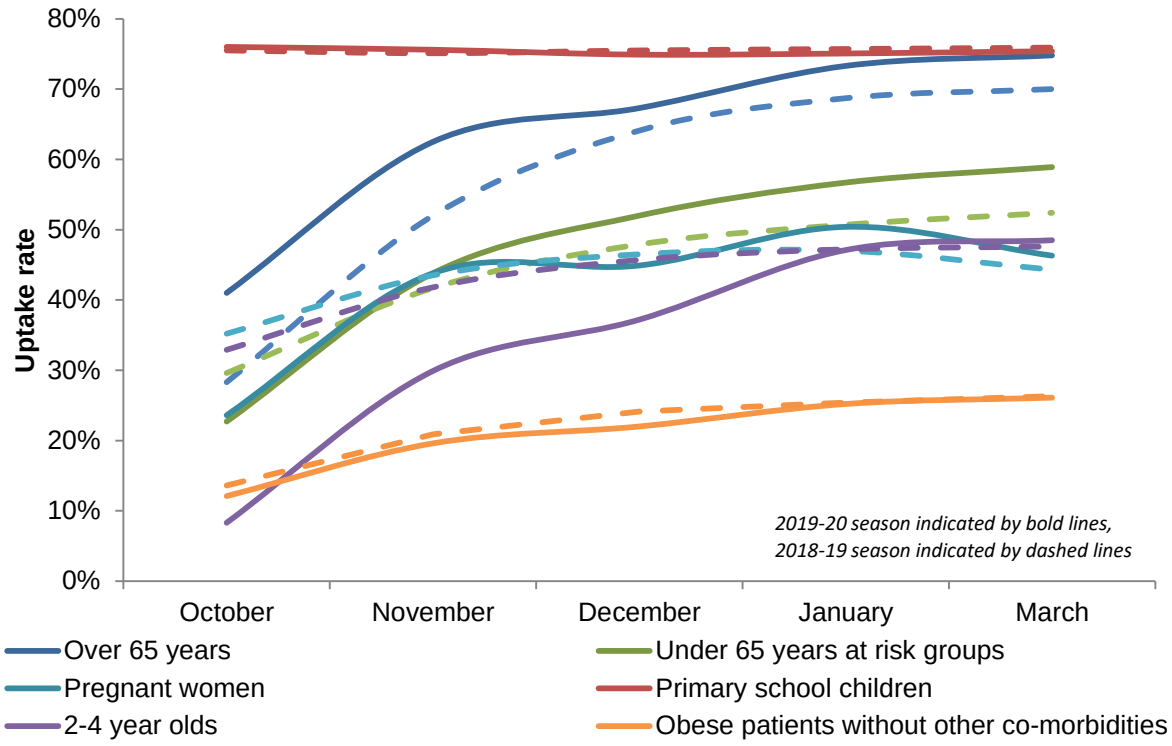

Figure 14: Cumulative monthly influenza vaccine uptake by population target group, 2017/18 and 2018/19

There was a percentage increase of 11% in the number of vaccines administered (numerator) in those aged 65 years and older between 2014/15 and 2019/20, while there was a percentage increase of 9% in the population size of this target group during the same period (Figures 12 and 15). Uptake between 2018/19 and 2019/20 increased from 70.0% to 74.8%.

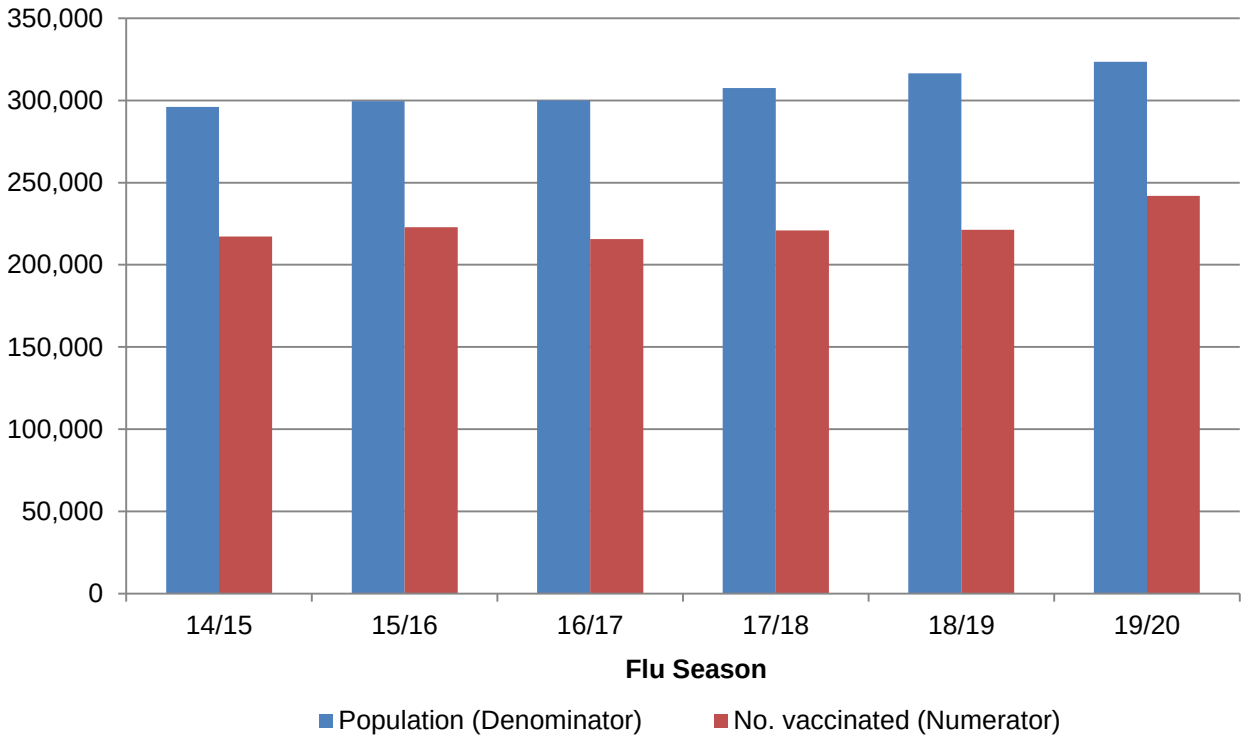

Figure 15: Population of people aged 65 years and older and number vaccinated, 2014/15 to 2019/20

There was a percentage decrease of 7% in the numerator in those under 65 years in clinical "at risk" groups between 2014/15 and 2019/20, while there was a percentage increase of 13% in denominator for this target group during the same period (Figures 12 and 16). Uptake between 2018/19 and 2019/20 increased from 52.4% to 58.9%.

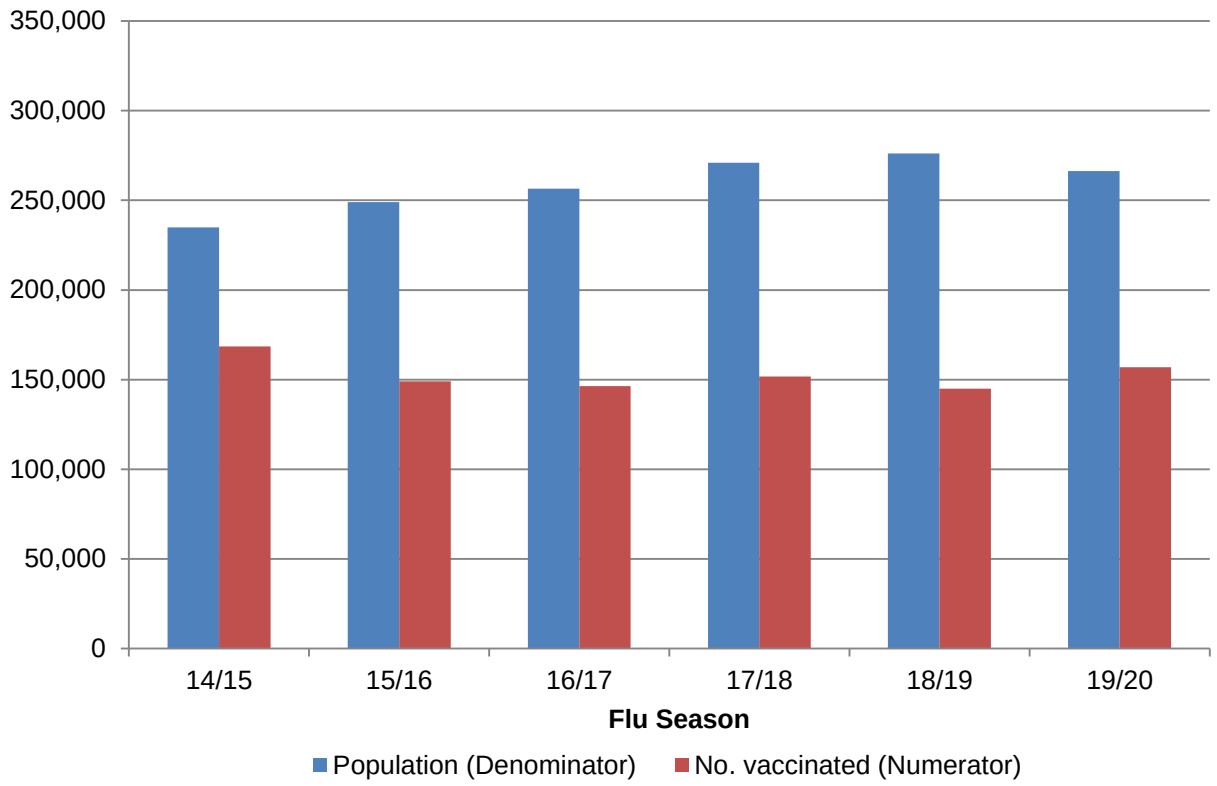

Figure 16: Population of people aged under 65 years in clinical "at risk" groups and number vaccinated, 2014/15 to 2019/20

HSCT frontline HSCW programme

The 2019/20 end of season influenza vaccine uptake was 36.8% in frontline HSCWs, up from 35.4% in 2018/19 (Figure 17). Uptake in frontline HCWs (excluding social care workers), increased from 39.5% in 2018/19 to 41.2% in 2019/20, and for social care workers (SCWs) increased slightly from 22.5% to 22.8% (Figure 17). This separation of frontline HSCWs allows greater comparability with other devolved administrations as unlike the rest of the UK, Northern Ireland collects and includes information on SCWs in frontline HSCW uptake rates. This season also marked the first time that the vaccine uptake targets differed between frontline HCWs (50%) and SCWs (40%).

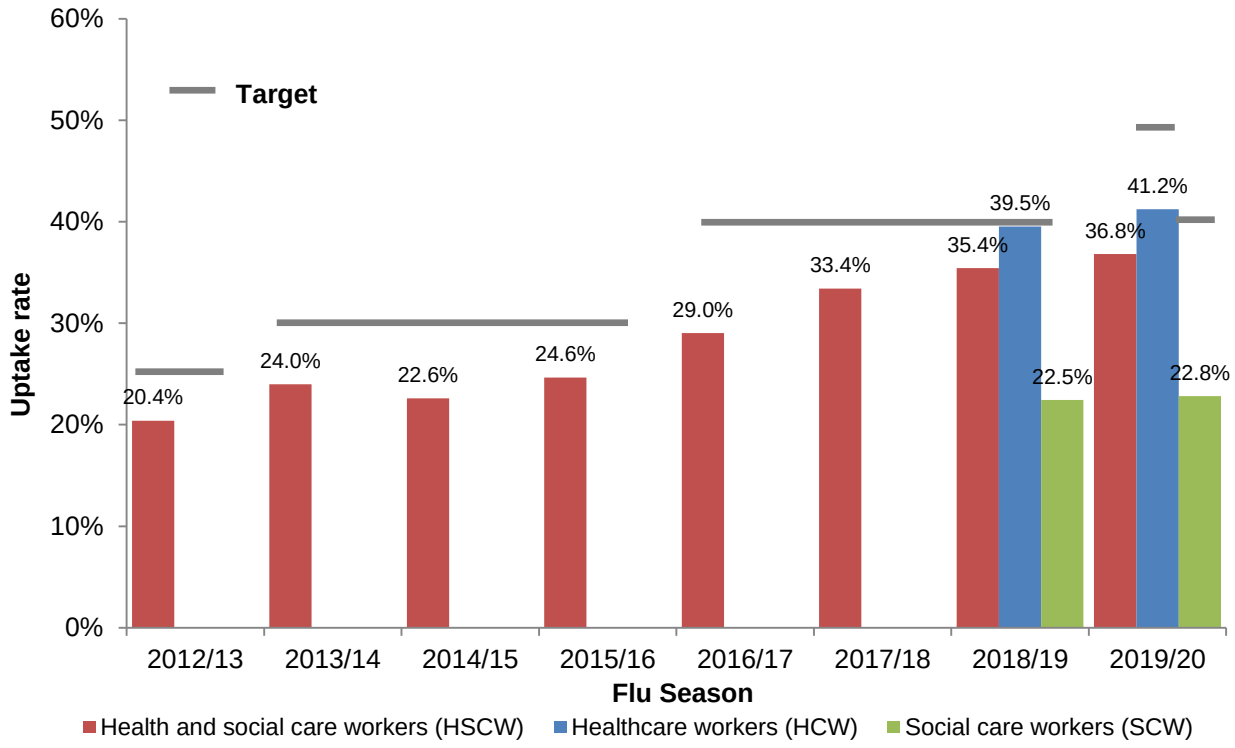

Figure 17: Influenza vaccine uptake in frontline health and social care workers 2012/13 to 2019/20

Vaccine uptake in 2019/20 was highest in pharmacists (65.2%; up from 57.2% in 2018/19), whilst low uptake was observed in trust employed social care workers (19.6%, similar to 2018/19) (Figure 18).

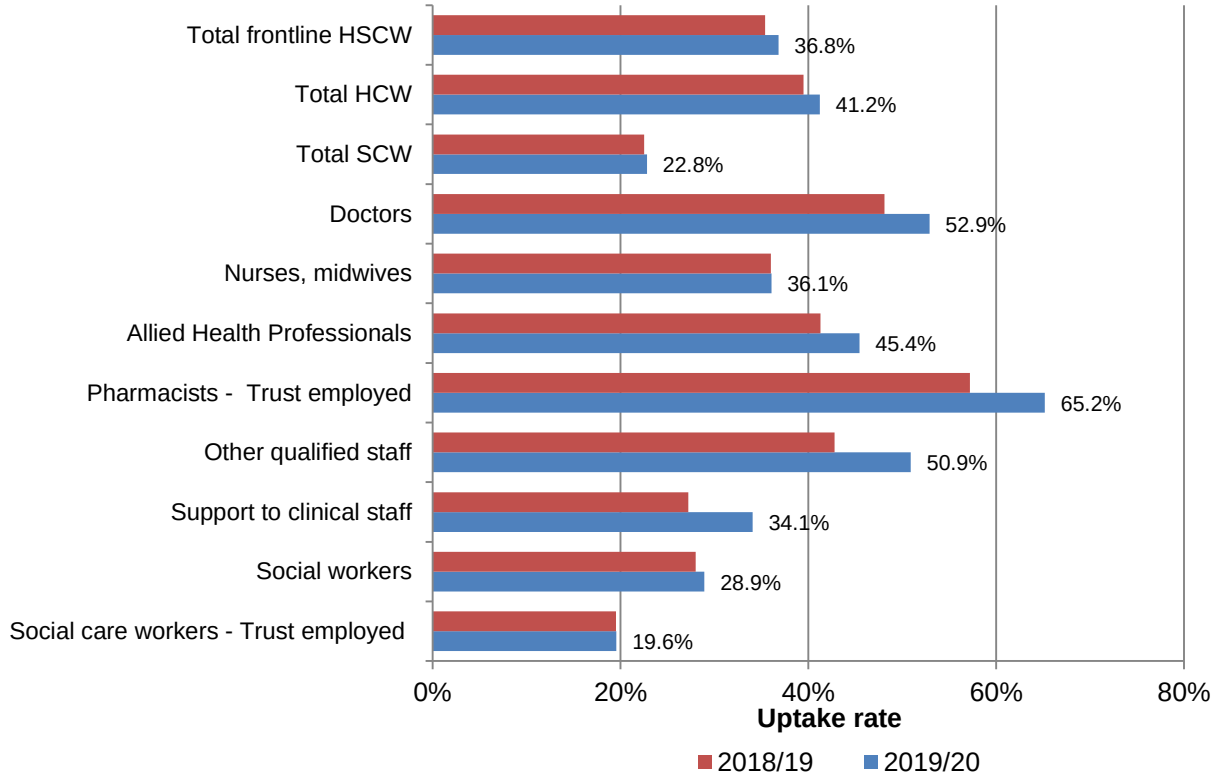

Figure 18: Influenza vaccine uptake rates in frontline health and social care worker staff groups 2018/19 - 2019/20

Vaccine effectiveness

Influenza vaccine effectiveness (VE) was measured using a test-negative case control design through 5 primary care influenza sentinel swabbing surveillance schemes in England (2 schemes), Scotland, Wales and Northern Ireland adjusting for key confounders (aVE).

There is evidence of overall significant influenza VE in 2019/20, most notably against influenza A(H1N1)pdm09, but as seen in the past 2 seasons, there was reduced VE against influenza A(H3N2). The new cell-based quadrivalent influenza vaccine provided significant protection for those in the 18 to 64 year of age and non-significant protection in the 65+ year olds. The point estimates for VE against influenza A(H3N2) in 18 to 64 year olds for QIVc was notably higher than for egg-based quadrivalent influenza vaccine, though confidence intervals overlapped[6].

[6] Surveillance of influenza and other respiratory viruses in the UK: Winter 2019 to 2020. Available here: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/895233/Surveillance_Influenza_and_other_respiratory_viruses_in_the_UK_2019_to_2020_FINAL.pdf

Conclusion

A novel coronavirus emerged in China in December 2019. This virus was later named SARS-CoV-2 with the associated disease being named COVID-19. Surveillance of this virus in Northern Ireland began in early 2020, with the first cases being confirmed in late February 2020. Surveillance of COVID-19 in PHA continues with a monthly COVID-19 surveillance bulletin to summarise epidemiological trends. In the latter part of the influenza season SARS-CoV-2 impacted on various influenza indicators described in this report. Some indicators such as syndromic surveillance, outbreak reporting, and excess all-cause mortality increased dramatically in later weeks.

Moderate levels of influenza activity were seen in the community in Northern Ireland in 2019/20, with influenza A(H3) being the predominant virus circulating throughout the season. Peak influenza activity was seen early in the season. Increased activity among the surveillance systems and excess all-cause mortality was also seen towards the end of the season, and was associated with COVID-19 activity. More testing for influenza was performed in 2019/20 compared to previous seasons as funding was provided for local influenza testing to be performed by all four of the local HSCT laboratories. A medium impact of influenza on the health service was experienced, with the peak admissions of influenza to and ICU/HDU similar to those observed in 2018/19, though the peak was earlier and the predominant strain was influenza A(H3).

GP 'flu/FLI' consultation rates increased from pre-season levels in week 46, 2019 (November), rising from 6.9 to a peak of 29.2 per 100,000 population in week 49. This peak was reached much earlier than in previous seasons. The baseline MEM threshold[7] was exceeded for six weeks in total, again earlier than previous seasons but also later in the season due to COVID-19 activity.

Overall, the highest proportion positivity for all samples was observed in those aged 65 years and older (31%), with influenza A(H3) most frequently reported in this age group (84%). This

[7] Equal to or greater than 14.7 per 100,000

strain was the predominant strain across all age groups. Out of a total of 176 respiratory-related outbreaks notified to the PHA duty room this season, 161 occurred from week 11, 2020 onwards and were COVID-19 related. 15 Influenza/FLI outbreaks were notified to the PHA between weeks 44, 2019 and week 6, 2020, of which nine were laboratory confirmed (all influenza A).

Of the 67 laboratory confirmed influenza cases in ICU/HDU, the predominant strain this season was influenza A(H3). The median age of cases admitted to ICU/HDU was 57 years old (range <1 year to 86 years). The largest proportion of cases were reported in those aged 65 years and over (37%).

This season influenza vaccine uptake was higher in the majority of targeted cohorts compared to 2019/19. Notable exceptions were the nurses/midwives and SCWs. The importance of ensuring high uptake in targeted groups of the national influenza vaccination programme remains. Provisional vaccine effectiveness for the newly licensed cell-based quadrivalent inactivated vaccine was encouraging in the 18 to 64 years age group.

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Resources

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- Management of Seasonal Flu in Northern Ireland 2019/20. Available online:
- http://www.hscbusiness.hscni.net/pdf/Management%20of%20Seasonal%20Flu%20201920%20pt%202.pdf
- Seasonal Influenza Vaccination Programme 2019/20. Available online: https://www.health-ni.gov.uk/sites/default/files/publications/health/hss-md-20-2019.pdf
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