



# Seasonal influenza in Wales 2019/20

## Annual Report

# Summary

## The season

The 2019/20 influenza season in Wales was shorter, but more intense compared to the 2018/19 season. Surveillance indicators of circulation in the community began to increase from early December and by week 50 had exceeded the threshold to indicate seasonally expected levels of influenza circulation. The weekly sentinel GP consultation rate for patients with influenza-like illness (ILI) symptoms peaked two weeks later at 37.1 per 100,000 practice population. In total, the sentinel GP ILI consultation rate was above the threshold for seasonal activity for eight weeks, including five weeks at medium intensity.

There were fewer cases confirmed in A&E departments, hospital wards and intensive care units than in 2018/19 at 904, 694, and 59 respectively. There was also a smaller number of outbreaks confirmed as influenza reported to Public Health Wales, 26 in total before SARS-CoV2 began circulating, the majority of which were in care homes. Surveillance indicators of influenza in hospital patients first exceeded the baseline threshold and peaked at a similar time and intensity level to surveillance indicators in the community.

Influenza A(H1N1)pdm09 and A(H3N2) co-circulated throughout the 2019/20 season, with few influenza B detections. Genetic characterisation of influenza viruses from confirmed cases suggested that most A(H3N2) viruses sequenced in Wales fell into the 3C.3a clade and antigenically matched the 2019/20 seasonal influenza vaccine strain, however, the genetic variability in the 3C.2a1b viruses increased. Few A(H1N1)pdm09 viruses were sequenced in Wales this year, however increasing genetic variability was observed.

Care should be taken when comparing indicators for the 2019/20 influenza season to previous seasons due to the COVID-19 pandemic effecting Wales from March onwards. Testing in hospitals increased for all respiratory pathogens in weeks 11 and 12 before testing capacity was exceeded and fewer hospital patients received a full respiratory screen. There was an increase in the number of ARI outbreaks reported in care homes from week 12 onwards, most of which were reported as COVID-19.

## Vaccination uptake

More individuals in at-risk and recommended groups received influenza vaccination last season than ever before. In total, 876,062 people were recorded in general practice as being vaccinated, representing 28% of the population of Wales. The true number is likely to be higher as occupational and school-based vaccinations may not be included in this figure. In those aged 65 years and older, 69.4% were vaccinated (469,497 individuals), the highest ever uptake in this group. Uptake for clinical risk groups remained stable at 44.1% (197,481 individuals) this season, following a downward trend over several years. Uptake was highest in those with diabetes (58.8%) and lowest in those who are morbidly obese (34.8%).

All children aged two to 10 years were eligible for influenza vaccination again this year, 202,019 of whom were vaccinated. Uptake in two and three year olds increased to 50.7% and in four to 10 year olds remained stable at 69.9%. Coverage of influenza vaccination in pregnant women was the highest ever at

78.5%, as estimated in an annual point of delivery (post-natal) survey. In front-line NHS staff uptake increased to 58.9%, as it had in nine of the previous 10 years, to reach the highest ever uptake.

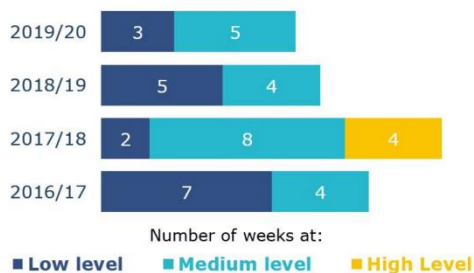
### Vaccine effectiveness

The provisional end of season estimate for overall effectiveness was 42.7% (95% CI 27.8% to 54.5%) against any laboratory-confirmed influenza for 2019/20 seasonal influenza vaccines in the UK. Against influenza A(H1N1)pdm09 specifically effectiveness was 53.5% (95% CI 20.1% to 72.9%), against influenza A(H3N2) it was 31.2% (95% CI 10.3% to 47.2%).

This is the second season that an adjuvanted inactivated trivalent influenza vaccine was available in the United Kingdom and recommended for patients aged 65 years and older, vaccine effectiveness within this group was estimated to be 16.2% (95% CI: -58.7%, 55.7%) against any influenza type. This is the first season that a cell based quadrivalent vaccine was licenced for use in 18 to 64 year olds in clinical risk groups, vaccine effectiveness in this group was 63.9% (95% CI: 26.9 %, 82.2%). Effectiveness of the Live Attenuated Intranasal Vaccine spray was estimated to be 45.4% (95% CI: 12.6%, 65.9%) in two to 17 year olds.

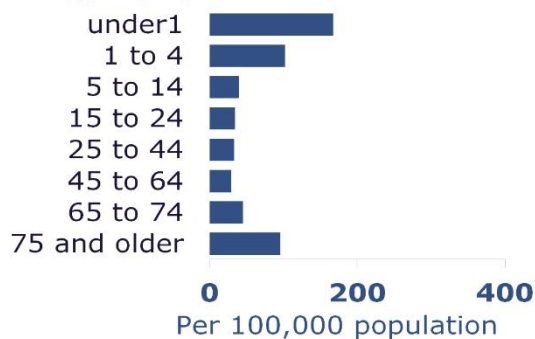
# INFLUENZA SEASON IN WALES 2019/20

## Dominant types of influenza A(H1N1) & A(H3N2)



2019/20 season was less intense than previous seasons

### Age of people in hospital with influenza



**26 Outbreaks\***  
 58% in care homes    23% in school settings

\*of influenza, ILI or ARI  
 To week 10 2020, before SARS-CoV2 circulation



**904**  
 patients confirmed with influenza in A&E

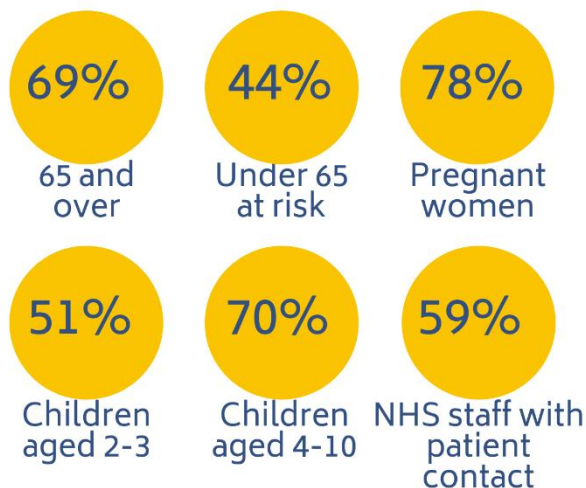


**694**  
 patients confirmed with influenza in hospital wards



**59**  
 patients confirmed with influenza in intensive care units

## Influenza vaccine uptake



The total number of people immunised against influenza is increasing each year



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## Key Findings

- During 2019/20 there were similar levels of influenza activity compared to the previous flu season. At eight weeks, the season was shorter than average (15 weeks) and peaked above the threshold for medium intensity levels for five weeks.
  - From week 40 2019 to week 15 2020, 1,657 patients were confirmed to have influenza in hospitals, 904 of whom were tested in accident and emergency departments and 59 of whom were in intensive care units.
  - A total of 26 outbreaks of ILI or acute respiratory illness (ARI) were reported between week 40 and week 10 (before SARS-CoV2 began circulating in Wales), with 58% of the outbreaks in residential homes, 23% in school settings, 12% in hospitals and 7% in other settings.
  - During the influenza season all-cause mortality exceed expected levels during week 1 2020. The highest levels of excess mortality since reporting began was observed from week 13 as SARS-CoV2 began circulating.
- Overall, influenza A(H3N2) was the dominant influenza virus, followed by influenza A(H1N1)pdm09. Small numbers of influenza B were also detected throughout the season.
- As at April 2020, 117 influenza A viruses had undergone genetic characterisation by whole genome sequencing (WGS), most A(H3N2) viruses sequenced in Wales fell into the 3C.3a clade. At the same time, the 3C.2a1b viruses also continued not only to circulate but also to increase in their genetic variability. Northern hemisphere influenza vaccines for 2019/20 were recommended to contain an A/Brisbane/02/2018 (H1N1)pdm09-like virus and an A/Kansas/14/2017 (H3N2)-like virus.
- The provisional end of season vaccine effectiveness estimate against laboratory confirmed influenza, was 42.7% (95% CI 27.8% to 54.5%). Estimated effectiveness of the new QIVc vaccine in the 18 to 64 age group was 63.9% (95% CI 26.9% to 82.2%) compared to 38.9% (95%CI -4.5% to 64.3%) for QIVe. The overall adjusted vaccine effectiveness for LAIV in those two to 17 years of age was 45.4% (95% CI 12.6% to 65.9%).
- The antiviral prescribing rate peaked at peaked at 3.2 prescriptions per 100,000 practice population during week 50 2019, lower than the 2018/19 peak of 5.5 prescriptions per 100,000 practice population. During the 2019/20 season in the UK, most viruses were fully susceptible and only small numbers of viruses were detected with reduced sensitivity to oseltamivir or zanamivir.
- During 2019/20 uptake of influenza vaccine in the eligible population increased in most groups compared to last season; however uptake in people aged six months to 64 years in a clinical risk group and older children immunised in school remained stable.
  - Influenza vaccine uptake in those aged 65 years and older in Wales was 69.4% (n=469,497), compared to 68.3% (n=457,200) last season and is the highest ever uptake in this age group.



- Uptake of influenza vaccine in people aged six months to 64 years in a clinical risk group was 44.1% (n=197,481), which is stable compared to 44.1% (n=192,352) last season, although lower than in previous seasons when morbidly obese patients were not included in the clinical risk group measure. This is the second time this group has included those who are morbidly obese and not otherwise at risk. Uptake among clinical risk groups was highest in patients with diabetes (58.8%) and lowest in the morbidly obese (34.8%).
  - Uptake of influenza vaccine in pregnant women was 78.5% (95% CI 74.2%-82.3%) (measured in an annual survey of women in major maternity units who gave birth during January 2019), an increase from 74.2% (95% CI 69.7% to 78.3%) last year and above the 75% vaccination target set by Welsh Government.
  - Uptake of influenza vaccine in people younger than 65 years and recorded as being a carer (including carers who are also in a clinical risk group) was 48.0% (n=16,589).
  - Uptake of influenza vaccine in children aged two and three years, mainly immunised in general practices, was 50.7% (n=34,504) compared to 49.4% (n=34,541) in 2018/19.
  - Uptake of influenza vaccine in children aged four to 10 years, immunised in schools, was 69.9% (n=165,575), which is stable compared to 69.9% (n=174,525) in 2018/19.
  - Uptake in NHS Wales staff with direct patient contact was 58.9% (n=36,190), compared to 55.5% (n=33,653) last season. Uptake in all NHS staff was 56.0% (n=50,649) during 2019/20, an increase compared to 53.4% (n=47,061) during 2018/19.
- The total number of individuals in Wales who were immunised against influenza was 876,062 for 2019/20, compared to an estimated 868,688 last season, based on Read codes in their general practice record. This represents 28% of the estimated total population of Wales.
  - Community pharmacies across Wales administered 64,085 influenza vaccinations through the NHS community pharmacy influenza service in 2019/20, an increase from 53,883 in 2018/19. This is an estimated 8.3% of all immunisations given to those aged 65 years and older and people aged six months to 64 years in a clinical risk group.



# 1. Background

## 1.1 Influenza and influenza-like illness surveillance indicators

Public Health Wales monitors and reports on influenza activity in Wales throughout the year using a number of indicators. Historically, the main indicator of influenza activity in Wales and in other UK countries has been the weekly rate of consultations in general practices for influenza-like illness (ILI), per 100,000 practice population. The general practice (GP) consultation rate for ILI in Wales is calculated using data provided from a network of sentinel practices, through Audit+ GP software. The sentinel GP network in Wales has provided data used for monitoring influenza activity since 1986, firstly using a paper based system and since 2009 using Audit+, an automated computer based data collection tool. The threshold at which the sentinel GP ILI consultation rate suggests that the influenza season has started is calculated using the Moving Epidemic Method (MEM). This method also produces thresholds to indicate medium, high and very high intensities of activity. In Wales, all influenza seasons from 2010/11 onwards are used to provide a historical comparison for MEM analysis.

More recently, a range of indicators from both primary and secondary care have been used in order to provide a wider picture of the burden of influenza and other seasonal respiratory illnesses. During 2019/20, the following influenza surveillance indicators were monitored each week in Wales:

### *Primary care and community indicators*

- GP consultations for ILI
- Sentinel GP virological surveillance to confirm influenza virus infection
- Respiratory related consultations with Out of Hours primary care doctors
- Influenza related calls to NHS Direct Wales

### *Secondary care indicators*

- Respiratory diagnostic test data for all hospital and non-sentinel GP patients
- Respiratory diagnostic data for patients attending an A&E, medical assessment, or urgent care unit
- Respiratory diagnostic test data for patients in intensive care units

### *Indicators from other settings*

- Outbreaks of ILI and other ARI in institutional settings e.g. hospitals, care homes, schools and nurseries, reported to Public Health Wales Health Protection Teams.

In addition, genetic characterisation of influenza viruses from sentinel GP samples and a proportion of hospital patients is carried out throughout the season using Whole Genome Sequencing (WGS).

## 1.2 Influenza immunisation

The aim of annual immunisation against influenza is to protect individuals at increased risk and communities from influenza, prevent spread within family, care and community settings and minimise the health impact of influenza on the population of Wales, and contribute to the reduction of antimicrobial resistance by preventing secondary bacterial infections [1].

In Wales in 2019/20, influenza immunisation was again offered free of charge to all people aged 65 years and older, people aged between six months and 64 years in clinical risk groups (chronic respiratory disease, chronic heart disease, chronic renal disease, chronic liver disease, chronic neurological conditions, diabetes mellitus, immunosuppression, asplenia/ dysfunction of the spleen, and adults who are category III obese (have a BMI of 40 or greater), all pregnant women, and residents of long-stay care homes. Vaccination was also offered to those who were a main carer for an elderly or disabled person whose welfare may be at risk if the carer fell ill, third sector carers, staff working in all adult residential care homes and nursing care homes, domiciliary carers (became eligible mid-season), members of voluntary organisations providing planned emergency first aid and community first responder scheme members [1].

In addition, influenza immunisation was also recommended for all other health and social care workers who are in direct contact with patients or service users. Care home staff with regular client contact and domiciliary carers may access free NHS flu vaccination via a community pharmacy but employing organisations are responsible for arranging immunisation of frontline health and social care workers in other settings.

The Welsh Government influenza immunisation uptake target was 75% for people aged 65 years and over, 55% for those aged between six months and 64 years in clinical risk groups and 60% for NHS Wales staff with direct patient contact [1].

The childhood influenza vaccination programme using live attenuated influenza vaccine (LAIV) nasal spray (Fluenz Tetra®) once again included children aged two to 10 years old (age on 31 August 2019) [1]. This is the second year that all primary school aged children have been eligible for LAIV following a five year roll out of the programme, completed one year ahead of schedule.

In most health boards influenza immunisations were delivered to the two and three year old age groups through general practices. Since the 2016/17 influenza season, three year olds in nursery classes attached to primary schools in Cwm Taf Morgannwg University Health Board (UHB) have been offered LAIV immunisation through school nursing services, in addition to being able to receive the vaccine through general practice. Vaccination for the primary school year groups (four to 10 year olds) was delivered by the school nursing services across Wales.

Public Health Wales monitor influenza immunisation uptake rates in general practices and report them weekly to GPs and health boards throughout the seasonal campaign and produce end of season influenza immunisation coverage statistics at a national, health board and local authority level. Immunisation statistics contained in this report record coverage in Welsh residents who are registered

with a GP in Wales as at 29<sup>th</sup> March 2020 and therefore are not a measure of all those who have been immunised during the course of the immunisation campaign, excluding those no longer registered.

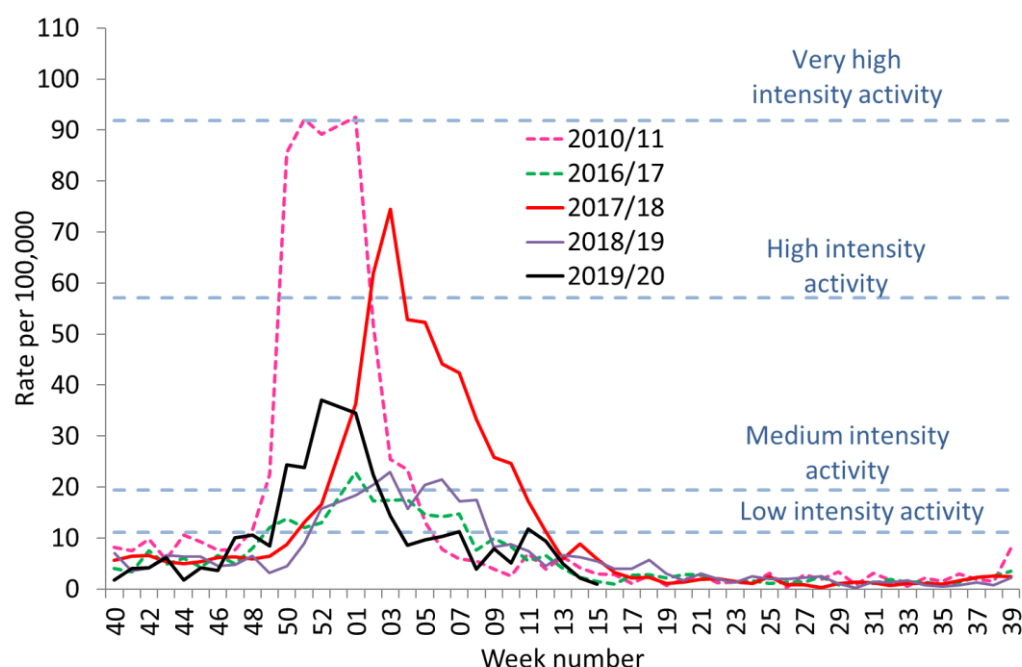
## 2. Influenza Surveillance in 2019/20

### 2.1 Community indicators - GP consultations for influenza-like illness (ILI)

A low intensity (or baseline) threshold level of 11.1 ILI consultations per 100,000 population was used as one of the indicators that influenza may be circulating in the community at low levels calculated using the Moving Epidemic Method (MEM) [2]. The sentinel GP ILI thresholds, for medium, high and very high intensity activity in the community were 19.4, 57.1 and 91.9 per 100,000 consultations respectively. Due to a technical issue affecting data submitted from sentinel practices utilising a specific brand of GP software, consultation rates for ILI in were calculated using a subset of data from 20 practices during week 47 2019 to week 03 2020. Due to this technical issue it was not possible to calculate the cumulative sentinel GP ILI rate for the whole 2019/20 season and provide a breakdown by age groups as has been done in previous reports.

The ILI baseline threshold level for low level activity was first exceeded in sentinel practices during week 50 of 2019 when levels went straight to medium intensity (Figure 2.1.1); this along with an increase in laboratory confirmed cases of influenza in the community, an increase in the number of confirmed cases of influenza in hospitals and the proportion of samples testing positive for influenza indicated the start of the influenza season in Wales. The sentinel GP ILI consultation rate returned to low levels in week 03 2020 and to baseline levels in week 04 2020. Activity also reached the low level threshold for short periods during weeks 07 and 11 of 2020. The peak sentinel GP ILI consultation rate was 37.1 per 100,000 practice population, during week 52 2019.

**Figure 2.1.1.** Public Health Wales sentinel GP weekly consultation rate for influenza-like illness 2019/20<sup>1</sup>



<sup>1</sup>Due to a technical issue affecting data submitted from sentinel practices utilising a specific brand of GP software, consultation rates for ILI in were calculated using a subset of data from 20 practices during week 47 2019 to week 03 2020.

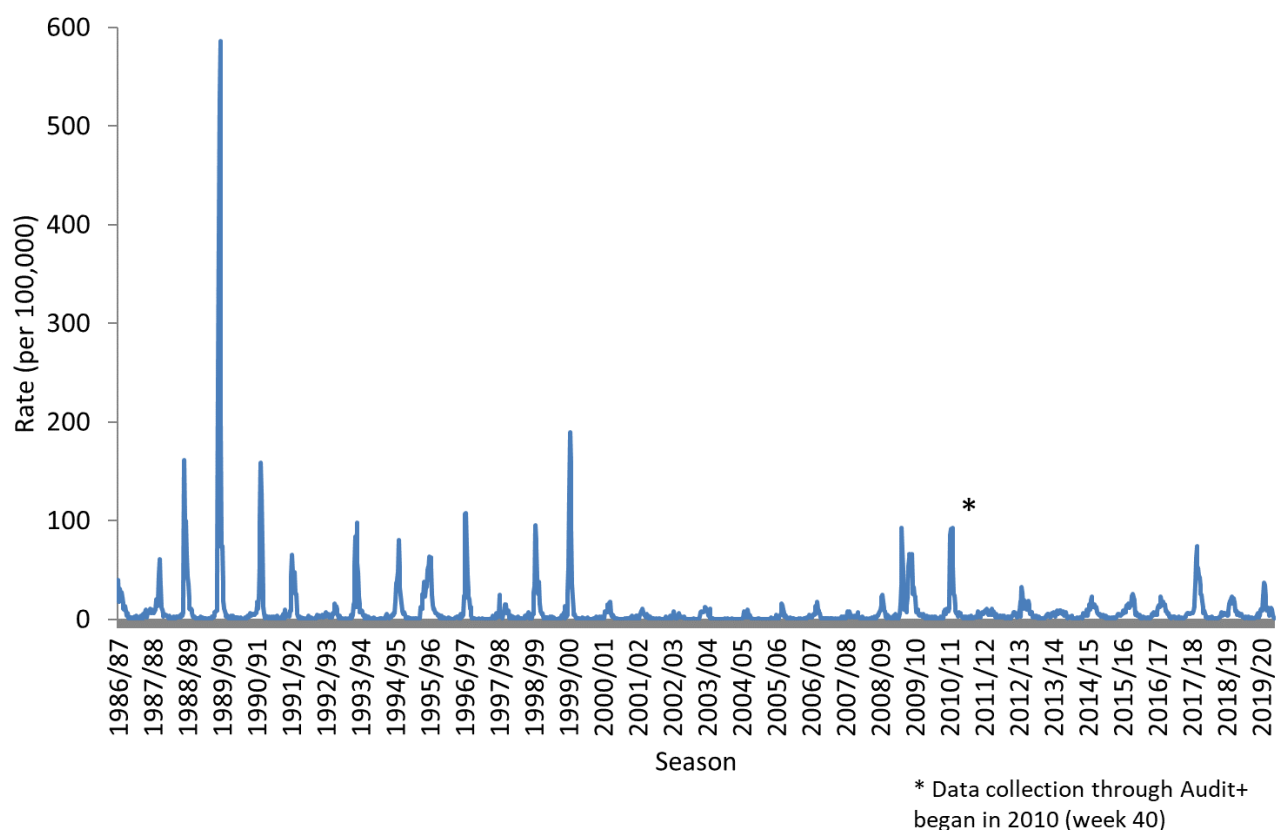
The sentinel GP consultation rate for ILI was above the threshold for low (baseline) intensity activity for a total of eight weeks in 2019/20, compared to nine weeks in 2018/19 (Table 2.1.1). Five of the eight weeks were above medium intensity levels of activity, compared to four weeks observed above medium intensity in 2018/19 (Table 2.1.1 and Figure 2.1.1).

**Table 2.1.1.** Comparison of sentinel GP consultation rates from 2012/13 to 2019/20

|  | Influenza Season |                             |         |         |         |         |         |         |
|--|------------------|-----------------------------|---------|---------|---------|---------|---------|---------|
|  | 2012/13          | 2013/14                     | 2014/15 | 2015/16 | 2016/17 | 2017/18 | 2018/19 | 2019/20 |
| Start of season (week of year)   | 50               | Threshold to indicate low   | 50      | 1       | 49      | 51      | 52      | 50      |
| Weeks sentinel GP ILI consultation rate above baseline threshold (n)     | 14               | level activity not exceeded | 13      | 14      | 11      | 14      | 9       | 8       |
| Weeks sentinel GP ILI consultation rate above medium activity levels (n) | Not available*   | Not available*              | 2       | 7       | 4       | 12      | 4       | 5       |
| Weeks sentinel GP ILI consultation rate above high activity levels (n)   | Not available*   | Not available*              | 0       | 0       | 0       | 4       | 0       | 0       |
| Peak sentinel GP ILI consultation rate                                   | 33.0             | 8.8                         | 23.2    | 25.8    | 22.8    | 74.5    | 22.9    | 37.1    |

\*Medium and high intensity thresholds were introduced in 2014/15.

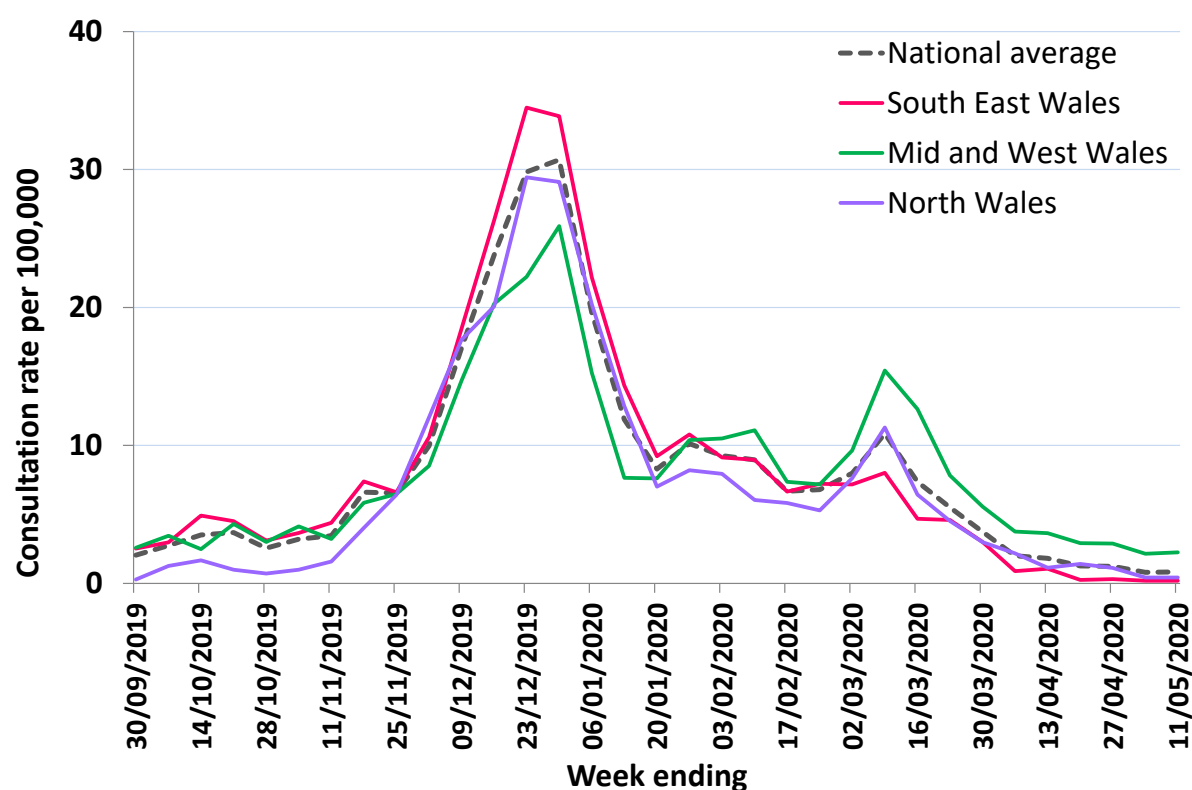
**Figure 2.1.2.** Public Health Wales sentinel GP weekly consultation rate for influenza-like illness 1986 to 2020



Regional differences in timing and intensity of the influenza season were assessed using data from all practices in Wales provided through Audit+ (Figure 2.1.3). Due to a technical issue affecting data submitted from sentinel practices utilising a specific brand of GP software, consultation rates for ILI were calculated using a subset of data from all practices during week 47 2019 to week 03 2020. GP ILI consultation rates followed a similar pattern in all regions.

- In South East Wales (Aneurin Bevan UHB, Cardiff and Vale UHB and Cwm Taf Morgannwg UHB areas), the peak in ILI consultation rate was seen during week 52 (ending 29<sup>th</sup> December), at 34.5 per 100,000 practice population.
- In Mid and West Wales (Swansea Bay UHB and Hywel Dda UHB areas, and Powys THB area) the peak in ILI consultation rate was seen during week 01 (ending 5<sup>th</sup> January), at 25.9 per 100,000 practice population.
- In North Wales (Betsi Cadwaladr UHB area) the peak in ILI consultation rate was seen during week 52 (ending 29<sup>th</sup> December), at 29.4 per 100,000 practice population.

**Figure 2.1.3.** Weekly consultation rates for influenza-like illness in regions of Wales, data from all available practices submitted through Audit+, compared to the national average, 2019/20



## 2.2 Community indicators - Virological surveillance in the community

Between 2019 week 40 and 2020 week 15 (30<sup>th</sup> September 2019 to 6<sup>th</sup> April 2020), there were 1,206 samples collected for virological testing by general practices in Wales. From this total, 336 samples were submitted by 26 sentinel GPs, a mean of 13 samples per participating practice. This is the third year that all sentinel GPs were asked to collect surveillance samples for an expanded number of clinical conditions, which include ARI, acute bronchitis, and bronchiolitis, in addition to ILI. Of the samples collected, 205 were clinically diagnosed with ILI (61.0%), 94 with ARI (28.0%) and eight with acute bronchitis (2.4%). No patients with samples collected were diagnosed with bronchiolitis and information was missing for 29 samples (8.6%).

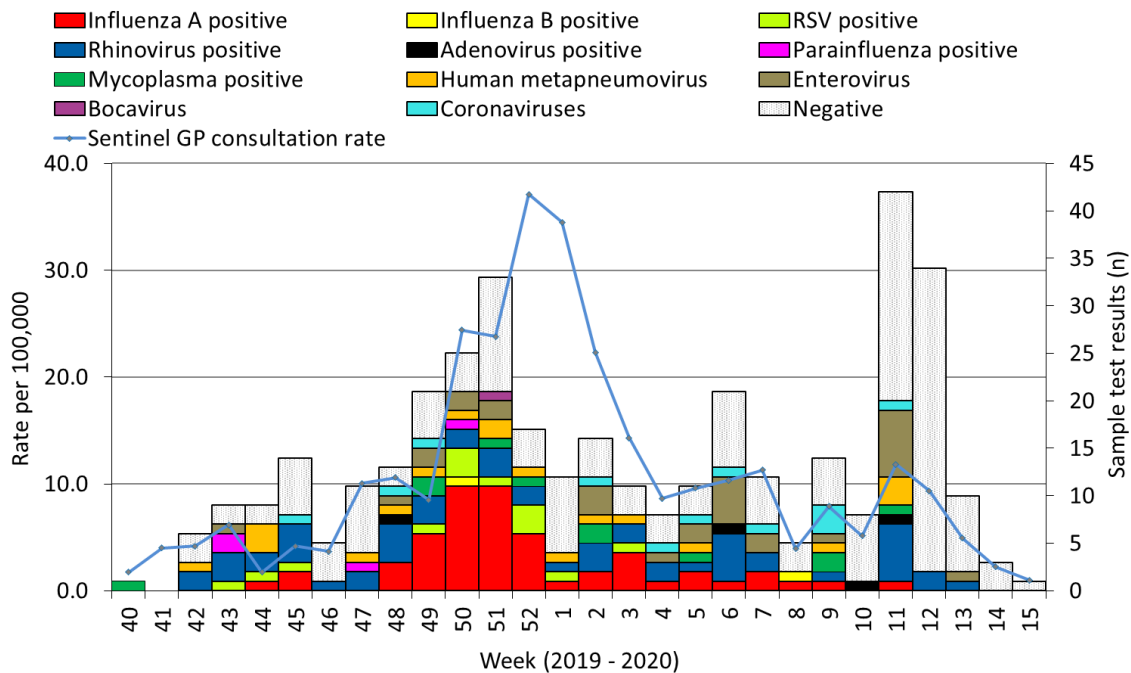
Of the 336 patient samples submitted, 99.4% (n=334) were tested. Of these, 17.4% (n=58) were positive for influenza. Of the samples testing positive for influenza, 77.6% (n=45) were influenza A(H3), 19.0% (n=11) were due to influenza A(H1N1) and two were influenza B (3.4%).

Surveillance samples are routinely tested for: influenza, RSV, adenovirus, *Mycoplasma pneumoniae*, rhinovirus, parainfluenza, human metapneumovirus, human bocavirus, seasonal coronaviruses, enterovirus D-68 and other enteroviruses. One or more other causes of seasonal respiratory infection were detected in 34.1% (n=114) of samples, and 49.7% (n=166) were negative for all routinely tested pathogens.

Sample submissions by sentinel GPs peaked in week 11 of 2020 (week ending 15<sup>th</sup> March 2020, 35 patient samples) (Figure 2.2.1). Influenza was first detected in sentinel samples during 2019 week 44, and was last detected in 2020 week 11. Throughout this time it was detected weekly in smaller numbers. The number of influenza positive samples peaked during 2019 week 50 and 51 (11 positive samples in both weeks, of those 19 were positive for influenza A(H3) and three were positive for influenza A(H1N1)).

Influenza A(H1N1) was first detected during 2019 week 45 (one patient sample) and was detected sporadically in small numbers until week 11 2020. Influenza A(H3) was first detected in 2019 week 44 and was detected in most weeks until week 07 2020. Two influenza B positive samples were confirmed, one in 2019 week 50 and one in 2020 week 08.

**Figure 2.2.1.** Results from Public Health Wales GP sentinel virological surveillance for influenza and other seasonal causes of respiratory illness by Week, 2019/20. The sentinel GP ILI consultation rate per 100,000 is also included.





**Table 2.2.1.** Samples from sentinel GP patients with influenza-like symptoms testing positive for influenza and other respiratory pathogens between 2019 week 40 and 2020 week 15 by age group<sup>1,2</sup>

| Age Group    | Samples Tested |             | All Influenza |             | Other      |             | Negative   |             |
|--------------|----------------|-------------|---------------|-------------|------------|-------------|------------|-------------|
|              | n              | %           | n             | %           | n          | %           | n          | %           |
| Under 1      | 1              | 0.3%        | 0             | 0.0%        | 0          | 0.0%        | 1          | 0.6%        |
| 1 to 4       | 9              | 2.7%        | 4             | 6.9%        | 5          | 4.4%        | 1          | 0.6%        |
| 5 to 9       | 12             | 3.6%        | 3             | 5.2%        | 3          | 2.6%        | 6          | 3.6%        |
| 10 to 14     | 18             | 5.4%        | 6             | 10.3%       | 4          | 3.5%        | 8          | 4.8%        |
| 15 to 24     | 51             | 15.3%       | 9             | 15.5%       | 20         | 17.5%       | 22         | 13.3%       |
| 25 to 34     | 43             | 12.9%       | 10            | 17.2%       | 17         | 14.9%       | 17         | 10.2%       |
| 35 to 44     | 59             | 17.7%       | 6             | 10.3%       | 14         | 12.3%       | 40         | 24.1%       |
| 45 to 64     | 94             | 28.1%       | 16            | 27.6%       | 26         | 22.8%       | 52         | 31.3%       |
| 65 to 74     | 26             | 7.8%        | 3             | 5.2%        | 16         | 14.0%       | 8          | 4.8%        |
| 75 and older | 21             | 6.3%        | 1             | 1.7%        | 9          | 7.9%        | 11         | 6.6%        |
| <b>Total</b> | <b>334</b>     | <b>100%</b> | <b>58</b>     | <b>100%</b> | <b>114</b> | <b>100%</b> | <b>166</b> | <b>100%</b> |

<sup>1</sup> There were 30 samples from sentinel GP patients which tested positive for two respiratory pathogens and four samples which tested positive for three respiratory pathogens. Of these, four samples from sentinel GP patients tested positive for influenza and one or more additional seasonal respiratory pathogens.

<sup>2</sup> Surveillance samples are routinely tested for: influenza, RSV, adenovirus, *Mycoplasma pneumoniae*, rhinovirus, parainfluenza, human metapneumovirus, human bocavirus, seasonal coronaviruses, enterovirus D-68 and other enteroviruses.

Of all symptomatic patients who visited a sentinel practice and were tested for seasonal respiratory pathogens between week 40 2019 and week 15 2020, 28.1% were aged 45 to 64 years (Table 2.2.1), the median age of patients tested was 39 years. Of the sentinel GP patients testing positive for influenza, 27.6% were aged 45 to 64 years, and the median patient age was 29 years.

## 2.3 Hospital indicators - Virological surveillance

From 2019 week 40 to 2020 week 15, there were 22,044 samples collected and tested by Public Health Wales Microbiology services from 10,772 hospital patients presenting with symptoms of respiratory infection (Table 2.3.1). In addition to existing PCR diagnostic services, during 2018-19 a rapid test service for influenza was rolled out in most health boards. During the 2019-20 season, this service was expanded and was available across all health boards. The rapid service was intended to help guide patient pathways and improve timeliness of decisions on continuation of antiviral treatments. Samples collected could be tested using one of three systems, differing in their abilities to provide influenza sub-type information and to detect non-influenza pathogens.

Two of the systems used were PCR screens for influenza, RSV, adenovirus, *Mycoplasma pneumoniae*, rhinovirus, enterovirus, parainfluenza, human metapneumovirus, and seasonal coronavirus, and where possible, influenza A results are subtyped. The third system in use only screened for influenza A, influenza B and RSV, and influenza A results are not subtyped. Patients may have more than one sample collected for an episode of respiratory illness and these samples could be tested using different test systems; patients who only had one sample collected and tested using the third platform are not included in the denominator for the number of patients screened for other pathogens included in respiratory surveillance.

Of the 10,772 testing episodes in hospital patients that had a sample collected from a hospital setting, all were tested for influenza and RSV, with 94.0% (10,128/10,772) tested for all respiratory pathogens and 6.0% (n=644/10,772) tested for influenza and RSV only.

The weekly number of patients tested for seasonal respiratory illness peaked during week 52 of 2019 (week ending 29<sup>th</sup> December 2019, n=789). Of the samples from patients in hospital, 50.5% (n=5,434) were collected from patients in general inpatient and outpatient wards, 39.8% (n=4,282) were collected from patients attending A&E settings or urgent care wards and 9.8% (n=1,056) were collected from patients admitted to an intensive care ward.

Of the hospital patients tested, 15.4% (n=1,657) were confirmed with influenza, of whom 94.7% (n=1,569) had influenza A only, 85 patients had influenza B only and three had dual infections of both influenza A and influenza B (Table 2.3.1). Of the samples testing positive for influenza A, 67.3% (n=1,059) were influenza A(H3N2), 15.8% (n=248) were influenza A(H1N1)pdm09 and 16.9% (n=265) were untyped.

The most commonly detected non-influenza respiratory pathogens were rhinovirus (14.9%, 1,511/10,128) and RSV (11.3%, 1,217/10,772).

Other detected causes of respiratory infection included: human metapneumovirus (5.6%, 562/10,128), seasonal coronavirus (5.3%, 533/10,128), adenovirus (5.0%, 508/10,128), parainfluenza (3.2%, 319/10,128), enterovirus (3.2%, 324/10,128), and *Mycoplasma pneumoniae* (1.5%, 153/10,128). Fifty-four percent (5,478/10,128) of patients tested for all nine routinely screened pathogens were negative, and from the patients that were only tested for influenza and RSV, 33.2% (214/644) were negative for both pathogens.

**Table 2.3.1. Results from patients tested for influenza and RSV in Wales between 2019 week 40 and 2020 week 15, by sample location<sup>2,3</sup>**

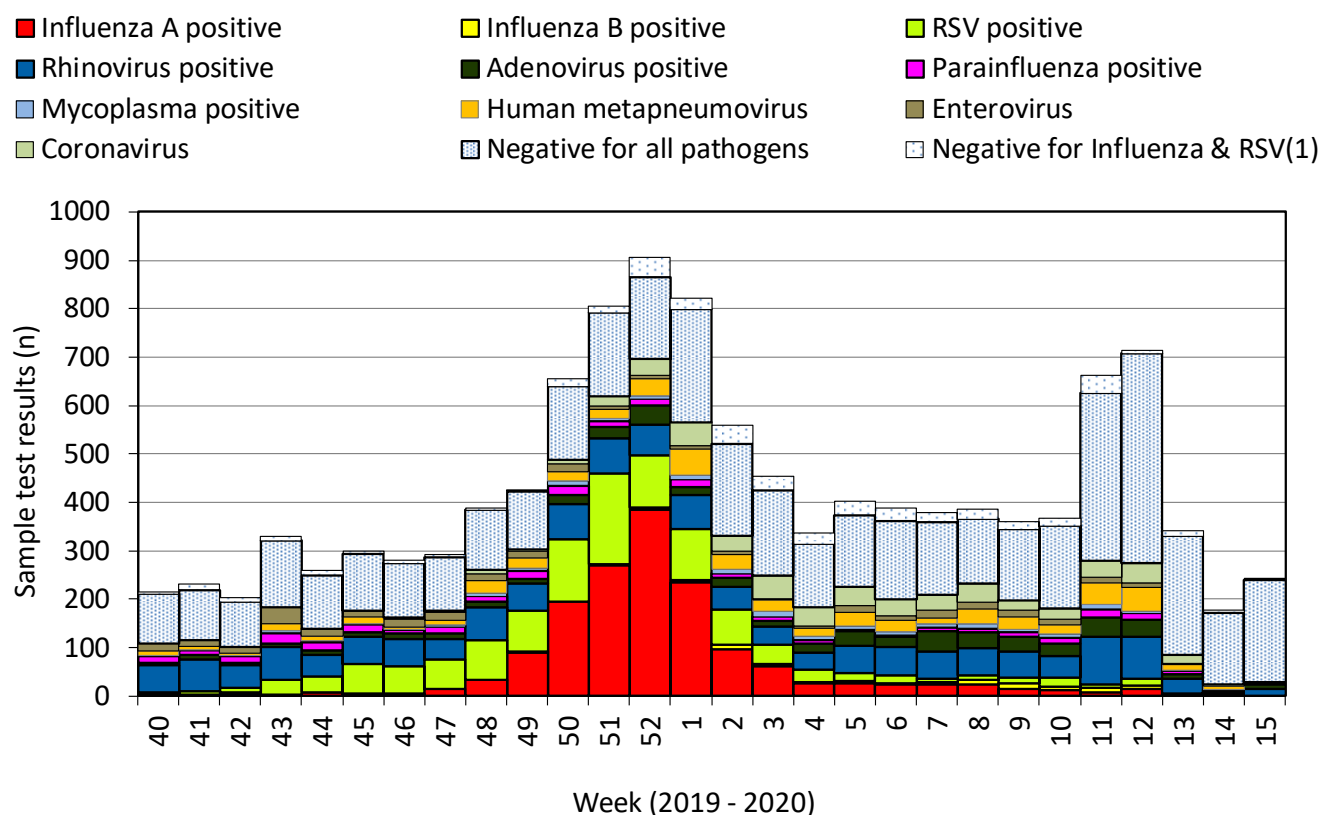
| Sample Location                | Samples tested |              | Influenza A |              | Influenza B |              | RSV         |              | Negative <sup>1</sup> |              |
|--------------------------------|----------------|--------------|-------------|--------------|-------------|--------------|-------------|--------------|-----------------------|--------------|
|                                | n              | %            | n           | %            | n           | %            | n           | %            | n                     | %            |
| Sentinel Practice              | 334            | 2.6%         | 56          | 3.0%         | 2           | 1.8%         | 13          | 1.0%         | 166                   | 2.7%         |
| Non-sentinel Practice          | 872            | 6.7%         | 142         | 7.7%         | 14          | 12.6%        | 45          | 3.4%         | 406                   | 6.5%         |
| <b>Total Community Samples</b> | <b>1206</b>    | <b>9.3%</b>  | <b>198</b>  | <b>10.7%</b> | <b>16</b>   | <b>14.4%</b> | <b>58</b>   | <b>4.3%</b>  | <b>572</b>            | <b>9.2%</b>  |
| Hospital - General             | 5434           | 41.7%        | 656         | 35.5%        | 40          | 36.0%        | 717         | 53.6%        | 2363                  | 37.9%        |
| Hospital - A&E                 | 4282           | 32.8%        | 857         | 46.3%        | 48          | 43.2%        | 397         | 29.7%        | 2067                  | 33.1%        |
| Hospital - ITU                 | 1056           | 8.1%         | 59          | 3.2%         | 0           | 0.0%         | 103         | 7.7%         | 650                   | 10.4%        |
| <b>Total Hospital Samples</b>  | <b>10772</b>   | <b>82.6%</b> | <b>1572</b> | <b>85.0%</b> | <b>88</b>   | <b>79.3%</b> | <b>1217</b> | <b>91.0%</b> | <b>5080</b>           | <b>81.4%</b> |
| Other / Unknown locations      | 1059           | 8.1%         | 79          | 4.3%         | 7           | 6.3%         | 63          | 4.7%         | 588                   | 9.4%         |
| <b>Total</b>                   | <b>13037</b>   | <b>100%</b>  | <b>1849</b> | <b>100%</b>  | <b>111</b>  | <b>100%</b>  | <b>1338</b> | <b>100%</b>  | <b>6240</b>           | <b>100%</b>  |

<sup>1</sup>This measure represents the number of samples negative for all pathogens routinely tested for. A small proportion of samples included have only been tested for influenza and RSV.

<sup>2</sup>Samples positive and negative will not add up to total screens as some individuals tested positive for more than one pathogen.

<sup>3</sup>Surveillance samples tested using a full PCR test are routinely tested for: influenza, RSV, adenovirus, *Mycoplasma pneumoniae*, rhinovirus, enterovirus, parainfluenza and human metapneumovirus.

**Figure 2.3.1.** Results from respiratory tests carried out on samples from patients in hospitals in Wales by Week, 2019/20



<sup>1</sup> A small proportion of samples have only been tested for influenza and RSV.

Low numbers of influenza cases were confirmed from week 40 to week 46 2019 (Figure 2.3.1). The number of samples testing positive for influenza began to increase from 2019 week 47, and the proportion of samples tested which were positive for influenza reached levels consistent with seasonal circulation in week 48. Influenza positivity in hospital samples exceeded 9% (the threshold suggestive of seasonal circulation) from 2019 week 48 and remained above this level through 2020 week 04. The proportion of samples testing positive for influenza peaked in week 52 ( $n=388/789$ , 49.2% positivity). The peak week for sample test positivity for RSV was week 51 of 2019 (week ending 22 December 2019,  $188/678$ , 27.7%).

**Table 2.3.2.** Patient samples from all hospital locations testing positive for influenza and RSV between 2019 week 40 and 2020 week 15 by age group<sup>2,3</sup>

| Age Group    | Samples tested |             | All Influenza |             | RSV         |             | Negative <sup>1</sup> |             |
|--------------|----------------|-------------|---------------|-------------|-------------|-------------|-----------------------|-------------|
|              | n              | %           | n             | %           | n           | %           | n                     | %           |
| Under 1      | 1239           | 11.5%       | 62            | 3.7%        | 430         | 35.3%       | 297                   | 6.4%        |
| 1 to 4       | 1061           | 9.9%        | 161           | 9.7%        | 206         | 16.9%       | 159                   | 3.4%        |
| 5 to 9       | 405            | 3.8%        | 93            | 5.6%        | 36          | 3.0%        | 115                   | 2.5%        |
| 10 to 14     | 227            | 2.1%        | 66            | 4.0%        | 17          | 1.4%        | 77                    | 1.7%        |
| 15 to 24     | 585            | 5.4%        | 143           | 8.6%        | 28          | 2.3%        | 240                   | 5.2%        |
| 25 to 34     | 832            | 7.7%        | 196           | 11.8%       | 43          | 3.5%        | 327                   | 7.0%        |
| 35 to 44     | 661            | 6.1%        | 114           | 6.9%        | 34          | 2.8%        | 314                   | 6.8%        |
| 45 to 64     | 2087           | 19.4%       | 286           | 17.3%       | 130         | 10.7%       | 1144                  | 24.6%       |
| 65 to 74     | 1516           | 14.1%       | 200           | 12.1%       | 119         | 9.8%        | 835                   | 18.0%       |
| 75 and older | 2157           | 20.0%       | 336           | 20.3%       | 174         | 14.3%       | 1140                  | 24.5%       |
| <b>Total</b> | <b>10770</b>   | <b>100%</b> | <b>1657</b>   | <b>100%</b> | <b>1217</b> | <b>100%</b> | <b>4648</b>           | <b>100%</b> |

<sup>1</sup>This measure represents the number of samples negative for all pathogens routinely tested for. A small proportion of samples included have only been tested for influenza and RSV.

<sup>2</sup>Samples positive and negative will not add up to total screens as some individuals tested positive for more than one pathogen. There are two samples from patients with unknown age.

<sup>3</sup>Samples are routinely tested for: influenza, RSV, adenovirus, *Mycoplasma pneumoniae*, rhinovirus, enterovirus, parainfluenza and human metapneumovirus.

**Table 2.3.3a.** Patients testing positive for influenza in Wales, between 2019 week 40 and 2020 week 15, by hospital location and age group

| Age Group    | General In & Out<br>Patient Wards |             | Urgent Care &<br>A/E Wards |             | ICU Wards |             |
|--------------|-----------------------------------|-------------|----------------------------|-------------|-----------|-------------|
|              | n                                 | %           | n                          | %           | n         | %           |
| Under 1      | 49                                | 7.1%        | 10                         | 1.1%        | 3         | 5.1%        |
| 1 to 4       | 112                               | 16.1%       | 48                         | 5.3%        | 1         | 1.7%        |
| 5 to 9       | 65                                | 9.4%        | 27                         | 3.0%        | 1         | 1.7%        |
| 10 to 14     | 46                                | 6.6%        | 19                         | 2.1%        | 1         | 1.7%        |
| 15 to 24     | 38                                | 5.5%        | 103                        | 11.4%       | 2         | 3.4%        |
| 25 to 34     | 50                                | 7.2%        | 145                        | 16.0%       | 1         | 1.7%        |
| 35 to 44     | 32                                | 4.6%        | 78                         | 8.6%        | 4         | 6.8%        |
| 45 to 64     | 82                                | 11.8%       | 182                        | 20.1%       | 22        | 37.3%       |
| 65 to 74     | 76                                | 11.0%       | 112                        | 12.4%       | 12        | 20.3%       |
| 75 and older | 144                               | 20.7%       | 180                        | 19.9%       | 12        | 20.3%       |
| <b>Total</b> | <b>694</b>                        | <b>100%</b> | <b>904</b>                 | <b>100%</b> | <b>59</b> | <b>100%</b> |

**Table 2.3.3b.** *Patients testing positive for RSV in Wales, between 2019 week 40 and 2020 week 15, by hospital location and age group*

| Age Group    | General In & Out Patient Wards |             | Urgent Care & A/E Wards |             | ICU Wards  |             |
|--------------|--------------------------------|-------------|-------------------------|-------------|------------|-------------|
|              | n                              | %           | n                       | %           | n          | %           |
| Under 1      | 310                            | 43.2%       | 75                      | 18.9%       | 45         | 43.7%       |
| 1 to 4       | 159                            | 22.2%       | 42                      | 10.6%       | 5          | 4.9%        |
| 5 to 9       | 29                             | 4.0%        | 5                       | 1.3%        | 2          | 1.9%        |
| 10 to 14     | 10                             | 1.4%        | 6                       | 1.5%        | 1          | 1.0%        |
| 15 to 24     | 7                              | 1.0%        | 17                      | 4.3%        | 4          | 3.9%        |
| 25 to 34     | 13                             | 1.8%        | 28                      | 7.1%        | 2          | 1.9%        |
| 35 to 44     | 9                              | 1.3%        | 24                      | 6.0%        | 1          | 1.0%        |
| 45 to 64     | 50                             | 7.0%        | 69                      | 17.4%       | 11         | 10.7%       |
| 65 to 74     | 45                             | 6.3%        | 55                      | 13.9%       | 19         | 18.4%       |
| 75 and older | 85                             | 11.9%       | 76                      | 19.1%       | 13         | 12.6%       |
| <b>Total</b> | <b>717</b>                     | <b>100%</b> | <b>397</b>              | <b>100%</b> | <b>103</b> | <b>100%</b> |

Of all the symptomatic patients in hospitals who were tested for seasonal respiratory pathogens between 2019 week 40 and 2020 week 15, 20.0% were aged 75 or older and 19.4% were 45 to 64 years (Table 2.3.2), the median age of patients tested was 50 years.

For those testing positive for influenza, 20.3% were aged 75 years and older and 17.3% were aged 45 to 64 years; the median patient age was 44 years. The median age of patients testing positive for RSV was 40 months, 35.3% of all these patients were younger than 12 months of age, 16.9% were aged one to four years, and 14.3% were 75 years and older (Table 2.3.2).

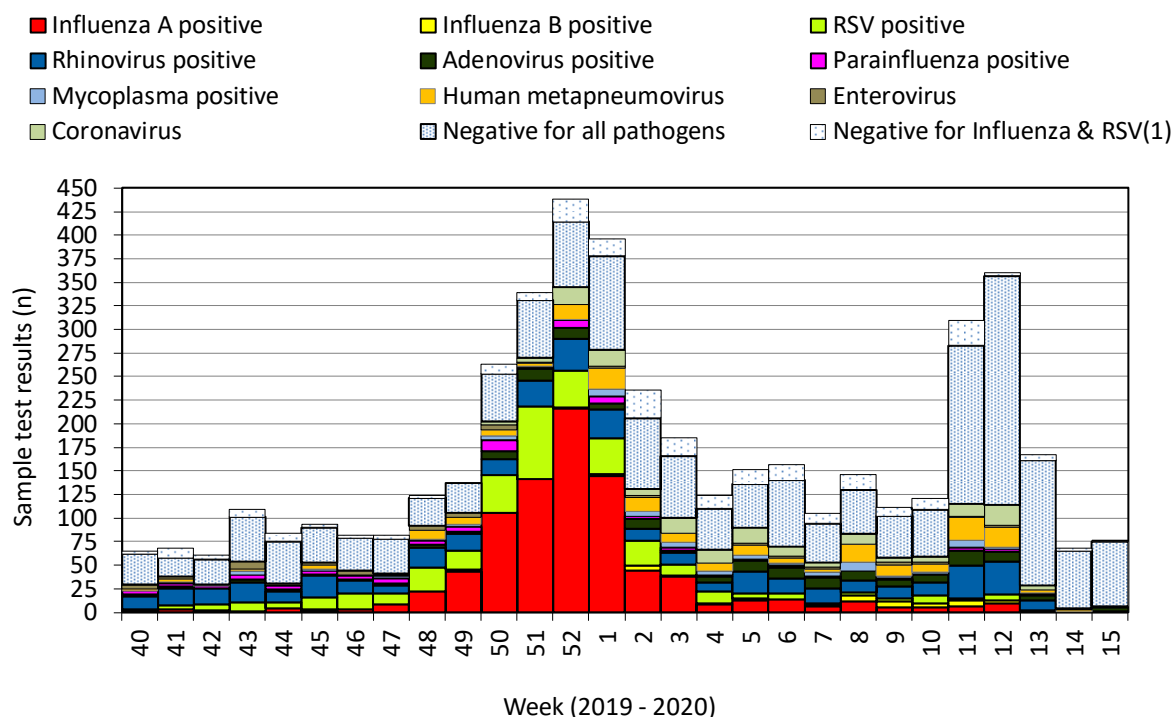
Patients who were aged 75 years and older accounted for the highest proportion of confirmed influenza cases in general inpatient and outpatient hospital wards (20.7%). Patients who were aged 75 years and older and patients aged 45 to 64 years of age accounted for the highest proportion of confirmed influenza cases in patients attending an accident & emergency or urgent care ward (19.9% and 20.1% respectively). Patients aged 45 to 64 years account for the highest proportion of confirmed influenza cases in those who were tested while in an intensive care ward (37.3%). (Table 2.3.3a).

Children who were aged under one year and children aged one to four years accounted for the highest proportion of confirmed cases of RSV in general hospital wards (43.2% and 22.2% respectively). Adults aged 75 and older, as well as children aged under one accounted for the highest proportion of confirmed RSV cases in patients attending an A&E or urgent care ward (19.1% and 18.9% respectively). Children aged under one, adults aged 65 to 74 years and 75 years or older accounted for the highest proportion of confirmed RSV cases in patients who were tested while in an intensive care hospital ward (43.7%, 18.4% and 12.6% respectively) (Table 2.3.3b).

## 2.4 Hospital indicators - patients in accident and emergency departments

During the period 2019 week 40 to 2020 week 15, 4,282 patients attending an accident & emergency or urgent care ward (A&E ward) with symptoms of an acute respiratory infection had samples collected and were tested. Of the 4,282 patients attending an A&E ward that had a sample collected, all were tested for influenza and RSV, 90.0% (n=3,856/4,282) were tested for all respiratory pathogens included for surveillance purposes and 10.0% (n=426/4,282) were only tested for influenza and RSV.

**Figure 2.4.1.** Results from respiratory tests carried out on samples from patients in A&E or urgent care units in Wales by Week, 2019/20



<sup>1</sup> A small proportion of samples included have only been tested for influenza and RSV.

Influenza was first detected in patients attending A&E wards from 2019 week 40 (week ending 6<sup>th</sup> October 2019), and was detected every week through to 2020 week 12. The peak in influenza positive samples was 2019 week 52 (week ending 29 December 2019; 392 patient samples; 143 influenza A(H3), 22 influenza A(H1N1), 51 influenza A not subtyped) and 1 influenza B.

From the A&E patients tested, 21.1% (n=904) were confirmed with influenza, of whom 94.7% (n=856) were positive for influenza A only, 47 patients had influenza B only, and one had dual infections of both influenza A and influenza B. Subtyping of influenza A positive samples breaks down as follows: 65.5% (n=561) were influenza A(H3), 15.4% (n=132) were influenza A(H1N1), and 91.1% (n=164) were not subtyped.

The most commonly detected non-influenza respiratory pathogens from the A&E patients tested were rhinovirus (12.6%, n= 485/3,856), RSV (9.3%, n=397/4,282), human metapneumovirus (5.7% n= 218/3,856) and seasonal coronavirus (4.6%, n=179/3,856). Other detected causes of respiratory

infection included: adenovirus (4.5%, n=172/3,856), parainfluenza (2.5%, n=97/3,856), *Mycoplasma pneumoniae* (2.1%, n=79/3,856) and enterovirus (1.6%, n=60/3,856). Forty-six percent of the 3,856 A&E patient samples receiving a full PCR screen tested negative for all nine pathogens, and from the patients that were only tested for influenza and RSV, 68.5% (292/426) were negative for both pathogens.

**Table 2.4.1.** *Samples from patients in A&E testing positive for influenza and RSV between 2019 week 40 and 2020 week 15 by age group<sup>2,3</sup>*

| Age Group    | Samples Tested |             | Influenza A |             | Influenza B |           | RSV        |             | Negative <sup>1</sup> |             |
|--------------|----------------|-------------|-------------|-------------|-------------|-----------|------------|-------------|-----------------------|-------------|
|              | n              | %           | n           | %           | n           | %         | n          | %           | n                     | %           |
| Under 1      | 187            | 4.4%        | 9           | 1.1%        | 1           | 2.1%      | 75         | 18.9%       | 29                    | 1.4%        |
| 1 to 4       | 209            | 4.9%        | 47          | 5.5%        | 1           | 2.1%      | 42         | 10.6%       | 32                    | 1.5%        |
| 5 to 9       | 78             | 1.8%        | 24          | 2.8%        | 4           | 0.0%      | 5          | 1.3%        | 22                    | 1.1%        |
| 10 to 14     | 45             | 1.1%        | 17          | 2.0%        | 2           | 0.0%      | 6          | 1.5%        | 13                    | 0.6%        |
| 15 to 24     | 330            | 7.7%        | 94          | 11.0%       | 9           | 0.0%      | 17         | 4.3%        | 133                   | 6.4%        |
| 25 to 34     | 465            | 10.9%       | 126         | 14.7%       | 19          | 39.6%     | 28         | 7.1%        | 191                   | 9.2%        |
| 35 to 44     | 355            | 8.3%        | 74          | 8.6%        | 4           | 0.0%      | 24         | 6.0%        | 171                   | 8.3%        |
| 45 to 64     | 991            | 23.1%       | 177         | 20.7%       | 5           | 10.4%     | 69         | 17.4%       | 567                   | 27.4%       |
| 65 to 74     | 658            | 15.4%       | 111         | 13.0%       | 1           | 2.1%      | 55         | 13.9%       | 382                   | 18.5%       |
| 75 and older | 964            | 22.5%       | 178         | 20.8%       | 2           | 0.0%      | 76         | 19.1%       | 527                   | 25.5%       |
| <b>Total</b> | <b>4282</b>    | <b>100%</b> | <b>857</b>  | <b>100%</b> | <b>48</b>   | <b>0%</b> | <b>397</b> | <b>100%</b> | <b>2067</b>           | <b>100%</b> |

<sup>1</sup> This measure represents the number of samples negative for all pathogens routinely tested for. A small proportion of samples included have only been tested for influenza and RSV.

<sup>2</sup> Samples positive and negative will not add up to total screens as some individuals tested positive for more than one pathogen.

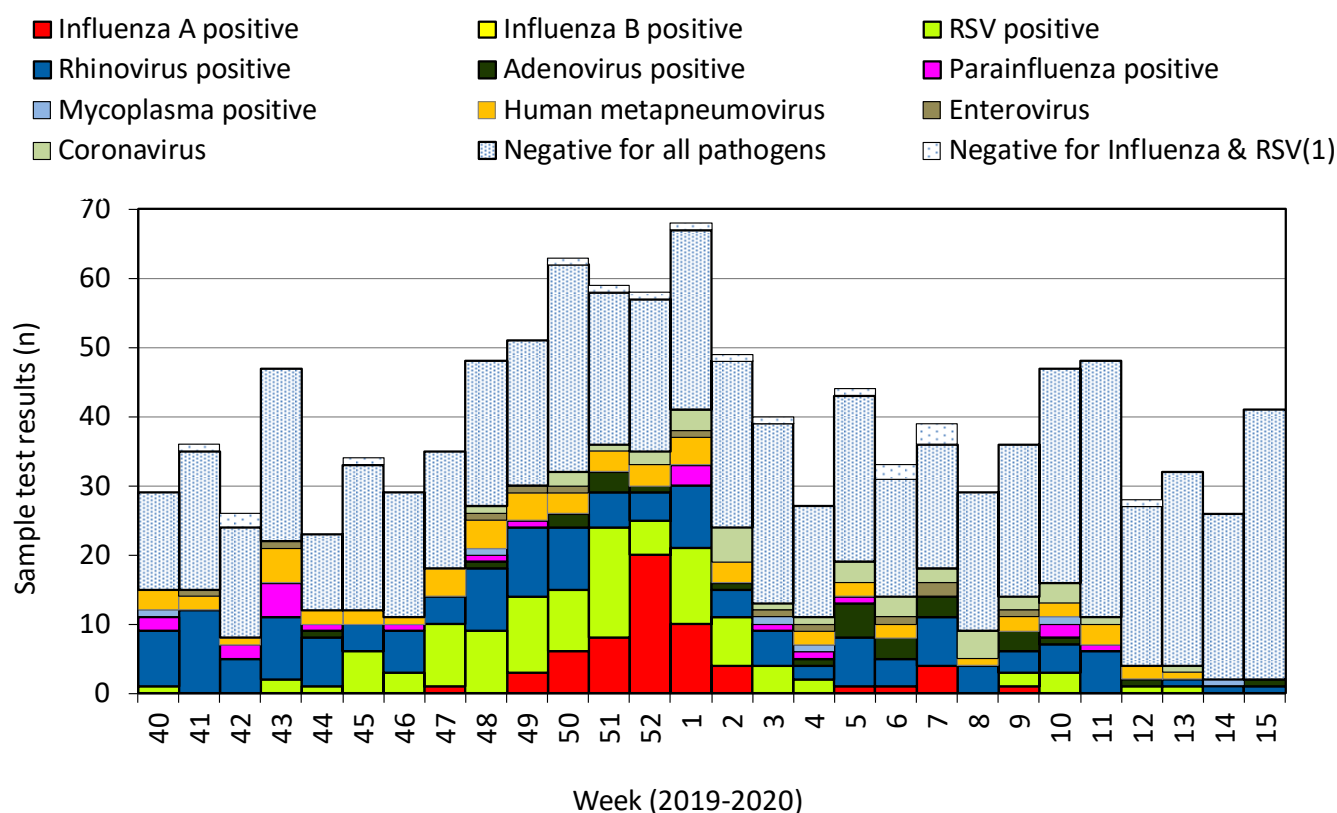
<sup>3</sup> Samples are routinely tested for: influenza, RSV, adenovirus, *Mycoplasma pneumoniae*, rhinovirus, enterovirus, parainfluenza and human metapneumovirus.



## 2.5 Hospital indicators - patients in intensive care units

During the period 2019 week 40 to 2020 week 1, 056 samples were collected from patients in an intensive care setting with symptoms of an acute respiratory infection. Of the 1,056 patients in an intensive care unit that had a sample collected, all were tested for influenza and RSV, with 97.9% (n=1,034/1,056) tested for all respiratory pathogens included for surveillance purposes and 2.1% (n=22/1,056) tested for influenza and RSV only.

**Figure 2.5.1.** Results from respiratory tests carried out on samples from patients in intensive care units in Wales by Week, 2019/20



<sup>1</sup> A small proportion of samples included have only been tested for influenza and RSV.

Influenza was first detected in ICU settings in 2019 week 47, and was detected sporadically up to 2020 week 09. The peak in influenza A(H3) positive samples from patients in an intensive care ward was 2019 week 52 (week ending 29 December 2019; 53 patient samples; 12 influenza A(H3), four influenza A(H1N1); which aligns with the overall peak in influenza positive samples (Figure 2.5.1).

Of the ICU patients tested, 5.6% (n=59) were confirmed with influenza, of whom all were confirmed with influenza A. Subtyping of influenza A positive samples breaks down as follows: 64.4% (n=38) were influenza A(H3), 18.6% (n=11) were influenza A(H1N1) and 17.0% (n=10) were not subtyped.

The most commonly detected non-influenza respiratory pathogens, from the ICU patients tested, were rhinovirus (14.5%, n= 150/1,034), RSV (9.8%, n=103/1,056) and human metapneumovirus (5.9% n=

61/1,034). Other detected causes of respiratory infection included: seasonal coronaviruses (3.4%, n=35/1,034), adenovirus (2.6%, n=27/1,034), parainfluenza (2.1%, n=22/1,034), enterovirus (1.2%, n=12/1,034) and *Mycoplasma pneumoniae* (0.6%, n=6/1,034). Sixty-one percent (n=633/1,034) of ICU patient samples screened for all nine pathogens tested negative, and from the ICU patients that were only tested for influenza and RSV, 77.3% (n=17/22) were negative for both pathogens (Table 2.5.1).

**Table 2.5.1. Samples from patients in ICU/HDU testing positive for influenza and RSV between 2019 week 40 and 2020 week 15 by age group<sup>2</sup>**

| Age Group    | Samples Tested |             | Influenza A |             | Influenza B |           | RSV        |             | Negative <sup>1</sup> |             |
|--------------|----------------|-------------|-------------|-------------|-------------|-----------|------------|-------------|-----------------------|-------------|
|              | n              | %           | n           | %           | n           | %         | n          | %           | n                     | %           |
| Under 1      | 218            | 20.7%       | 3           | 5.1%        | 0           | 0.0%      | 45         | 43.7%       | 122                   | 18.8%       |
| 1 to 4       | 25             | 2.4%        | 1           | 1.7%        | 0           | 0.0%      | 5          | 4.9%        | 2                     | 0.3%        |
| 5 to 9       | 14             | 1.3%        | 1           | 1.7%        | 0           | 0.0%      | 2          | 1.9%        | 3                     | 0.5%        |
| 10 to 14     | 7              | 0.7%        | 1           | 1.7%        | 0           | 0.0%      | 1          | 1.0%        | 3                     | 0.5%        |
| 15 to 24     | 25             | 2.4%        | 2           | 3.4%        | 0           | 0.0%      | 4          | 3.9%        | 12                    | 1.8%        |
| 25 to 34     | 50             | 4.7%        | 1           | 1.7%        | 0           | 0.0%      | 2          | 1.9%        | 34                    | 5.2%        |
| 35 to 44     | 58             | 5.5%        | 4           | 6.8%        | 0           | 0.0%      | 1          | 1.0%        | 33                    | 5.1%        |
| 45 to 64     | 276            | 26.2%       | 22          | 37.3%       | 0           | 0.0%      | 11         | 10.7%       | 184                   | 28.4%       |
| 65 to 74     | 203            | 19.2%       | 12          | 20.3%       | 0           | 0.0%      | 19         | 18.4%       | 132                   | 20.3%       |
| 75 and older | 179            | 17.0%       | 12          | 20.3%       | 0           | 0.0%      | 13         | 12.6%       | 124                   | 19.1%       |
| <b>Total</b> | <b>1055</b>    | <b>100%</b> | <b>59</b>   | <b>100%</b> | <b>0</b>    | <b>0%</b> | <b>103</b> | <b>100%</b> | <b>649</b>            | <b>100%</b> |

<sup>1</sup> This measure represents the number of samples negative for all pathogens routinely tested for. A small proportion of samples included have only been tested for influenza and RSV.

<sup>2</sup> Samples are routinely tested for: influenza, RSV, adenovirus, *Mycoplasma pneumoniae*, rhinovirus, enterovirus, parainfluenza and human metapneumovirus.

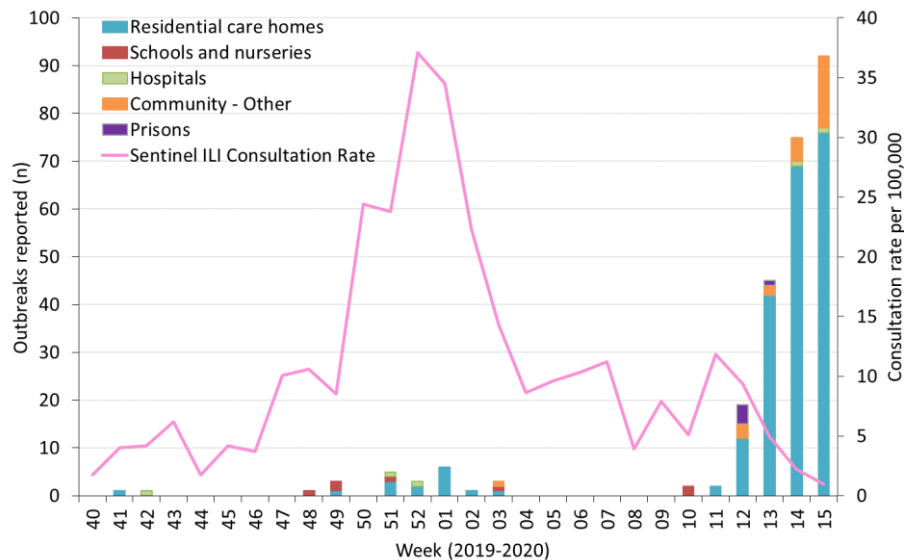
## 2.6 Outbreaks of influenza, ILI or acute respiratory illness

During the 2019/20 influenza season in Wales there were 259 outbreaks of influenza, ILI or acute respiratory illness (ARI) reported to Public Health Wales Health Protection Teams (Figure 2.6.1), compared to 62 reported outbreaks during the 2018/19 season. Outbreaks were reported from 2019 week 41 to 2020 week 15. Influenza A was laboratory confirmed in 4% of the outbreaks reported this season; eight A(H3), one A(H1) and one A(untyped). Of the other 249 outbreaks, 161 were SARS-CoV2 and 88 had no respiratory test result. Eighty-three percent (n=216) of the outbreaks were reported from residential homes, 10% (n=26) were reported from other community settings, 3% (n=7) were reported from school or nursery settings, 2% (n=5) were reported from hospital and 2% (n=5) were reported from prisons. Fifty-nine percent (n=153) of the outbreaks reported occurred in South East Wales (covering Aneurin Bevan UHB, Cardiff and Vale UHB and Cwm Taf Morgannwg UHB areas), 24% (n=62) of the outbreaks occurred in Mid and West Wales (covering Swansea Bay UHB, Hywel Dda UHB and Powys THB), and 17% (n=44) of the outbreaks were reported from North Wales (covering Betsi Cadwaladr UHB). The number of outbreaks reported in hospitals may be underestimated as reporting mechanisms have recently changed.

Twenty-six outbreaks of ILI or acute respiratory illness (ARI) were reported between week 40 and week 10 (before SARS-CoV2 began circulating in Wales), with 58% of the outbreaks in residential homes, 27%

in school settings, 12% in hospitals and 4% were in other settings. Influenza was confirmed in 38% of the outbreaks.

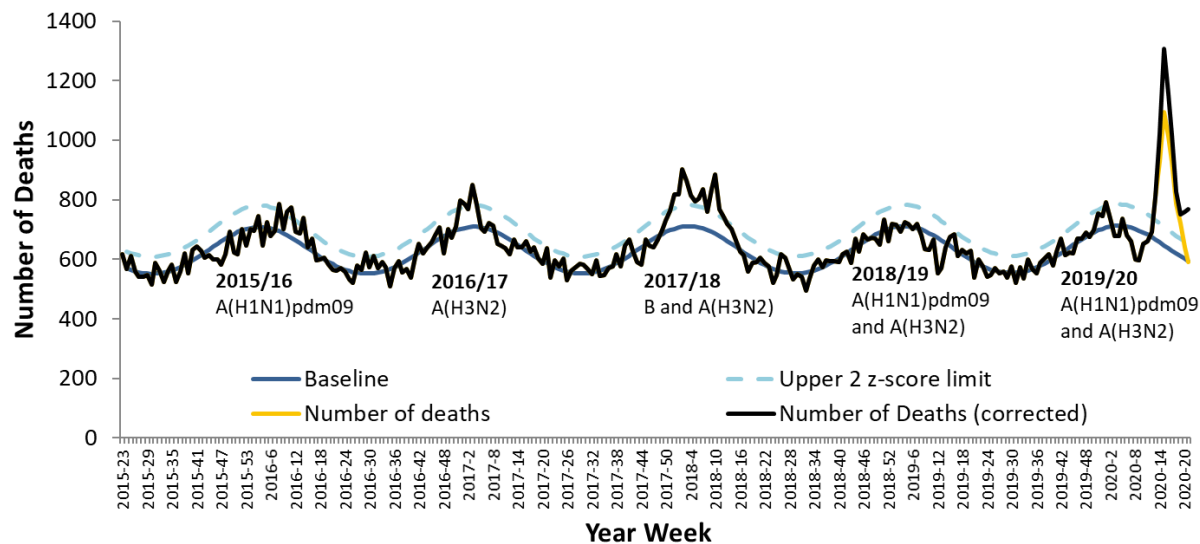
**Figure 2.6.1.** Outbreaks of acute respiratory illness reported to Public Health Wales Health Protection Team during the 2019/20 season, and sentinel GP ILI consultation rate per 100,000



**2.7 Excess mortality during the influenza season**

Surveillance of weekly all-cause mortality in Wales during 2019/20 was carried out using the EuroMoMo method by Public Health England [3]. In Wales, during the influenza season significant excess mortality was seen during week 01 2020 at an all Wales level. Due to the COVID-19 pandemic excess mortality was also seen from week 13. This is the highest excess mortality seen in Wales since this analysis began.

**Figure 2.7.1.** Excess winter mortality, Wales; 2014-2020



## 3. Influenza virus characterisation, vaccine effectiveness and antivirals

### 3.1 Laboratory characterisation of influenza viruses

During the 2019/20 influenza season, whole genome characterisation of 117 influenza A viruses was performed. Relatively low viral loads were a problem for influenza B samples which meant successful sequencing could not be performed.

The sequencing demonstrated that high rates of genetic variability were ongoing, certainly for the H3N2 viruses with evidence of the co-circulation of at least four distinct clades. Most H3N2 viruses sequenced in Wales fell into the 3C.3a clade and antigenically matched the 2019/20 seasonal influenza vaccine strain A/Kansas/14/2017 however, the 3C.2a1b viruses also continued not only to circulate but also to increase in their genetic variability with viruses containing key mutations at two sites, T131K that dominated during the 2018/19 season and viruses with T135K. The latter viruses also demonstrated increased genetic variability with some viruses accruing additional mutations. This was to the extent that the T135K viruses were subdivided into A and B subgroups.

There was clear evidence from the genetic sequencing from Wales that every described clade was present in the population. This was reflected globally and directly impacted on the vaccine selection choice for the H3N2 component with the decision delayed until March 2020. Whilst 3C.3a viruses dominated 2019/20 and the 3C.2a1b-T135K viruses dominated 2018/19 the final decision was to choose a 3C.2a1b-T131K virus from the B subclade A/HongKong/45/2019, due in part to antigenic discrepancy with the current vaccines, background population immunity and growing global incidence.

Although only 12 H1N1pdm09 viruses were sequenced in Wales this year, again increasing genetic variability was observed, reflecting what was reported globally. Whilst most viruses remain antigenically matched to the vaccine virus A/Brisbane/02/2018, some reported globally with mutations (notable at site N156K) were demonstrating reduced neutralisation to antibodies raised to the vaccine in ferret serum.

In Wales, the viruses circulating belonged to the 6B.1A5 clade with the majority belonging to the 6B.1A5A subclade characterised by the mutations S183P and N129D, the vaccine virus strain for the 2020/21 season A/Hawaii/70/2019 is genetically similar to this subclade. Four viruses belonged to the emerging 6B.1a5B subclade with a mutation E235D.

### 3.2 Effectiveness of the 2019/20 seasonal influenza vaccine in the UK

During 2019/20 (for the second season) an adjuvanted trivalent vaccine (aTIV) was available for use in those aged 65 years and older. A new high dose trivalent vaccine (TIV-HD) was also available for this age group, although it was not recommended for use in NHS Wales due to the higher list price. For the first time this season a newly licensed cell grown quadrivalent adjuvanted vaccine (QIVc) was available for those eligible aged over 9 years in addition to the standard egg cultured quadrivalent influenza vaccine (QIVe) that is licensed for under 65 year olds.

Provisional end of season estimates of influenza vaccine effectiveness against laboratory confirmed influenza in the UK were published in the PHE annual report [3]. Estimated overall adjusted vaccine effectiveness for the 2019/20 season measured using a test-negative case control design was 42.7% (95% CI 27.8% to 54.5%). At 53.5% (95% CI 20.1% to 72.9%) effectiveness was estimated to be higher against influenza A(H1N1)pdm09 compared to A(H3), 31.2% (95% CI 10.3% to 47.2%).

The estimated effectiveness of the new QIVc vaccine in the 18 to 64 year age group was 63.9% (95% CI 26.9% to 82.2%) compared to 38.9% (95%CI -4.5% to 64.3%) for QIVe. The overall adjusted vaccine effectiveness for LAIV in those two to 17 years of age was 45.4% (95% CI 12.6% to 65.9%). The effectiveness of aTIV in those aged 65+ was 16.2% (95% CI: -58.7%, 55.7%) compared to 22.7% (95%CI: -38.5%, 56.9%) for any vaccine in this age group.

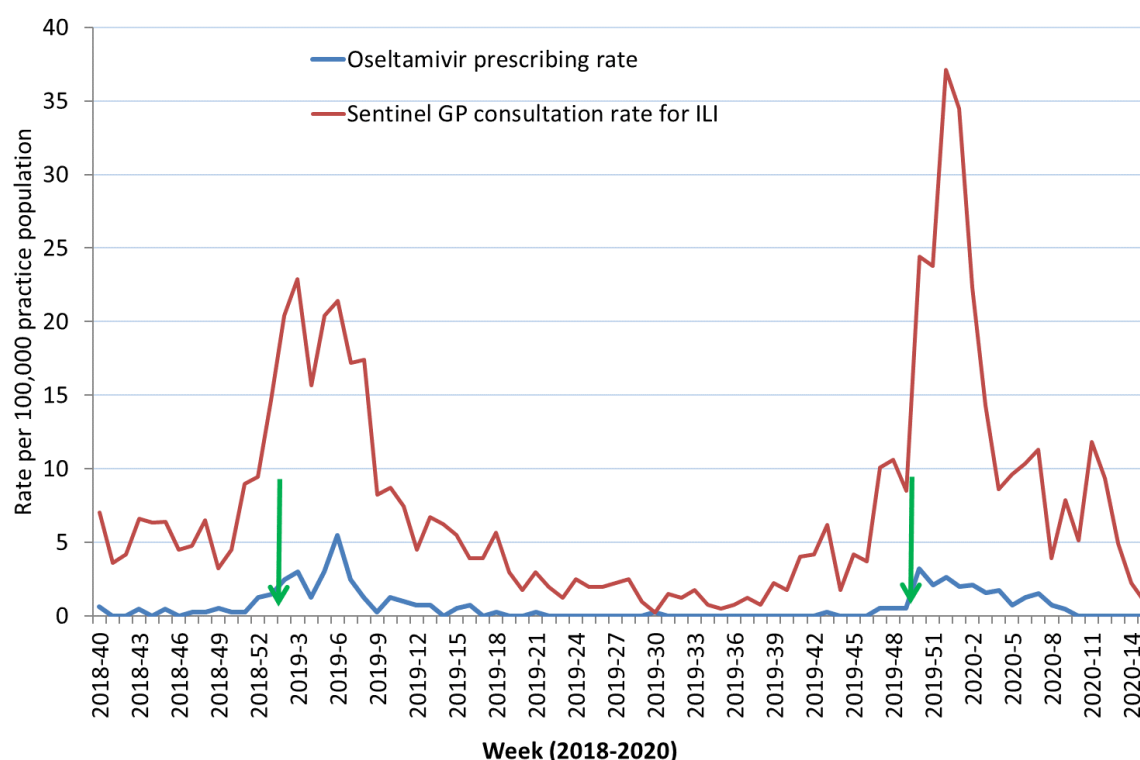
Data published in March 2020 contained information from six vaccine effectiveness studies carried out in 10 European countries, including the United Kingdom. Estimates of overall effectiveness against laboratory confirmed influenza varied from 29% to 61%, depending on study country [4].

### 3.3 Antiviral prescribing rates and virus sensitivity

The GP prescribing rate of oseltamivir in Wales was measured using data collected through Audit+ on coded prescriptions in general practice. Prescribing of influenza antivirals in general practice was authorised under the Selected List Scheme (SLS) in the period 6<sup>th</sup> December 2019 to 2<sup>nd</sup> April 2020. Prescribing rates followed a similar trend to the sentinel GP consultation rate for ILI. Due to a technical issue affecting data submitted from sentinel practices utilising a specific brand of GP software, consultation rates for ILI and antiviral prescribing rates were calculated using a subset of data from 20 practices during week 47 2019 to week 03 2020. The rate peaked at 3.2 prescriptions per 100,000 practice population during week 50 2019 (week ending 15<sup>th</sup> December, Figure 3.3.1), which was two weeks before the peak for ILI consultations in sentinel practices. Using the subset of sentinel practices, the peak in prescribing rate during 2019/20 was lower than the 2018/19 peak prescribing rate in Wales (Table 3.3.1). However, comparisons should be made with caution as prescribing patterns may differ between practices. During the 2019/20 season in the UK, most viruses were fully susceptible and only small numbers of viruses were detected with reduced sensitivity to oseltamivir or zanamivir [3].

No evidence of mutations that confer antiviral resistance to any of the neuraminidase inhibitors was found in the viruses sequenced in Wales during 2019/20. Additionally, the whole genome sequencing allows for analysis for mutations that might give rise to the new class of antiviral treatment the endonuclease inhibitor Baloxavir – none were found.

**Figure 3.3.1.** Prescribing rate for oseltamivir per 100,000 practice population in Wales from 2018 week 40 to 2020 week 15 (arrows indicate when antiviral licensing triggers were issued, in line with NICE guidance)



**Table 3.3.1.** Peak sentinel GP consultation rates for ILI per 100,000 practice population and peak all Wales prescribing rates per 100,000 for influenza seasons from 2010/11 to 2019/20

| Influenza Season | Peak sentinel GP ILI consultation rate | Peak all Wales GP oseltamivir prescribing rate |
|------------------|--|--|
| 2010/11          | 92.2                                   | 12.4   |
| 2011/12          | 10.4                                   | 1.0  |
| 2012/13          | 33.0                                   | 0.8  |
| 2013/14          | 8.8                                    | 0.2  |
| 2014/15          | 23.2                                   | 3.0  |
| 2015/16          | 25.8                                   | 1.1  |
| 2016/17          | 22.8                                   | 3.4  |
| 2017/18          | 74.5                                   | 9.5  |
| 2018/19          | 22.9                                   | 5.5  |
| 2019/20          | 37.1                                   | 3.2  |

## 4. Influenza immunisation in Wales 2019/20

### 4.1 Data collection

#### 4.1.1 Primary Care data

Data on influenza immunisation for the 2019/20 campaign were collected directly from GP IT systems using the Audit+ Data Quality System. Audit+ interrogates GP systems using specified Read codes and automatically relays the relevant anonymous aggregate data to a central database on a weekly basis. This provides the information required to monitor uptake of influenza immunisation in Wales, whilst minimising impact on GPs. Data were collected on immunisations given and recorded on GP systems between 1<sup>st</sup> September 2019 and 31<sup>st</sup> March 2020.

If data from individual General Practices were not received for a particular week, the most recent submission of data from the relevant practice was identified and used. This report is based on data submitted from all 405 practices in Wales.

Data were collected on immunisations given to those aged 65 years and older, those aged between six months and 64 years recorded as belonging to one or more clinical risk group (in total and by specific risk group) and children aged two to three years (age on 31<sup>st</sup> August 2019). Immunisation uptake figures for pregnant women calculated from practice data represent the proportion of women whose practice records contained Read codes associated with pregnancy at any point during September 2019 to January 2020 who had received an influenza vaccine since 1<sup>st</sup> September 2019. Risk categories were based on the Read and SNOMED code groups defined in the [PRIMIS Seasonal Influenza Vaccine Uptake Reporting Specification for 2019/20](#) [5].

#### 4.1.2 Point of delivery survey data of coverage in pregnant women

During January 2020 a survey was conducted with Heads of Midwifery and midwifery colleagues in all Welsh health boards of how many women delivering in the major maternity units recalled being offered influenza immunisation, and how many recalled receiving it [6]. During the five-day period, information was collected from 413 women giving birth. This is the sixth year the point of delivery survey has been conducted across maternity units in Wales.

#### 4.1.3 Nursery, Reception class to School Year 6 classes (children aged four to 10 years) data

Data on uptake of Live Attenuated Influenza Vaccine (LAIV) in schoolchildren in reception class and in school years 1 to 6 (children aged four to 10 years of age as at 31<sup>st</sup> August 2019) were manually submitted by health board Immunisation Coordinators on a fortnightly basis throughout the campaign through an online data reporting survey hosted on SmartSurvey. Uptake figures represent the proportion of children that received LAIV at a school immunisation session. Data on uptake of LAIV in three year old children in nursery classes in Cwm Taf Morgannwg UHB were also manually submitted by the health board Immunisation Coordinator throughout the campaign as part of a nursery school based influenza immunisation programme. Children not attending school and children who were vaccinated in primary care are not included in the data used to calculate uptake in these age groups to avoid double counting of children recorded as vaccinated in both school and general practice datasets.



#### **4.1.4 NHS staff data**

Immunisation uptake data for NHS staff employed by health boards and trusts were provided on a monthly basis from October 2019 to March 2020 by health board and trust occupational health departments. Denominator data were sourced at the start of the campaign from health boards and trusts using Electronic Staff Record (ESR) staff groupings. In Wales all NHS staff are offered influenza immunisation, however the approach to offering influenza immunisation to staff not normally considered to have direct patient contact may vary between health boards and trusts. Data provided relates to immunisations given to all staff and staff with direct patient contact which are calculated by aggregating data for ESR staff-groups which would normally have direct contact with patients.

#### **4.1.5 Pharmacy data**

Immunisations given in community pharmacies are recorded in the NECAF (National Electronic Claim and Audit Forms) data system. This is an anonymised dataset that provides information on location and health board of the pharmacy; age and eligibility of the patient and date of vaccination. This data provides a more detailed breakdown of carers, however accurate equivalent denominators are not currently available, so it is not possible to calculate uptake. A number of pharmacy vaccinations may also be recorded in general practice systems, so it is not possible to add the number of pharmacy vaccinations to the number of general practice vaccinations as some patients may be double-counted.

## 4.2 Influenza immunisation uptake

### 4.2.1 Uptake in children

Of a total 68,022 children aged two and three years old (as at 31 August 2019), 50.7% (n=34,504) were immunised against influenza in general practice between 1<sup>st</sup> Sept 2019 and 31<sup>st</sup> March 2020. The number of immunisations given to children aged two and three years old in general practice decreased by 37 in 2019/20 compared to 2018/19. Uptake in two and three year olds varied by health board, ranging from 46.2% (Cardiff and Vale UHB) to 53.9% (Aneurin Bevan UHB). Uptake in three year olds (52.1%) was higher compared to uptake in two year olds (49.3%) (Table 4.2.1).

**Table 4.2.1.** *Uptake of influenza immunisation in general practice in children aged two and three years by health board, Wales, 2019/20<sup>1</sup>*

| Health Board         | Children aged 2 years |                 |             | Children aged 3 years |                 |             | Combined Uptake (%) |
|----------------------|-----------------------|-----------------|-------------|-----------------------|-----------------|-------------|---------------------|
|                      | Immunised (n)         | Denominator (n) | Uptake (%)  | Immunised (n)         | Denominator (n) | Uptake (%)  |                     |
| Aneurin Bevan UHB    | 3590                  | 6748            | 53.2        | 3754                  | 6874            | 54.6        | 53.9                |
| Betsi Cadwaladr UHB  | 3671                  | 7153            | 51.3        | 3862                  | 7299            | 52.9        | 52.1                |
| Cardiff and Vale UHB | 2528                  | 5580            | 45.3        | 2817                  | 6000            | 47.0        | 46.2                |
| Cwm Taf UHB          | 2164                  | 5090            | 42.5        | 3078                  | 5291            | 58.2        | 50.5                |
| Hywel Dda UHB        | 1834                  | 3682            | 49.8        | 1813                  | 3841            | 47.2        | 48.5                |
| Powys Teaching HB    | 641                   | 1243            | 51.6        | 688                   | 1268            | 54.3        | 52.9                |
| Swansea Bay UHB      | 2012                  | 3857            | 52.2        | 2052                  | 4096            | 50.1        | 51.1                |
| <b>Wales</b>         | <b>16440</b>          | <b>33353</b>    | <b>49.3</b> | <b>18064</b>          | <b>34669</b>    | <b>52.1</b> | <b>50.7</b>         |

<sup>1</sup>Children aged three years from Cwm Taf Morgannwg UHB were offered influenza immunisation in nurseries attached to primary schools. Data presented in Table 4.2.1 are provided by general practices and it is likely information for a small proportion of children immunised in nursery sessions in Cwm Taf Morgannwg UHB was not entered in to GP records. As a result, uptake presented here for three year olds in Cwm Taf Morgannwg UHB is likely to underestimate true uptake (see Table 4.2.2 for further information).

In Cwm Taf Morgannwg UHB, LAIV was offered to children aged three years old in nursery classes attached to primary schools. Uptake in this group of children was 66.3% (Table 4.2.2), an increase from 66.1% in 2018/19 in this same age group. Of a total of 5,291 three year old children registered with a GP in Cwm Taf Morgannwg UHB, 2,775 (52.4%) were recorded in the nursery school data.

**Table 4.2.2.** *Uptake of influenza immunisation in children aged three years in nursery classes in Cwm Taf Morgannwg UHB, 2019/20*

| Health Board | Schools targeted (n) | Children aged 3 years (Nursery classes) |                 |            |
|--------------|----------------------|---|-----------------|------------|
|              |                      | Immunised (n)                           | Denominator (n) | Uptake (%) |
| Cwm Taf UHB  | 177                  | 1840                                    | 2775            | 66.3       |

LAIV was offered in 1,354 schools in Wales to children in reception class, and School Years 1 to 6. Of the 236,924 eligible children who were aged four to 10 years on 31<sup>st</sup> August 2019, 69.9% (165,575) were immunised against influenza. This remained stable compared to 69.9% in 2018/19 in eligible children immunised in schools. Uptake ranged by HB from 66.9% (Cardiff and Vale UHB) to 76.0% (Powys Teaching HB) (Table 4.2.3).

Uptake in school reception classes (children four to five years of age) decreased to 71.7% (23,312/32,535) from 72.1% in the same age group last year. Uptake varied by HB, ranging from 68.2% (Aneurin Bevan UHB) to 77.1% (Powys Teaching HB) (Table 4.2.4).

Uptake in School Year 1 (children five to six years of age) decreased to 71.6% (23,382/32,646) from 71.8% in the same age group last year. Uptake varied by HB, ranging from 69.2% (Betsi Cadwaladr UHB) to 77.1% (Powys Teaching HB) (Table 4.2.4).

Uptake in School Year 2 (children six to seven years of age) increased to 71.5% (23,971/33,532) from 71.2% in the same age group last year. Uptake varied by HB, ranging from 68.8% (Betsi Cadwaladr UHB) to 76.5% (Swansea Bay UHB) (Table 4.2.4).

Uptake in School Year 3 (children seven to eight years of age) decreased to 69.9% (24,209/34,649) from 70.8% in the same age group last year. Uptake varied by HB, ranging from 66.0% (Cardiff and Vale UHB) to 75.2% (Swansea Bay UHB) (Table 4.2.4).

Uptake in School Year 4 (children eight to nine years of age) increased to 69.6% (24,528/35,249) from 68.7% in the same age group last year. Uptake varied by HB, ranging from 65.4% (Cardiff and Vale UHB) to 75.1% (Swansea Bay UHB) (Table 4.2.4).

Uptake in School Year 5 (children nine to 10 years of age) decreased to 68.0% (23,318/34,306) from 68.1% in the same age group last year. Uptake varied by HB, ranging from 63.8% (Betsi Cadwaladr UHB) to 72.6% (Cwm Taf Morgannwg UHB) (Table 4.2.4).

Uptake in School Year 6 (children 10 to 11 years of age) increased to 67.2% (22,855/34,007) from 66.6% in the same age group last year. Uptake varied by HB, ranging from 61.6% (Cardiff and Vale UHB) to 86.5% (Powys Teaching HB) (Table 4.2.4).

**Table 4.2.3.** *Uptake of influenza immunisation in all eligible school children by health board, Wales, 2019/20*

| Health Board         | Schools<br>targeted (n) | All children aged 4 to 10 years |                 |             |
|----------------------|-------------------------|---------------------------------|-----------------|-------------|
|                      |                         | Immunised (n)                   | Denominator (n) | Uptake (%)  |
| Aneurin Bevan UHB    | 205                     | 33392                           | 49093           | 68.0        |
| Betsi Cadwaladr UHB  | 389                     | 36515                           | 54266           | 67.3        |
| Cardiff and Vale UHB | 150                     | 23518                           | 35143           | 66.9        |
| Cwm Taf UHB          | 177                     | 23413                           | 31738           | 73.8        |
| Hywel Dda UHB        | 206                     | 20193                           | 28375           | 71.2        |
| Powys Teaching HB    | 86                      | 7157                            | 9423            | 76.0        |
| Swansea Bay UHB      | 141                     | 21387                           | 28886           | 74.0        |
| <b>Wales</b>         | <b>1354</b>             | <b>165575</b>                   | <b>236924</b>   | <b>69.9</b> |

**Table 4.2.4.** Uptake of influenza immunisation in school children aged four to ten years by health board, Wales, 2019/20

| Health Board         | Schools targeted (n) | School children aged: |             |             |             |             |             |             |
|----------------------|----------------------|-----------------------|-------------|-------------|-------------|-------------|-------------|-------------|
|                      |                      | 4 years               | 5 years     | 6 years     | 7 years     | 8 years     | 9 years     | 10 years    |
|                      |                      | Uptake (%)            | Uptake (%)  | Uptake (%)  | Uptake (%)  | Uptake (%)  | Uptake (%)  | Uptake (%)  |
| Aneurin Bevan UHB    | 205                  | 68.2                  | 69.5        | 69.4        | 67.9        | 68.0        | 67.2        | 65.9        |
| Betsi Cadwaladr UHB  | 389                  | 71.9                  | 69.2        | 68.8        | 68.1        | 66.3        | 63.8        | 63.5        |
| Cardiff and Vale UHB | 150                  | 69.9                  | 69.8        | 69.1        | 66.0        | 65.4        | 66.9        | 61.6        |
| Cwm Taf UHB          | 177                  | 74.2                  | 75.1        | 75.4        | 73.9        | 73.7        | 72.6        | 71.5        |
| Hywel Dda UHB        | 206                  | 71.7                  | 73.9        | 72.3        | 70.3        | 72.3        | 69.9        | 67.9        |
| Powys Teaching HB    | 86                   | 77.1                  | 77.1        | 76.2        | 73.1        | 72.4        | 69.4        | 86.5        |
| Swansea Bay UHB      | 141                  | 74.8                  | 74.1        | 76.5        | 75.2        | 75.1        | 71.1        | 71.6        |
| <b>Wales</b>         | <b>1354</b>          | <b>71.7</b>           | <b>71.6</b> | <b>71.5</b> | <b>69.9</b> | <b>69.6</b> | <b>68.0</b> | <b>67.2</b> |

Uptake in children at risk aged two to three years was 58.8% and ranged by health board from 56.6% (Cardiff and Vale UHB) to 66.3% (Powys THB). Uptake in children at risk aged four to 10 years was 51.8% and ranged by health board from 19.1% (Cardiff and Vale UHB) to 63.9% (Aneurin Bevan UHB). The proportion of children in a risk group vaccinated aged four to 10 years may be higher as some vaccinations given in school sessions will not be recorded on the child's General Practice record. Uptake in children at risk aged 11 to 17 years was 35.0% and ranged by health board from 29.9% (Hywel Dda UHB) to 37.9% (Cardiff and Vale UHB) (Table 4.2.5).

**Table 4.2.5.** Uptake of influenza immunisation in children aged two to seventeen with a risk condition by health board, Wales, 2019/20<sup>1,2,3</sup>

| Health Board         | Children aged 2-3 years |                 |             | Children aged 4-10 years |                 |             | Children aged 11-17 years |                 |             |
|----------------------|-------------------------|-----------------|-------------|--------------------------|-----------------|-------------|---------------------------|-----------------|-------------|
|                      | Immunised (n)           | Denominator (n) | Uptake (%)  | Immunised (n)            | Denominator (n) | Uptake (%)  | Immunised (n)             | Denominator (n) | Uptake (%)  |
| Aneurin Bevan UHB    | 272                     | 461             | 59.0        | 2238                     | 3501            | 63.9        | 1577                      | 4239            | 37.2        |
| Betsi Cadwaladr UHB  | 269                     | 449             | 59.9        | 2180                     | 3798            | 57.4        | 1765                      | 4836            | 36.5        |
| Cardiff and Vale UHB | 206                     | 364             | 56.6        | 585                      | 3061            | 19.1        | 1381                      | 3644            | 37.9        |
| Cwm Taf UHB          | 222                     | 389             | 57.1        | 1755                     | 2861            | 61.3        | 1085                      | 3400            | 31.9        |
| Hywel Dda UHB        | 132                     | 225             | 58.7        | 939                      | 1802            | 52.1        | 759                       | 2539            | 29.9        |
| Powys Teaching HB    | 59                      | 89              | 66.3        | 335                      | 659             | 50.8        | 313                       | 992             | 31.6        |
| Swansea Bay UHB      | 149                     | 251             | 59.4        | 1110                     | 1952            | 56.9        | 939                       | 2719            | 34.5        |
| <b>Wales</b>         | <b>1309</b>             | <b>2228</b>     | <b>58.8</b> | <b>9142</b>              | <b>17634</b>    | <b>51.8</b> | <b>7819</b>               | <b>22369</b>    | <b>35.0</b> |

<sup>1</sup>Age as at 31/08/2019.

<sup>2</sup> Data from Audit+

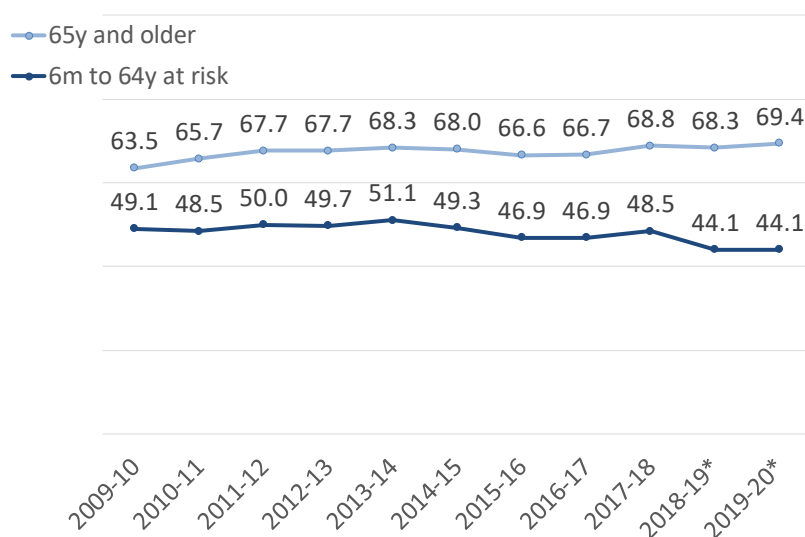
<sup>3</sup>All children aged four to 10 years are eligible for immunisation through school vaccination sessions. Data presented here for four to 10 year olds in clinical risk groups show the numbers of patients at clinical risk, whose GP record contains appropriate influenza vaccination Read codes; and is likely to underestimate true uptake in the group.

### 4.2.2 Uptake in those aged 65 years and older and aged six months to 64 years in clinical risk groups

Uptake of influenza vaccine in those aged 65 years and older was 69.4%, an increase compared to 68.3% in the 2018/19 season (Figure 4.2.1). Of all influenza immunisations given to those aged 65 years and over, 90% were delivered by the week ending 1<sup>st</sup> December 2019 (Figure 4.2.2). Uptake varied by HB from 64.8% (Hywel Dda UHB) to 71.4% (Betsi Cadwaladr UHB), (Table 4.2.6, Figure 4.2.3) and ranged by Local Authority (LA) area from 59.2% (Ceredigion) to 74.5% (Monmouthshire) (Appendix Table A1). For patients aged 65 years or older, 10.4% were recorded as having declined immunisation, compared to 11.6% in the 2018/19 season. No HB or LA area achieved the 75% target.

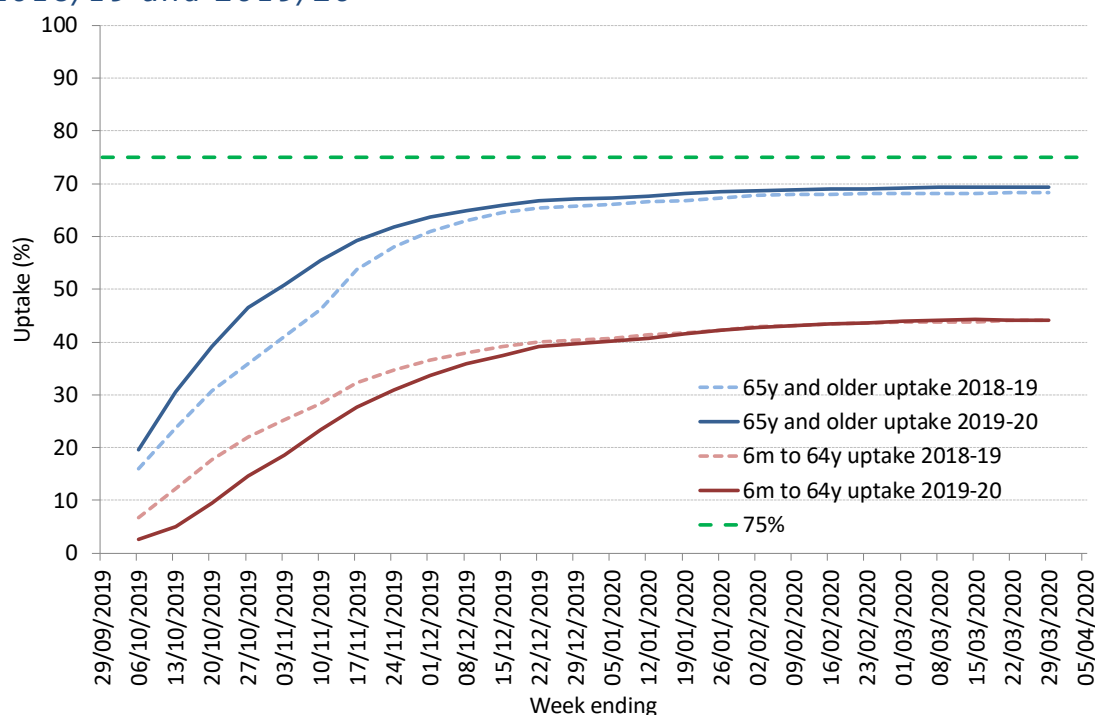
Uptake in those aged six months to 64 years in a clinical risk group was 44.1%, the same as 2018/19 (Figure 4.2.1). Of all immunisations given to those aged six months to 64 years in clinical risk groups, 90% were delivered by the week ending 5<sup>th</sup> January 2020 (Figure 4.2.2). Uptake ranged by HB from 40.2% (Hywel Dda UHB) to 46.9% (Betsi Cadwaladr UHB) (Table 4.2.6, Figure 4.2.4) and by LA area from 37.5% (Ceredigion) to 54.0% (Monmouthshire) (Appendix Table A1). The proportion of all people aged six months to 64 years recorded in one or more clinical risk categories was 17.3% (an increase from 16.8% in 2018/19). Of those aged six months to 64 years a clinical risk group, 9.6% were recorded as having declined immunisation, compared to 9.7% in 2018/19. No HB or LA met the 55% target.

**Figure 4.2.1.** Annual trends in influenza immunisation uptake (%) in those aged 65 years and over and in those aged six months to 64 years in clinical risk groups, Wales, 2009/10 – 2019/20



\*Data for those aged six months to 64 years at risk includes those morbidly obese not otherwise at risk. Prior to 2018/19 this group were not included in the overall uptake figures for this category.

**Figure 4.2.2.** Weekly trend in uptake of influenza vaccine in patients aged 65 years and over and in those aged six months to 64 years in clinical risk groups, Wales, 2018/19 and 2019/20

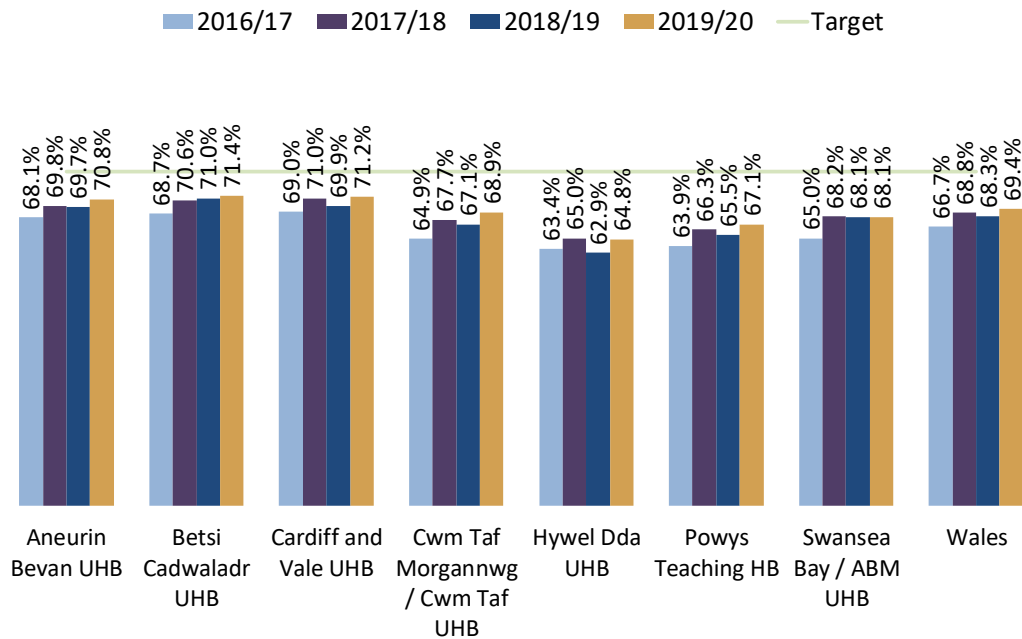


**Table 4.2.6.** Trends in uptake (%) of influenza immunisation in health boards, Wales, 2016/17 - 2019/20

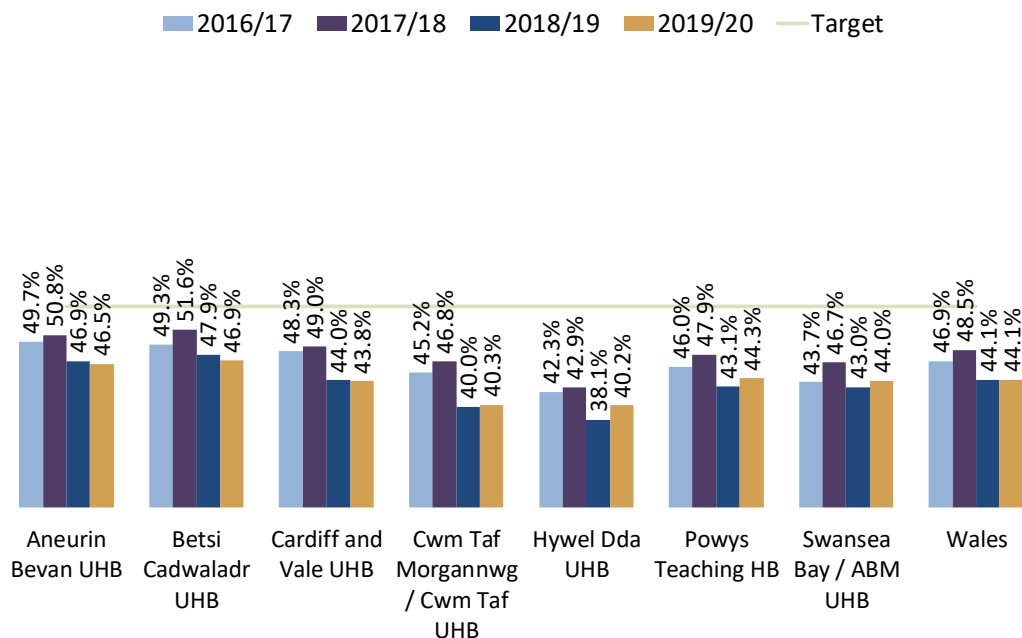
| Health Board                    | Uptake in patients aged 65y and older (%) |             |             |             | Uptake in patients younger than 65y at risk (%) |             |                      |                      |
|---------------------------------|---|-------------|-------------|-------------|---|-------------|----------------------|----------------------|
|                                 | 2016/17                                   | 2017/18     | 2018/19     | 2019/20     | 2016/17   | 2017/18     | 2018/19 <sup>1</sup> | 2019/20 <sup>1</sup> |
| Aneurin Bevan UHB               | 68.1                                      | 69.8        | 69.7        | 70.8        | 49.7  | 50.8        | 46.9                 | 46.5                 |
| Betsi Cadwaladr UHB             | 68.7                                      | 70.6        | 71.0        | 71.4        | 49.3  | 51.6        | 47.9                 | 46.9                 |
| Cardiff and Vale UHB            | 69.0                                      | 71.0        | 69.9        | 71.2        | 48.3  | 49.0        | 44.0                 | 43.8                 |
| Cwm Taf Morgannwg / Cwm Taf UHB | 64.9                                      | 67.7        | 67.1        | 68.9        | 45.2  | 46.8        | 40.0                 | 40.3                 |
| Hywel Dda UHB                   | 63.4                                      | 65.0        | 62.9        | 64.8        | 42.3  | 42.9        | 38.1                 | 40.2                 |
| Powys Teaching UHB              | 63.9                                      | 66.3        | 65.5        | 67.1        | 46.0  | 47.9        | 43.1                 | 44.3                 |
| Swansea Bay / ABM UHB           | 65.0                                      | 68.2        | 68.1        | 68.1        | 43.7  | 46.7        | 43.0                 | 44.0                 |
| <b>Wales</b>                    | <b>66.7</b>                               | <b>68.8</b> | <b>68.3</b> | <b>69.4</b> | <b>46.9</b>                                     | <b>48.5</b> | <b>44.1</b>          | <b>44.1</b>          |

<sup>1</sup>Data for those aged six months to 64 years at risk includes those morbidly obese not otherwise at risk. Prior to 2018/19 this group were not included in the overall uptake figures for this category.

**Figure 4.2.3.** Uptake of influenza immunisation in health boards in Wales in patients aged 65 years and over, 2016/17 – 2019/20



**Figure 4.2.4.** Uptake of influenza immunisation in health boards in Wales in patients aged six months to 64 years in clinical risk groups, 2016/17 – 2019/20

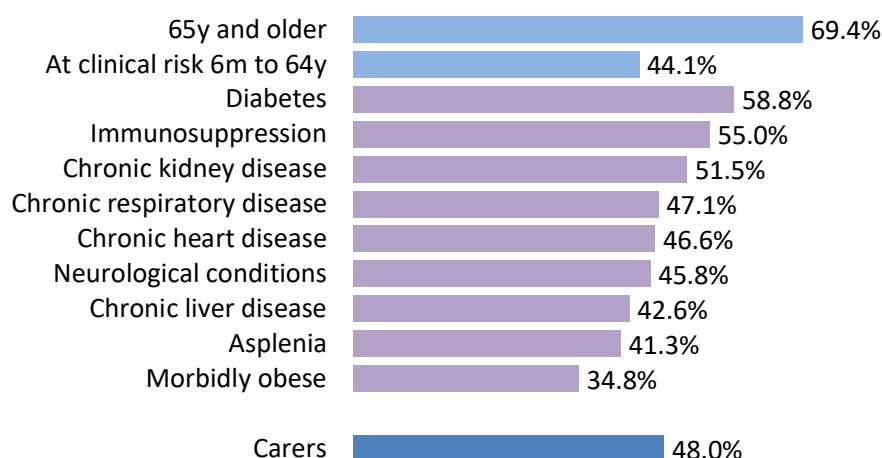




### 4.2.3 Immunisation uptake by risk group

Vaccine uptake in those aged six months to 64 years in a clinical risk group (including morbidly obese adults not otherwise at risk) was 44.1%. Many people will have more than one clinical risk, for example, a patient may suffer from both diabetes and chronic heart disease, therefore the same patient may be represented in the uptake figures for more than one risk group. However, a patient will only be counted once in the overall total uptake figure of 44.1% for those aged six months to 64 years in a clinical risk group, irrespective of how many clinical risk conditions they suffer from. Numbers of individuals coded as being in each clinical risk group can be found in appendix Table A2.

**Figure 4.2.5. Influenza immunisation uptake rates in patients aged 65 years and over and six months to 64 years at risk, by individual risk group, Wales, 2019/20**



- Chronic heart disease was recorded in 2.7% of patients aged six months to 64 years, of whom 46.6% were immunised against influenza (Figure 4.2.5, Appendix Table A2). Uptake by HB ranged from 42.7% (Hywel Dda UHB) to 50.5% (Aneurin Bevan UHB).
- Chronic respiratory disease was recorded in 7.9% of patients aged six months to 64 years, of whom 47.1% were immunised against influenza (Figure 4.2.5, Appendix Table A2), ranging by HB from 43.2% (Hywel Dda UHB) to 49.6% (Aneurin Bevan UHB). At Wales level, 57.7% of those with COPD were immunised against influenza, whilst 46.5% of those with asthma and 49.9% of those with non-asthma non-COPD respiratory were immunised against influenza.
- Chronic kidney disease was recorded in 0.6% of patients aged six months to 64 years, of whom 51.5% were immunised against influenza (Figure 4.2.5, Appendix Table A2), ranging by HB from 46.3% (Hywel Dda UHB) to 55.6% (Betsi Cadwaladr UHB).
- Diabetes was recorded in 3.4% of patients aged six months to 64 years, of whom 58.8% were immunised against influenza (Figure 4.2.5, Appendix Table A2), ranging by HB from 54.5% (Hywel Dda UHB) to 60.5% (Aneurin Bevan UHB and Cardiff & Vale UHB).
- Immunosuppression due to disease or treatment was recorded in 1.0% of patients aged six months to 64 years, of whom 55.0% were immunised against influenza (Figure 4.2.5, Appendix Table A2), ranging by HB from 47.1% (Cwm Taf Morgannwg UHB) to 60.2% (Betsi Cadwaladr UHB).

- Chronic liver disease was recorded in 0.4% of patients aged six months to 64 years, of whom 42.6% were immunised against influenza (Figure 4.2.5, Appendix Table A2), ranging by HB from 40.0% (Hywel Dda UHB) to 46.2% (Powys Teaching HB).
- Chronic neurological conditions (including stroke and TIA) were recorded in 1.4% of patients aged six months to 64 years, of whom 45.8% were immunised against influenza (Figure 4.2.5, Appendix Table A2), ranging by HB from 41.7% (Hywel Dda UHB) to 48.8% (Betsi Cadwaladr UHB).
- Morbidly obese was recorded in 3.2% of patients aged six months to 64 years, of whom 34.8% were immunised against influenza (Figure 4.2.5, Appendix Table A2). Uptake ranged by HB from 29.5% (Cwm Taf Morgannwg UHB) to 38.4% (Betsi Cadwaladr UHB). For those aged 18 to 64 years, 34.9% were immunised against influenza.
- Being asplenic (or having a dysfunctional spleen) was recorded in 0.5% of patients aged six months to 64 years, of whom 41.3% were immunised against influenza (Figure 4.2.5, Appendix Table A2), ranging by HB from 38.5% (Cwm Taf Morgannwg UHB) to 44.7% (Betsi Cadwaladr UHB).
- A total of 34,577 people aged six months to 64 years were recorded as being a carer (including carers who are also in a clinical risk group), of whom 48.0% were immunised against influenza (Figure 4.2.5, Appendix Table A4). These figures only include those who have identified themselves as a carer to their GP, and have been coded appropriately in the GP records; the true denominator for carers is likely to be higher. Uptake ranged by HB from 42.7% (Hywel Dda UHB) to 53.1% (Aneurin Bevan UHB).

#### 4.2.4 Uptake in pregnant women

Coverage of influenza vaccination in pregnant women was measured using two methods:

1. A five-day survey carried out with health board midwifery services in major maternity units across Wales, ascertaining self-reported vaccination status for the women delivering during the survey period. Ascertainment of pregnancy status is more robust using this method. However, the survey does not capture information on women whose pregnancies ended with outcomes other than a birth in a major maternity unit.
2. Weekly collections of data from GPs using Audit+. This method provides timely data on immunisations given to pregnant women, however ascertaining pregnancy status using Read codes in GP data systems can be problematic and results in underestimation of uptake in this group.

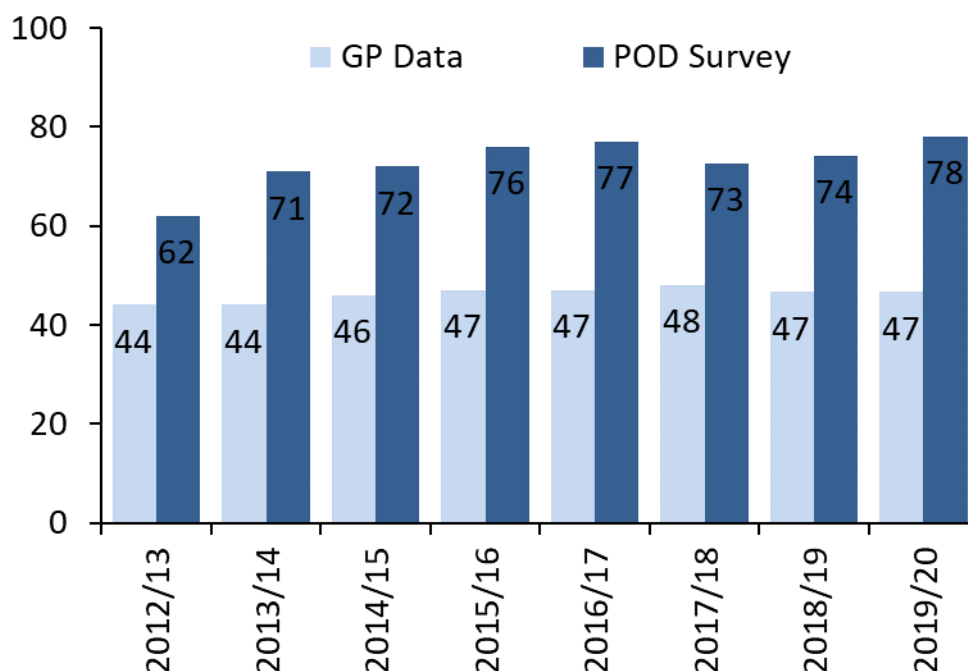
From 1<sup>st</sup> September 2019 to 31<sup>st</sup> January 2020, 26,080 women were coded in General Practice with Read codes associated with pregnancy. Out of these women, 2,995 (11.5%) had an existing risk (as defined by the CMO letter [1]), the remainder (23,085) did not have another identified clinical risk (Appendix Table A3). Uptake of influenza vaccination in all pregnant women, measured using GP data was 47.4% and ranged by HB from 43.4% (Cwm Taf Morgannwg UHB) to 58.7% (Powys THB). Uptake in pregnant women with another existing risk condition was 60.6% and ranged by HB from 53.3% (Swansea Bay UHB) to 70.5% (Powys THB). Uptake in pregnant women without another existing risk condition was 46.0%, and ranged by HB from 41.5% (Cwm Taf Morgannwg UHB) to 57.0% (Powys THB).

The point of delivery (POD) survey included 413 women giving birth during a five-day period in January 2020 [6]. Data were submitted by all health boards in Wales. Uptake of influenza immunisation recalled in this group was 78.5% (95% CI 74.2%-82.3%), an increase compared to 74.2% (95% CI 69.7%-78.3%) last year and above the 75% vaccination target set by Welsh Government. Uptake increased in four HBs (Cardiff and Vale UHB, Cwm Taf Morgannwg UHB, Hywel Dda UHB and Powys THB) compared to the 2018/19 survey, and decreased in the remaining three HBs [6]. The survey also found that 96.9% of the women could recall being offered influenza immunisation, an increase of 3.6 from 93.3% last year (Table 4.2.7 and Figure 4.2.8). The estimates using GP data are uniformly lower than those estimated using the survey at the point of delivery (Figure 4.2.6).

**Table 4.2.7.** *Number of women offered influenza vaccine during pregnancy, Wales, 2019/20 (Data source: 2019/20 point of delivery survey)*

| Women offered influenza vaccination while pregnant |            |            |
|--|------------|------------|
|  | n          | %          |
| Yes  | 400        | 96.9       |
| No   | 8          | 1.9        |
| Not sure/missing                                   | 5          | 1.2        |
| <b>Total</b>                                       | <b>413</b> | <b>100</b> |

**Figure 4.2.6.** *Uptake (%) of influenza vaccination in pregnant women by data source, Wales, 2012/13-2019/20*



Although there may be problems with ascertainment of the percentage uptake, data provided by GPs on uptake in pregnancy are still useful in estimating and monitoring the number of pregnant women in

Wales who have received influenza vaccination each season. During the 2019/20 winter, 12,292 women whose GP record contained Read codes relating to pregnancy were recorded as having received influenza vaccination. This is a decrease from the 2018/19 total of 12,591 women vaccinated.

#### **4.2.5 Estimated numbers of individuals immunised in Wales in 2019/20**

The estimated total number of individuals recorded by their general practice as immunised against influenza was 876,062 as at 31<sup>st</sup> March 2020, based on Read coded data reported from all practices in Wales for 2019/20. This represents an estimated 28% of the population of Wales.

This includes 469,497 individuals aged 65 years and over, 197,481 aged six months to 64 years in a clinical risk group, 12,434 pregnant women, 34,504 children aged two and three years and 16,589 carers. Vaccinated individuals are ascertained using Read codes which correspond to eligibility criteria [5].

The remaining 145,557 immunisations were likely received by:

- Patients aged younger than 65 years who did not have Read codes attached to their GP records which are recommended for use in surveillance of influenza immunisation uptake in risk groups who were regarded as at risk by GPs based on clinical judgement.
- Those in long-stay residential homes who are not aged 65 years or older, and not in a clinical risk group.
- Patients immunised by other service providers, for example occupational health departments and school nursing services, whose GPs were notified and whose records were updated with appropriate vaccination Read codes.

The estimated total of 876,062 individuals immunised in 2019/20 is an increase on the estimated 868,688 individuals immunised during the 2018/19 influenza immunisation campaign. These estimates are based on data recorded by general practices, the actual number of individuals immunised against influenza in Wales will be higher as not all immunisations given by other service providers will be recorded in general practice databases. In addition, the extent to which immunisations given in community pharmacies are recorded using Read codes in GP patient databases is unknown; these vaccinations may be under-reported in uptake figures calculated using GP data.

#### **4.2.6 Uptake in NHS staff in Wales**

All health boards and NHS trusts in Wales provided NHS staff immunisation uptake data. Uptake in staff groups expected to have direct patient contact was 58.9% (n=36,190) (Table 4.2.8). Uptake in staff with direct patient contact ranged by organisation from 41.3% (Welsh Ambulance Service NHS Trust) to 67.8% (Public Health Wales NHS Trust). Uptake in staff groups ranged from 40.3% (Estates and Ancillary) to 66.8% (Allied Health Professionals) (Table 4.2.9).

There were a total of 90,459 NHS health board or trust staff reported under the care of NHS Occupational Health departments in Wales and offered influenza vaccination, of whom 56.0% (n=50,649) were immunised during 2019/20, an increase of 2.6 from 53.4% in 2018/19. Uptake has now increased in nine of the ten years since 2009/10 (11.6%). Uptake in all staff ranged by organisation from 42.2%

(Welsh Ambulance Service NHS Trust) to 64.2% (Public Health Wales NHS Trust). Eight health boards and NHS Trusts showed an increase in uptake compared to the previous season (Figure 4.2.7 and Figure 4.2.8).

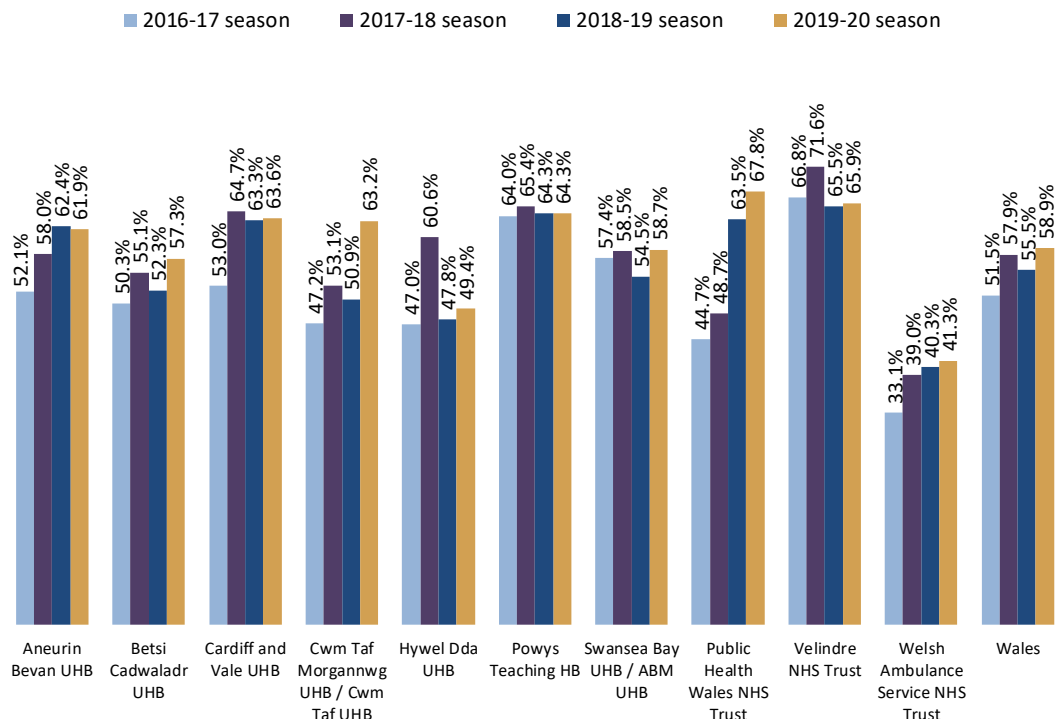
In four HBs (Aneurin Bevan UHB, Cardiff and Vale UHB, Cwm Taf Morgannwg UHB and Powys Teaching HB) and in two NHS Trusts (Public Health Wales NHS Trust and Velindre NHS Trust), uptake of influenza vaccination in staff with direct patient contact exceeded the Welsh Government target of 60% (Table 4.2.8).

**Table 4.2.8. Uptake of influenza immunisation in NHS staff in Wales, 2019/20**

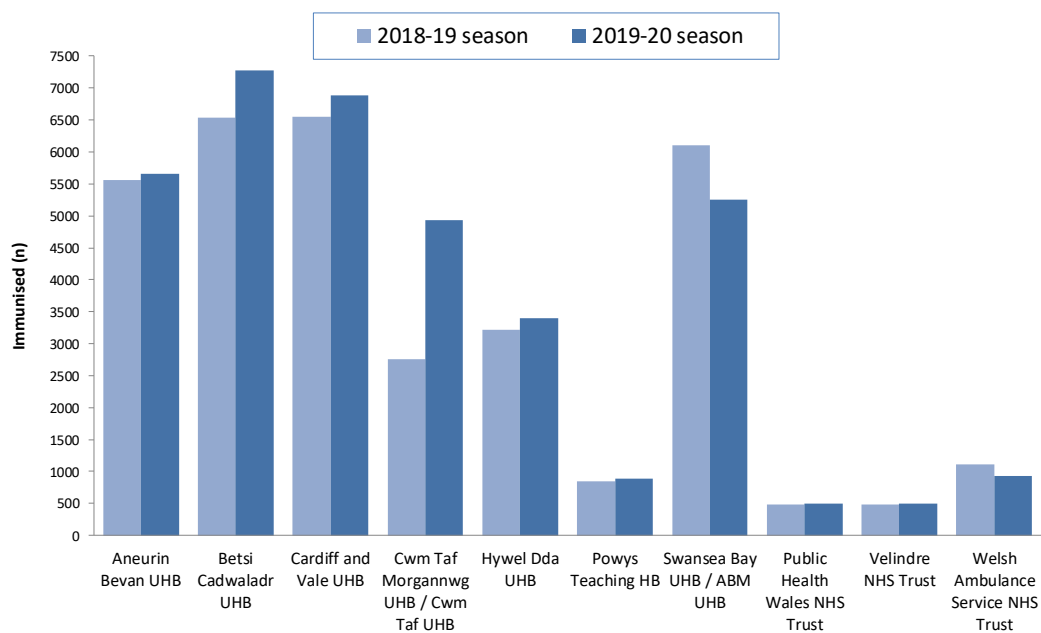
| Health Board/Trust                | Total Staff      |                    |               | Staff with direct patient contact <sup>1</sup> |                    |               |
|-----------------------------------|------------------|--------------------|---------------|--|--------------------|---------------|
|                                   | Immunised<br>(n) | Denominator<br>(n) | Uptake<br>(%) | Immunised<br>(n)                               | Denominator<br>(n) | Uptake<br>(%) |
| Aneurin Bevan UHB                 | 8076             | 13382              | 60.3          | 5654   | 9133               | 61.9          |
| Betsi Cadwaladr UHB               | 10068            | 18036              | 55.8          | 7275   | 12700              | 57.3          |
| Cardiff and Vale UHB              | 8738             | 15098              | 57.9          | 6886   | 10829              | 63.6          |
| Cwm Taf Morgannwg UHB             | 6767             | 11742              | 57.6          | 4926   | 7800               | 63.2          |
| Hywel Dda UHB                     | 4713             | 9881               | 47.7          | 3404   | 6895               | 49.4          |
| Powys Teaching HB                 | 1290             | 2239               | 57.6          | 883  | 1374               | 64.3          |
| Swansea Bay UHB                   | 7269             | 12962              | 56.1          | 5247   | 8942               | 58.7          |
| Velindre NHS Trust                | 912              | 1495               | 61.0          | 492  | 747                | 65.9          |
| Welsh Ambulance Service NHS Trust | 1520             | 3606               | 42.2          | 925  | 2241               | 41.3          |
| Public Health Wales NHS Trust     | 1296             | 2018               | 64.2          | 498  | 734                | 67.8          |
| <b>Wales</b>                      | <b>50649</b>     | <b>90459</b>       | <b>56.0</b>   | <b>36190</b>                                   | <b>61395</b>       | <b>58.9</b>   |

<sup>1</sup> Combined figures for: Additional Prof Scientific and Technical, Additional Clinical Services, Allied Health Professions, Medical and Dental, Nursing & Midwifery Registered staff groups.

**Figure 4.2.7.** Uptake of influenza immunisation in NHS staff with direct patient contact in Wales, 2016/17 - 2019/20



**Figure 4.2.8.** Number of influenza immunisations in Welsh Health Board & NHS Trust staff with direct patient contact – seasonal comparison 2018/19 and 2019/20.



**Table 4.2.9.** *Uptake of influenza immunisation in NHS staff groups, Wales, 2019/20*

| ESR staff group                          | Staff         |                 | Uptake (%) |
|--|---------------|-----------------|------------|
|  | Immunised (n) | Denominator (n) |            |
| Additional Clinical Services             | 9279          | 17036           | 54.5       |
| Additional Prof Scientific and Technical | 1870          | 3433            | 54.5       |
| Administrative and Clerical              | 8858          | 16298           | 54.4       |
| Allied Health Professionals              | 3619          | 5415            | 66.8       |
| Estates and Ancillary                    | 3314          | 8230            | 40.3       |
| Healthcare Scientists                    | 894           | 1887            | 47.4       |
| Medical and Dental                       | 4408          | 7010            | 62.9       |
| Nursing & Midwifery Registered           | 15591         | 25526           | 61.1       |

### 4.2.7 Immunisations given in community pharmacies

A total of 64,085 people were immunised against influenza in community pharmacies in Wales, as at 31<sup>st</sup> March 2020. The highest number of influenza immunisations given in this setting was in Betsi Cadwaladr UHB (22.5%) whilst the lowest number was in Powys Teaching HB (3.7%) (Table 4.2.10).

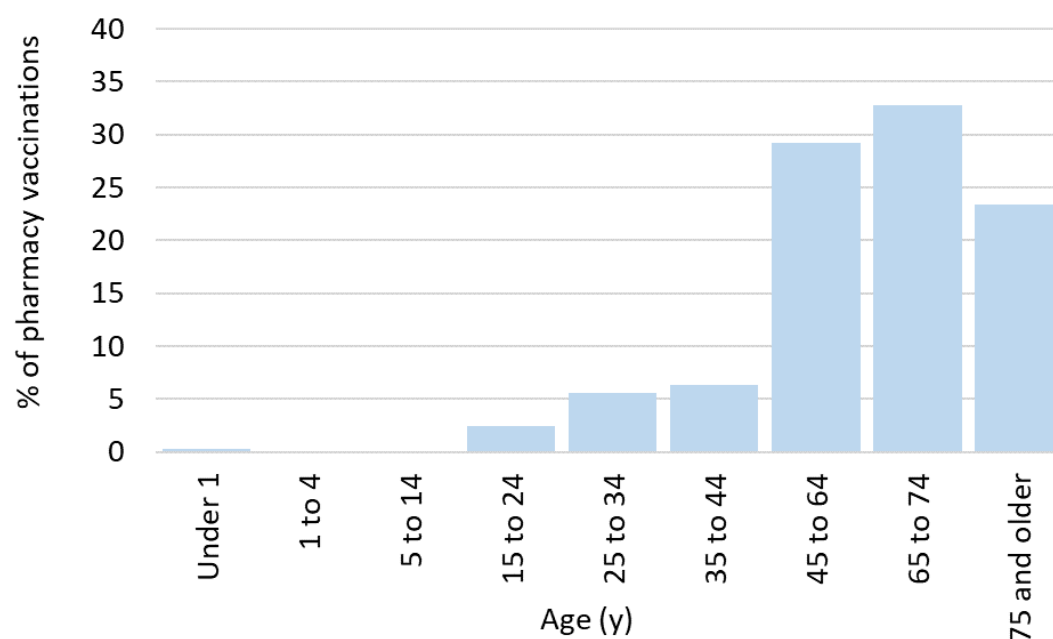
The majority of influenza immunisations given in community pharmacies were given to individuals aged 65 years and older (56.6%); whilst 29.7% of immunisations were given to those in one or more risk group (Table 4.2.11). Of the influenza immunisations given to those in a risk group, the majority were given to individuals with chronic respiratory disease (50.1%) and individuals with diabetes (21.5%) (Table 4.2.12).

**Table 4.2.10.** *Number of influenza immunisations given in community pharmacies in Wales, by health board, 2019/20*

| Health board          | Immunised    |              |
|-----------------------|--------------|--------------|
|                       | (n)          | (%)          |
| Aneurin Bevan UHB     | 10223        | 21.3         |
| Betsi Cadwaladr UHB   | 14396        | 17.4         |
| Cardiff and Vale UHB  | 9163         | 21.5         |
| Cwm Taf Morgannwg UHB | 9873         | 15.3         |
| Hywel Dda UHB         | 9796         | 8.1          |
| Powys Teaching HB     | 2378         | 13.0         |
| Swansea Bay UHB       | 8256         | 3.5          |
| <b>Wales</b>          | <b>64085</b> | <b>100.0</b> |



**Figure 4.2.9.** Proportion of influenza immunisations given in community pharmacies in Wales, by age-group distribution 2019/20



**Table 4.2.11.** Number of influenza immunisations given in community pharmacies, by eligibility group, 2019/20

| Eligibility        | Immunised in pharmacies |  | Total recorded as vaccinated in general practice databases (n) <sup>1</sup> | % of total vaccinations given through pharmacies <sup>1</sup> |
|--------------------|-------------------------|--|---|---|
|                    | n                       | % of total pharmacy influenza vaccinations |   |   |
| Aged 65 or over    | 36254                   | 56.6                                       | 469497  | 7.7   |
| Risk group         | 19037                   | 29.7                                       | 197481  | 9.6   |
| Carer <sup>2</sup> | 3096                    | 4.8  | 16589   | 18.7  |
| Pregnancy          | 1115                    | 1.7  | 12434   | 9.0   |
| Care home staff    | 2844                    | 4.4  | -   | -   |
| Other <sup>3</sup> | 1739                    | 2.7  | -   | -   |
| <b>Total</b>       | <b>64085</b>            | <b>100.0</b>                               |   |   |

<sup>1</sup> Completeness of reporting of pharmacy vaccinations to general practices and consistency of coding for pharmacy vaccinations in general practice databases are unknown. Due to this, the total number of individuals vaccinated may be an underestimate.

<sup>2</sup> Includes informal unpaid and voluntary sector unpaid carers.

<sup>3</sup> Includes individuals who are categorised as: Community First Responder; Designated First Aider; Domiciliary carers; Household contact of immunocompromised; Not in a risk group; People living in long-stay residential care homes or other long-stay care facilities; Third Sector Carer; Other (as specified in PGD).

**Table 4.2.12.** Number of influenza immunisations given in community pharmacies, by risk group, 2019/20

| Risk group                      | Immunised in pharmacies |  | Total recorded as vaccinated in general practice databases (n) <sup>1</sup> | % of total vaccinations given through pharmacies <sup>1</sup> |
|---------------------------------|-------------------------|--|---|---|
|                                 | n                       | % of total pharmacy influenza vaccinations |   |   |
| Asplenia or splenic dysfunction | 105                     | 0.6  | 4980  | 2.1   |
| Chronic Heart Disease           | 1919                    | 10.1                                       | 32131   | 6.0   |
| Chronic Kidney Disease          | 252                     | 1.3  | 7427  | 3.4   |
| Chronic Liver Disease           | 140                     | 0.7  | 4528  | 3.1   |
| Chronic Neurological Disease    | 892                     | 4.7  | 16679   | 5.3   |
| Chronic Respiratory Disease     | 9543                    | 50.1                                       | 97013   | 9.8   |
| Diabetes                        | 4095                    | 21.5                                       | 52497   | 7.8   |
| Immuno-suppressed               | 1914                    | 10.1                                       | 14383   | 13.3  |
| Morbidly obese adults           | 177                     | 0.9  | 29109   | 0.6   |
| <b>Total</b>                    | <b>19037</b>            | <b>100.0</b>                               | <b>197481</b>   | <b>9.6</b>  |

<sup>1</sup>Completeness of reporting of pharmacy vaccinations to general practices and consistency of coding for pharmacy vaccinations in general practice databases are unknown. Due to this the total number of individuals vaccinated may be an underestimate.

## 5. Conclusions

Although it was shorter in duration than the 2018/19 influenza seasons, the 2019/20 season still presented a substantial burden of disease to the population of Wales and additional pressures to health care services in Wales. Co-circulation of influenza A(H1) and influenza A(H3) viruses; and the absence of significant influenza B activity demonstrates the year-on-year variability in patterns virus circulation.

The continuation of rapid influenza testing for those attending hospital highlights the burden of influenza for hospital attendances, with more than 900 confirmed cases in Emergency Department. During the peak week for confirmed case in EDs, more than half of those tested were positive for influenza.

Once again this season, more patients than ever at risk or in eligible groups were vaccinated against influenza, although due to the expanding nature of the eligible groups, this was not reflected in increased percentage uptake. The roll-out of the childhood flu programme is complete for all primary school ages and uptake remains high in the school-aged groups.

Vaccine effectiveness studies from the UK show that the 2019/20 flu vaccine showed significant effectiveness against influenza A(H3) and influenza A(H1). The genetic variation and continued divergence of influenza A(H3N2) virus clades continues to pose challenges to vaccine effectiveness, with potential for limited cross-protection against circulating clades.

## 6. References

1. Chief Medical Officer for Wales. *The national influenza immunisation programme 2019-2020*. WHC(2019)015. Welsh Government. 2019. [Accessed 15<sup>th</sup> July 2020]. Available from: <https://gov.wales/sites/default/files/publications/2019-06/the-national-influenza-immunisation-programme-2019-2020.pdf>
2. Vega T Lozano J E, Meerhoff T *et al*. *Influenza surveillance in Europe: establishing epidemic thresholds by the Moving Epidemic Method*. *Influenza and Other Respiratory Viruses*. 2013;7(4):346-558 Available from: <http://onlinelibrary.wiley.com/doi/10.1111/j.1750-2659.2012.00422.x/full>
3. Public Health England Centre for Infectious Disease Surveillance and Control Respiratory Diseases Department. *Surveillance of influenza and other respiratory viruses in the United Kingdom: Winter 2019 to 2020*. Public Health England, 2020. [Accessed 6<sup>th</sup> July 2020]. Available from: [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](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)
4. Rose A, Kissling E, Emborg HD, *et al*. Interim 2019/20 influenza vaccine effectiveness: six European studies, September 2019 to January 2020. *Euro Surveill*. 2020;25(10). [Accessed 31<sup>st</sup> July 2020]. Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7078828/>
5. PRIMIS. *Seasonal Influenza Vaccine Uptake Reporting Specification Collection 2019/2020* University of Nottingham. 2019 Available from: [http://nww2.nphs.wales.nhs.uk:8080/VaccinationsImmunisationProgsDocs.nsf/\(\\$All\)/FE96B3FC7BCF17C28025845E00479294/\\$File/Seasonal\\_Flu\\_LQD\\_Specification\\_2019%20v%2011.2%20SCT.pdf](http://nww2.nphs.wales.nhs.uk:8080/VaccinationsImmunisationProgsDocs.nsf/($All)/FE96B3FC7BCF17C28025845E00479294/$File/Seasonal_Flu_LQD_Specification_2019%20v%2011.2%20SCT.pdf)
6. Public Health Wales Vaccine Preventable Disease Programme. *Coverage of pertussis and influenza vaccination in pregnant women in Wales 2019/20*. Public Health Wales Health Protection Division. 2020. [Accessed 31<sup>st</sup> July 2020]. Available from: [http://nww2.nphs.wales.nhs.uk:8080/CommunitySurveillanceDocs.nsf/3dc04669c9e1eaa880257062003b246b/01fc056a84f7f6728025855f00348528/\\$FILE/Coverage%20of%20pertussis%20and%20influenza%20vaccination%20in%20pregnant%20women%20in%20Wales%202019-20\\_v1.pdf](http://nww2.nphs.wales.nhs.uk:8080/CommunitySurveillanceDocs.nsf/3dc04669c9e1eaa880257062003b246b/01fc056a84f7f6728025855f00348528/$FILE/Coverage%20of%20pertussis%20and%20influenza%20vaccination%20in%20pregnant%20women%20in%20Wales%202019-20_v1.pdf)

**Further information on influenza and influenza immunisation can be found using the links below:**

Information for Health Professionals on influenza immunisation (NHS Wales only):

<http://howis.wales.nhs.uk/sites3/page.cfm?orgid=474&pid=54871>

Information on influenza:

<http://www.wales.nhs.uk/sites3/page.cfm?orgid=457&pid=27522>

General information on influenza immunisation in Wales:

<http://www.wales.nhs.uk/sites3/page.cfm?orgid=457&pid=25480>

Influenza surveillance in Wales:

<http://www.wales.nhs.uk/sites3/page.cfm?orgid=457&pid=27922>

## 7. Information about this report

### Report Team

Report prepared by Public Health Wales Vaccine Preventable Disease Programme (VPDP), Communicable Disease Surveillance Centre (CDSC) and Specialist Virology Centre, in collaboration with NHS Wales Informatics Service Primary Care Informatics Team (NWIS PCIT).

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## 8. Appendix A: Influenza immunisation data tables

**Table A1.** Uptake of influenza immunisation in Wales 2019/20.

| Local Authority              | Patients aged 65y and older |                    |               | Patients aged 6m to 64y at risk |                    |               |
|------------------------------|-----------------------------|--------------------|---------------|---------------------------------|--------------------|---------------|
|                              | Immunised<br>(n)            | Denominator<br>(n) | Uptake<br>(%) | Immunised<br>(n)                | Denominator<br>(n) | Uptake<br>(%) |
| <b>Aneurin Bevan UHB</b>     |                             |                    |               |                                 |                    |               |
| Blaenau Gwent LA             | 9,615                       | 14,353             | 67.0          | 5,089                           | 11,479             | 44.3          |
| Caerphilly LA                | 25,457                      | 36,969             | 68.9          | 12,064                          | 27,213             | 44.3          |
| Monmouthshire LA             | 18,798                      | 25,230             | 74.5          | 7,148                           | 13,238             | 54.0          |
| Newport LA                   | 19,347                      | 27,104             | 71.4          | 10,228                          | 21,692             | 47.2          |
| Torfaen LA                   | 14,135                      | 19,651             | 71.9          | 6,938                           | 15,640             | 44.4          |
| <b>Health Board Total</b>    | <b>87,352</b>               | <b>123,307</b>     | <b>70.8</b>   | <b>41,467</b>                   | <b>89,262</b>      | <b>46.5</b>   |
| <b>Betsi Cadwaladr UHB</b>   |                             |                    |               |                                 |                    |               |
| Anglesey LA                  | 12,427                      | 17,073             | 72.8          | 4,647                           | 9,321              | 49.9          |
| Conwy LA                     | 21,703                      | 31,138             | 69.7          | 6,832                           | 15,020             | 45.5          |
| Denbighshire LA              | 17,061                      | 24,654             | 69.2          | 6,389                           | 14,322             | 44.6          |
| Flintshire LA                | 23,937                      | 32,257             | 74.2          | 10,217                          | 20,842             | 49.0          |
| Gwynedd LA                   | 19,288                      | 28,087             | 68.7          | 7,345                           | 16,009             | 45.9          |
| Wrexham LA                   | 21,961                      | 29,868             | 73.5          | 9,534                           | 20,282             | 47.0          |
| <b>Health Board Total</b>    | <b>116,377</b>              | <b>163,077</b>     | <b>71.4</b>   | <b>44,964</b>                   | <b>95,796</b>      | <b>46.9</b>   |
| <b>Cardiff and Vale UHB</b>  |                             |                    |               |                                 |                    |               |
| Cardiff LA                   | 39,116                      | 55,128             | 71.0          | 22,108                          | 50,009             | 44.2          |
| Vale of Glamorgan LA         | 19,654                      | 27,393             | 71.7          | 7,279                           | 17,009             | 42.8          |
| <b>Health Board Total</b>    | <b>58,770</b>               | <b>82,521</b>      | <b>71.2</b>   | <b>29,387</b>                   | <b>67,018</b>      | <b>43.8</b>   |
| <b>Cwm Taf Morgannwg UHB</b> |                             |                    |               |                                 |                    |               |
| Bridgend LA                  | 23,324                      | 32,618             | 71.5          | 9,812                           | 23,738             | 41.3          |
| Merthyr Tydfil LA            | 7,678                       | 11,313             | 67.9          | 3,824                           | 9,366              | 40.8          |
| Rhondda Cynon Taff LA        | 33,619                      | 49,895             | 67.4          | 14,805                          | 37,426             | 39.6          |
| <b>Health Board Total</b>    | <b>64,621</b>               | <b>93,826</b>      | <b>68.9</b>   | <b>28,441</b>                   | <b>70,530</b>      | <b>40.3</b>   |
| <b>Hywel Dda UHB</b>         |                             |                    |               |                                 |                    |               |
| Carmarthenshire LA           | 28,156                      | 42,513             | 66.2          | 10,149                          | 25,106             | 40.4          |
| Ceredigion LA                | 13,663                      | 23,082             | 59.2          | 4,152                           | 11,068             | 37.5          |
| Pembrokeshire LA             | 20,710                      | 30,836             | 67.2          | 6,879                           | 16,485             | 41.7          |
| <b>Health Board Total</b>    | <b>62,529</b>               | <b>96,431</b>      | <b>64.8</b>   | <b>21,180</b>                   | <b>52,659</b>      | <b>40.2</b>   |
| <b>Powys Teaching HB</b>     |                             |                    |               |                                 |                    |               |
|                              | <b>25,222</b>               | <b>37,587</b>      | <b>67.1</b>   | <b>7,867</b>                    | <b>17,764</b>      | <b>44.3</b>   |
| <b>Swansea Bay UHB</b>       |                             |                    |               |                                 |                    |               |
| Neath Port Talbot LA         | 20,319                      | 29,698             | 68.4          | 9,451                           | 20,847             | 45.3          |
| Swansea LA                   | 34,307                      | 50,492             | 67.9          | 14,724                          | 34,142             | 43.1          |
| <b>Health Board Total</b>    | <b>54,626</b>               | <b>80,190</b>      | <b>68.1</b>   | <b>24,175</b>                   | <b>54,989</b>      | <b>44.0</b>   |
| <b>Wales Total</b>           | <b>469,497</b>              | <b>676,939</b>     | <b>69.4</b>   | <b>197,481</b>                  | <b>448,018</b>     | <b>44.1</b>   |

**Table A2.** Uptake of influenza immunisation in those aged six months to 64 years with one or more clinical risk (by risk category) in Wales 2019/20.

| Local Authority                     | Total patients<br>aged 6m to 64y | Chronic heart disease |     |                  |               | Chronic respiratory disease |      |                  |               | Chronic kidney disease |     |                  |               | Diabetes          |     |                  |               |
|-------------------------------------|----------------------------------|-----------------------|-----|------------------|---------------|-----------------------------|------|------------------|---------------|------------------------|-----|------------------|---------------|-------------------|-----|------------------|---------------|
|                                     |                                  | With<br>condition     |     | Immunised<br>(n) | Uptake<br>(%) | With condition<br>(n)       | (%)  | Immunised<br>(n) | Uptake<br>(%) | With<br>condition      |     | Immunised<br>(n) | Uptake<br>(%) | With<br>condition |     | Immunised<br>(n) | Uptake<br>(%) |
| <b><u>Aneurin Bevan UHB</u></b>     |                                  |                       |     |                  |               |                             |      |                  |               |                        |     |                  |               |                   |     |                  |               |
| Blaenau Gwent LA                    | 57,536                           | 1,765                 | 3.1 | 841              | 47.6          | 5,066                       | 8.8  | 2,489            | 49.1          | 406                    | 0.7 | 206              | 50.7          | 2,485             | 4.3 | 1,400            | 56.3          |
| Caerphilly LA                       | 151,874                          | 4,167                 | 2.7 | 2,039            | 48.9          | 11,568                      | 7.6  | 5,617            | 48.6          | 722                    | 0.5 | 372              | 51.5          | 5,841             | 3.8 | 3,582            | 61.3          |
| Monmouthshire LA                    | 77,228                           | 2,188                 | 2.8 | 1,227            | 56.1          | 6,020                       | 7.8  | 3,450            | 57.3          | 451                    | 0.6 | 275              | 61.0          | 2,434             | 3.2 | 1,573            | 64.6          |
| Newport LA                          | 132,775                          | 3,088                 | 2.3 | 1,551            | 50.2          | 9,368                       | 7.1  | 4,788            | 51.1          | 638                    | 0.5 | 351              | 55.0          | 4,900             | 3.7 | 2,944            | 60.1          |
| Torfaen LA                          | 77,135                           | 2,377                 | 3.1 | 1,196            | 50.3          | 7,767                       | 10.1 | 3,391            | 43.7          | 357                    | 0.5 | 210              | 58.8          | 2,942             | 3.8 | 1,753            | 59.6          |
| Health Board Total                  | 496,548                          | 13,585                | 2.7 | 6,854            | 50.5          | 39,789                      | 8.0  | 19,735           | 49.6          | 2,574                  | 0.5 | 1,414            | 54.9          | 18,602            | 3.7 | 11,252           | 60.5          |
| <b><u>Betsi Cadwaladr UHB</u></b>   |                                  |                       |     |                  |               |                             |      |                  |               |                        |     |                  |               |                   |     |                  |               |
| Anglesey LA                         | 48,985                           | 1,219                 | 2.5 | 651              | 53.4          | 4,650                       | 9.5  | 2,382            | 51.2          | 262                    | 0.5 | 151              | 57.6          | 1,782             | 3.6 | 1,104            | 62.0          |
| Conwy LA                            | 86,418                           | 2,340                 | 2.7 | 1,135            | 48.5          | 7,020                       | 8.1  | 3,409            | 48.6          | 531                    | 0.6 | 272              | 51.2          | 2,886             | 3.3 | 1,661            | 57.6          |
| Denbighshire LA                     | 78,831                           | 2,302                 | 2.9 | 1,089            | 47.3          | 6,821                       | 8.7  | 3,206            | 47.0          | 449                    | 0.6 | 247              | 55.0          | 2,772             | 3.5 | 1,559            | 56.2          |
| Flintshire LA                       | 122,238                          | 3,146                 | 2.6 | 1,659            | 52.7          | 9,806                       | 8.0  | 4,988            | 50.9          | 685                    | 0.6 | 395              | 57.7          | 4,051             | 3.3 | 2,553            | 63.0          |
| Gwynedd LA                          | 99,995                           | 2,133                 | 2.1 | 1,014            | 47.5          | 7,944                       | 7.9  | 3,784            | 47.6          | 519                    | 0.5 | 290              | 55.9          | 2,853             | 2.9 | 1,717            | 60.2          |
| Wrexham LA                          | 118,790                          | 3,095                 | 2.6 | 1,547            | 50.0          | 9,555                       | 8.0  | 4,770            | 49.9          | 656                    | 0.6 | 371              | 56.6          | 3,831             | 3.2 | 2,362            | 61.7          |
| Health Board Total                  | 555,257                          | 14,235                | 2.6 | 7,095            | 49.8          | 45,796                      | 8.2  | 22,539           | 49.2          | 3,102                  | 0.6 | 1,726            | 55.6          | 18,175            | 3.3 | 10,956           | 60.3          |
| <b><u>Cardiff and Vale UHB</u></b>  |                                  |                       |     |                  |               |                             |      |                  |               |                        |     |                  |               |                   |     |                  |               |
| Cardiff LA                          | 339,667                          | 7,019                 | 2.1 | 3,076            | 43.8          | 23,874                      | 7.0  | 11,180           | 46.8          | 1,348                  | 0.4 | 681              | 50.5          | 10,211            | 3.0 | 6,229            | 61.0          |
| Vale of Glamorgan LA                | 103,579                          | 2,608                 | 2.5 | 1,174            | 45.0          | 8,025                       | 7.7  | 3,580            | 44.6          | 475                    | 0.5 | 230              | 48.4          | 3,189             | 3.1 | 1,878            | 58.9          |
| Health Board Total                  | 443,246                          | 9,627                 | 2.2 | 4,250            | 44.1          | 31,899                      | 7.2  | 14,760           | 46.3          | 1,823                  | 0.4 | 911              | 50.0          | 13,400            | 3.0 | 8,107            | 60.5          |
| <b><u>Cwm Taf Morgannwg UHB</u></b> |                                  |                       |     |                  |               |                             |      |                  |               |                        |     |                  |               |                   |     |                  |               |
| Bridgend LA                         | 127,372                          | 4,103                 | 3.2 | 1,788            | 43.6          | 10,710                      | 8.4  | 4,748            | 44.3          | 951                    | 0.7 | 474              | 49.8          | 4,842             | 3.8 | 2,739            | 56.6          |
| Merthyr Tydfil LA                   | 50,149                           | 1,500                 | 3.0 | 630              | 42.0          | 4,121                       | 8.2  | 1,960            | 47.6          | 299                    | 0.6 | 138              | 46.2          | 2,010             | 4.0 | 1,137            | 56.6          |
| Rhondda Cynon Taff LA               | 204,927                          | 5,559                 | 2.7 | 2,430            | 43.7          | 16,584                      | 8.1  | 7,331            | 44.2          | 1,366                  | 0.7 | 611              | 44.7          | 7,801             | 3.8 | 4,365            | 56.0          |
| Health Board Total                  | 382,448                          | 11,162                | 2.9 | 4,848            | 43.4          | 31,415                      | 8.2  | 14,039           | 44.7          | 2,616                  | 0.7 | 1,223            | 46.8          | 14,653            | 3.8 | 8,241            | 56.2          |
| <b><u>Hywel Dda UHB</u></b>         |                                  |                       |     |                  |               |                             |      |                  |               |                        |     |                  |               |                   |     |                  |               |
| Carmarthenshire LA                  | 139,160                          | 4,129                 | 3.0 | 1,766            | 42.8          | 11,419                      | 8.2  | 4,949            | 43.3          | 846                    | 0.6 | 392              | 46.3          | 5,012             | 3.6 | 2,748            | 54.8          |
| Ceredigion LA                       | 70,233                           | 1,887                 | 2.7 | 762              | 40.4          | 5,018                       | 7.1  | 1,994            | 39.7          | 354                    | 0.5 | 163              | 46.0          | 2,100             | 3.0 | 1,096            | 52.2          |
| Pembrokeshire LA                    | 90,629                           | 2,665                 | 2.9 | 1,176            | 44.1          | 7,483                       | 8.3  | 3,393            | 45.3          | 552                    | 0.6 | 256              | 46.4          | 3,144             | 3.5 | 1,746            | 55.5          |
| Health Board Total                  | 300,022                          | 8,681                 | 2.9 | 3,704            | 42.7          | 23,920                      | 8.0  | 10,336           | 43.2          | 1,752                  | 0.6 | 811              | 46.3          | 10,256            | 3.4 | 5,590            | 54.5          |
| <b><u>Powys Teaching HB</u></b>     |                                  |                       |     |                  |               |                             |      |                  |               |                        |     |                  |               |                   |     |                  |               |
|                                     | 102,206                          | 3,043                 | 3.0 | 1,388            | 45.6          | 8,160                       | 8.0  | 3,822            | 46.8          | 647                    | 0.6 | 348              | 53.8          | 3,174             | 3.1 | 1,870            | 58.9          |
| <b><u>Swansea Bay UHB</u></b>       |                                  |                       |     |                  |               |                             |      |                  |               |                        |     |                  |               |                   |     |                  |               |
| Neath Port Talbot LA                | 109,770                          | 3,352                 | 3.1 | 1,618            | 48.3          | 9,180                       | 8.4  | 4,358            | 47.5          | 946                    | 0.9 | 529              | 55.9          | 4,317             | 3.9 | 2,531            | 58.6          |
| Swansea LA                          | 205,673                          | 5,285                 | 2.6 | 2,374            | 44.9          | 15,896                      | 7.7  | 7,424            | 46.7          | 955                    | 0.5 | 465              | 48.7          | 6,775             | 3.3 | 3,950            | 58.3          |
| Health Board Total                  | 315,443                          | 8,637                 | 2.7 | 3,992            | 46.2          | 25,076                      | 7.9  | 11,782           | 47.0          | 1,901                  | 0.6 | 994              | 52.3          | 11,092            | 3.5 | 6,481            | 58.4          |
| <b><u>Wales Total</u></b>           |                                  |                       |     |                  |               |                             |      |                  |               |                        |     |                  |               |                   |     |                  |               |
|                                     | 2,595,170                        | 68,970                | 2.7 | 32,131           | 46.6          | 206,055                     | 7.9  | 97,013           | 47.1          | 14,415                 | 0.6 | 7,427            | 51.5          | 89,352            | 3.4 | 52,497           | 58.8          |



**Table A2 (cont).** Uptake of influenza immunisation in those aged six months to 64 years with one or more clinical risk (by risk category) in Wales 2019/20.

| Local Authority              | Total patients<br>aged 6m to 64y | Immuno-supression |                  |               | Chronic liver disease |        |                  | Neurological conditions |                   |                  | Morbidly obese |                   |                  | Asplenia/ splenic dysfunction |                       |        |                  |               |     |       |      |
|------------------------------|----------------------------------|-------------------|------------------|---------------|-----------------------|--------|------------------|-------------------------|-------------------|------------------|----------------|-------------------|------------------|-------------------------------|-----------------------|--------|------------------|---------------|-----|-------|------|
|                              |                                  | With<br>condition | Immunised<br>(n) | Uptake<br>(%) | With condition<br>(n) | (%)    | Immunised<br>(n) | Uptake<br>(%)           | With<br>condition | Immunised<br>(n) | Uptake<br>(%)  | With<br>condition | Immunised<br>(n) | Uptake<br>(%)                 | With condition<br>(n) | (%)    | Immunised<br>(n) | Uptake<br>(%) |     |       |      |
| <b>Aneurin Bevan UHB</b>     |                                  |                   |                  |               |                       |        |                  |                         |                   |                  |                |                   |                  |                               |                       |        |                  |               |     |       |      |
| Blaenau Gwent LA             | 57,536                           | 743               | 1.3              | 422           | 56.8                  | 306    | 0.5              | 140                     | 45.8              | 883              | 1.5            | 398               | 45.1             | 2,514                         | 4.4                   | 869    | 34.6             | 259           | 0.5 | 99    | 38.2 |
| Caerphilly LA                | 151,874                          | 1,574             | 1.0              | 888           | 56.4                  | 592    | 0.4              | 250                     | 42.2              | 2,169            | 1.4            | 996               | 45.9             | 6,192                         | 4.1                   | 2,062  | 33.3             | 677           | 0.4 | 279   | 41.2 |
| Monmouthshire LA             | 77,228                           | 866               | 1.1              | 554           | 64.0                  | 280    | 0.4              | 132                     | 47.1              | 1,079            | 1.4            | 600               | 55.6             | 2,316                         | 3.0                   | 1,055  | 45.6             | 439           | 0.6 | 227   | 51.7 |
| Newport LA                   | 132,775                          | 1,387             | 1.0              | 785           | 56.6                  | 504    | 0.4              | 214                     | 42.5              | 1,644            | 1.2            | 773               | 47.0             | 4,431                         | 3.3                   | 1,639  | 37.0             | 554           | 0.4 | 232   | 41.9 |
| Torfaen LA                   | 77,135                           | 1,018             | 1.3              | 637           | 62.6                  | 356    | 0.5              | 169                     | 47.5              | 1,216            | 1.6            | 609               | 50.1             | 2,991                         | 3.9                   | 1,159  | 38.7             | 424           | 0.5 | 206   | 48.6 |
| Health Board Total           | 496,548                          | 5,588             | 1.1              | 3,286         | 58.8                  | 2,038  | 0.4              | 905                     | 44.4              | 6,991            | 1.4            | 3,376             | 48.3             | 18,444                        | 3.7                   | 6,784  | 36.8             | 2,353         | 0.5 | 1,043 | 44.3 |
| <b>Betsi Cadwaladr UHB</b>   |                                  |                   |                  |               |                       |        |                  |                         |                   |                  |                |                   |                  |                               |                       |        |                  |               |     |       |      |
| Anglesey LA                  | 48,985                           | 621               | 1.3              | 407           | 65.5                  | 205    | 0.4              | 104                     | 50.7              | 764              | 1.6            | 404               | 52.9             | 1,689                         | 3.4                   | 717    | 42.5             | 229           | 0.5 | 123   | 53.7 |
| Conwy LA                     | 86,418                           | 912               | 1.1              | 519           | 56.9                  | 414    | 0.5              | 177                     | 42.8              | 1,240            | 1.4            | 574               | 46.3             | 2,429                         | 2.8                   | 864    | 35.6             | 464           | 0.5 | 197   | 42.5 |
| Denbighshire LA              | 78,831                           | 951               | 1.2              | 544           | 57.2                  | 360    | 0.5              | 151                     | 41.9              | 1,218            | 1.5            | 564               | 46.3             | 2,400                         | 3.0                   | 881    | 36.7             | 408           | 0.5 | 172   | 42.2 |
| Flintshire LA                | 122,238                          | 1,384             | 1.1              | 863           | 62.4                  | 523    | 0.4              | 253                     | 48.4              | 1,536            | 1.3            | 802               | 52.2             | 3,620                         | 3.0                   | 1,433  | 39.6             | 584           | 0.5 | 277   | 47.4 |
| Gwynedd LA                   | 99,995                           | 1,060             | 1.1              | 671           | 63.3                  | 377    | 0.4              | 162                     | 43.0              | 1,146            | 1.1            | 542               | 47.3             | 2,580                         | 2.6                   | 978    | 37.9             | 435           | 0.4 | 170   | 39.1 |
| Wrexham LA                   | 118,790                          | 1,169             | 1.0              | 669           | 57.2                  | 512    | 0.4              | 213                     | 41.6              | 1,447            | 1.2            | 699               | 48.3             | 3,891                         | 3.3                   | 1,498  | 38.5             | 569           | 0.5 | 264   | 46.4 |
| Health Board Total           | 555,257                          | 6,097             | 1.1              | 3,673         | 60.2                  | 2,391  | 0.4              | 1,060                   | 44.3              | 7,351            | 1.3            | 3,585             | 48.8             | 16,609                        | 3.0                   | 6,371  | 38.4             | 2,689         | 0.5 | 1,203 | 44.7 |
| <b>Cardiff and Vale UHB</b>  |                                  |                   |                  |               |                       |        |                  |                         |                   |                  |                |                   |                  |                               |                       |        |                  |               |     |       |      |
| Cardiff LA                   | 339,667                          | 3,045             | 0.9              | 1,621         | 53.2                  | 1,081  | 0.3              | 447                     | 41.4              | 3,763            | 1.1            | 1,681             | 44.7             | 7,939                         | 2.3                   | 2,841  | 35.8             | 1,624         | 0.5 | 638   | 39.3 |
| Vale of Glamorgan LA         | 103,579                          | 1,025             | 1.0              | 557           | 54.3                  | 308    | 0.3              | 133                     | 43.2              | 1,402            | 1.4            | 638               | 45.5             | 2,822                         | 2.7                   | 981    | 34.8             | 537           | 0.5 | 207   | 38.5 |
| Health Board Total           | 443,246                          | 4,070             | 0.9              | 2,178         | 53.5                  | 1,389  | 0.3              | 580                     | 41.8              | 5,165            | 1.2            | 2,319             | 44.9             | 10,761                        | 2.4                   | 3,822  | 35.5             | 2,161         | 0.5 | 845   | 39.1 |
| <b>Cwm Taf Morgannwg UHB</b> |                                  |                   |                  |               |                       |        |                  |                         |                   |                  |                |                   |                  |                               |                       |        |                  |               |     |       |      |
| Bridgend LA                  | 127,372                          | 996               | 0.8              | 500           | 50.2                  | 506    | 0.4              | 217                     | 42.9              | 2,088            | 1.6            | 929               | 44.5             | 4,593                         | 3.6                   | 1,482  | 32.3             | 569           | 0.4 | 213   | 37.4 |
| Merthyr Tydfil LA            | 50,149                           | 463               | 0.9              | 193           | 41.7                  | 237    | 0.5              | 91                      | 38.4              | 784              | 1.6            | 327               | 41.7             | 2,071                         | 4.1                   | 630    | 30.4             | 181           | 0.4 | 66    | 36.5 |
| Rhondda Cynon Taff LA        | 204,927                          | 2,014             | 1.0              | 944           | 46.9                  | 973    | 0.5              | 383                     | 39.4              | 2,996            | 1.5            | 1,203             | 40.2             | 8,161                         | 4.0                   | 2,264  | 27.7             | 839           | 0.4 | 332   | 39.6 |
| Health Board Total           | 382,448                          | 3,473             | 0.9              | 1,637         | 47.1                  | 1,716  | 0.4              | 691                     | 40.3              | 5,868            | 1.5            | 2,459             | 41.9             | 14,825                        | 3.9                   | 4,376  | 29.5             | 1,589         | 0.4 | 611   | 38.5 |
| <b>Hywel Dda UHB</b>         |                                  |                   |                  |               |                       |        |                  |                         |                   |                  |                |                   |                  |                               |                       |        |                  |               |     |       |      |
| Carmarthenshire LA           | 139,160                          | 1,392             | 1.0              | 718           | 51.6                  | 530    | 0.4              | 204                     | 38.5              | 2,257            | 1.6            | 960               | 42.5             | 4,731                         | 3.4                   | 1,514  | 32.0             | 582           | 0.4 | 228   | 39.2 |
| Ceredigion LA                | 70,233                           | 648               | 0.9              | 313           | 48.3                  | 270    | 0.4              | 96                      | 35.6              | 943              | 1.3            | 365               | 38.7             | 1,828                         | 2.6                   | 529    | 28.9             | 344           | 0.5 | 113   | 32.8 |
| Pembrokeshire LA             | 90,629                           | 1,136             | 1.3              | 628           | 55.3                  | 526    | 0.6              | 231                     | 43.9              | 1,460            | 1.6            | 620               | 42.5             | 2,920                         | 3.2                   | 920    | 31.5             | 476           | 0.5 | 188   | 39.5 |
| Health Board Total           | 300,022                          | 3,176             | 1.1              | 1,659         | 52.2                  | 1,326  | 0.4              | 531                     | 40.0              | 4,660            | 1.6            | 1,945             | 41.7             | 9,479                         | 3.2                   | 2,963  | 31.3             | 1,402         | 0.5 | 529   | 37.7 |
| <b>Powys Teaching HB</b>     |                                  |                   |                  |               |                       |        |                  |                         |                   |                  |                |                   |                  |                               |                       |        |                  |               |     |       |      |
|                              | 102,206                          | 1,166             | 1.1              | 665           | 57.0                  | 333    | 0.3              | 154                     | 46.2              | 1,631            | 1.6            | 780               | 47.8             | 2,892                         | 2.8                   | 1,022  | 35.3             | 555           | 0.5 | 215   | 38.7 |
| <b>Swansea Bay UHB</b>       |                                  |                   |                  |               |                       |        |                  |                         |                   |                  |                |                   |                  |                               |                       |        |                  |               |     |       |      |
| Neath Port Talbot LA         | 109,770                          | 890               | 0.8              | 503           | 56.5                  | 487    | 0.4              | 225                     | 46.2              | 1,795            | 1.6            | 868               | 48.4             | 4,519                         | 4.1                   | 1,744  | 38.6             | 437           | 0.4 | 193   | 44.2 |
| Swansea LA                   | 205,673                          | 1,683             | 0.8              | 782           | 46.5                  | 942    | 0.5              | 382                     | 40.6              | 2,930            | 1.4            | 1,347             | 46.0             | 6,088                         | 3.0                   | 2,027  | 33.3             | 873           | 0.4 | 341   | 39.1 |
| Health Board Total           | 315,443                          | 2,573             | 0.8              | 1,285         | 49.9                  | 1,429  | 0.5              | 607                     | 42.5              | 4,725            | 1.5            | 2,215             | 46.9             | 10,607                        | 3.4                   | 3,771  | 35.6             | 1,310         | 0.4 | 534   | 40.8 |
| <b>Wales Total</b>           |                                  |                   |                  |               |                       |        |                  |                         |                   |                  |                |                   |                  |                               |                       |        |                  |               |     |       |      |
|                              | 2,595,170                        | 26,143            | 1.0              | 14,383        | 55.0                  | 10,622 | 0.4              | 4,528                   | 42.6              | 36,391           | 1.4            | 16,679            | 45.8             | 83,617                        | 3.2                   | 29,109 | 34.8             | 12,059        | 0.5 | 4,980 | 41.3 |

**Table A3.** Uptake of influenza immunisation in pregnant women, with breakdown for those who have another clinical risk condition in Wales 2019/20.

| Local Authority                     | Pregnant women with clinical risk |                    |               | Pregnant women without clinical risk |                    |               | Total pregnant women |                    |               |
|-------------------------------------|-----------------------------------|--------------------|---------------|--------------------------------------|--------------------|---------------|----------------------|--------------------|---------------|
|                                     | Immunised<br>(n)                  | Denominator<br>(n) | Uptake<br>(%) | Immunised<br>(n)                     | Denominator<br>(n) | Uptake<br>(%) | Immunised<br>(n)     | Denominator<br>(n) | Uptake<br>(%) |
| <b><u>Aneurin Bevan UHB</u></b>     |                                   |                    |               |                                      |                    |               |                      |                    |               |
| Blaenau Gwent LA                    | 55                                | 103                | 53.4          | 190                                  | 607                | 31.3          | 245                  | 710                | 34.5          |
| Caerphilly LA                       | 75                                | 129                | 58.1          | 463                                  | 1,024              | 45.2          | 538                  | 1,153              | 46.7          |
| Monmouthshire LA                    | 57                                | 89                 | 64.0          | 392                                  | 692                | 56.6          | 449                  | 781                | 57.5          |
| Newport LA                          | 123                               | 199                | 61.8          | 755                                  | 1,744              | 43.3          | 878                  | 1,943              | 45.2          |
| Torfaen LA                          | 63                                | 105                | 60.0          | 303                                  | 676                | 44.8          | 366                  | 781                | 46.9          |
| <b>Health Board Total</b>           | <b>373</b>                        | <b>625</b>         | <b>59.7</b>   | <b>2,103</b>                         | <b>4,743</b>       | <b>44.3</b>   | <b>2,476</b>         | <b>5,368</b>       | <b>46.1</b>   |
| <b><u>Betsi Cadwaladr UHB</u></b>   |                                   |                    |               |                                      |                    |               |                      |                    |               |
| Anglesey LA                         | 51                                | 80                 | 63.8          | 265                                  | 542                | 48.9          | 316                  | 622                | 50.8          |
| Conwy LA                            | 74                                | 119                | 62.2          | 399                                  | 871                | 45.8          | 473                  | 990                | 47.8          |
| Denbighshire LA                     | 69                                | 106                | 65.1          | 434                                  | 899                | 48.3          | 503                  | 1,005              | 50.0          |
| Flintshire LA                       | 106                               | 158                | 67.1          | 617                                  | 1,221              | 50.5          | 723                  | 1,379              | 52.4          |
| Gwynedd LA                          | 91                                | 138                | 65.9          | 545                                  | 1,061              | 51.4          | 636                  | 1,199              | 53.0          |
| Wrexham LA                          | 96                                | 145                | 66.2          | 525                                  | 1,255              | 41.8          | 621                  | 1,400              | 44.4          |
| <b>Health Board Total</b>           | <b>487</b>                        | <b>746</b>         | <b>65.3</b>   | <b>2,785</b>                         | <b>5,849</b>       | <b>47.6</b>   | <b>3,272</b>         | <b>6,595</b>       | <b>49.6</b>   |
| <b><u>Cardiff and Vale UHB</u></b>  |                                   |                    |               |                                      |                    |               |                      |                    |               |
| Cardiff LA                          | 220                               | 345                | 63.8          | 1,431                                | 3,103              | 46.1          | 1,651                | 3,448              | 47.9          |
| Vale of Glamorgan LA                | 78                                | 137                | 56.9          | 529                                  | 1,084              | 48.8          | 607                  | 1,221              | 49.7          |
| <b>Health Board Total</b>           | <b>298</b>                        | <b>482</b>         | <b>61.8</b>   | <b>1,960</b>                         | <b>4,187</b>       | <b>46.8</b>   | <b>2,258</b>         | <b>4,669</b>       | <b>48.4</b>   |
| <b><u>Cwm Taf Morgannwg UHB</u></b> |                                   |                    |               |                                      |                    |               |                      |                    |               |
| Bridgend LA                         | 117                               | 206                | 56.8          | 504                                  | 1,252              | 40.3          | 621                  | 1,458              | 42.6          |
| Merthyr Tydfil LA                   | 29                                | 56                 | 51.8          | 174                                  | 375                | 46.4          | 203                  | 431                | 47.1          |
| Rhondda Cynon Taff LA               | 103                               | 172                | 59.9          | 638                                  | 1,543              | 41.3          | 741                  | 1,715              | 43.2          |
| <b>Health Board Total</b>           | <b>249</b>                        | <b>434</b>         | <b>57.4</b>   | <b>1,316</b>                         | <b>3,170</b>       | <b>41.5</b>   | <b>1,565</b>         | <b>3,604</b>       | <b>43.4</b>   |
| <b><u>Hywel Dda UHB</u></b>         |                                   |                    |               |                                      |                    |               |                      |                    |               |
| Carmarthenshire LA                  | 86                                | 142                | 60.6          | 462                                  | 973                | 47.5          | 548                  | 1,115              | 49.1          |
| Ceredigion LA                       | 38                                | 71                 | 53.5          | 198                                  | 452                | 43.8          | 236                  | 523                | 45.1          |
| Pembrokeshire LA                    | 66                                | 126                | 52.4          | 328                                  | 811                | 40.4          | 394                  | 937                | 42.0          |
| <b>Health Board Total</b>           | <b>190</b>                        | <b>339</b>         | <b>56.0</b>   | <b>988</b>                           | <b>2,236</b>       | <b>44.2</b>   | <b>1,178</b>         | <b>2,575</b>       | <b>45.7</b>   |
| <b><u>Powys Teaching HB</u></b>     | <b>91</b>                         | <b>129</b>         | <b>70.5</b>   | <b>512</b>                           | <b>898</b>         | <b>57.0</b>   | <b>603</b>           | <b>1,027</b>       | <b>58.7</b>   |
| <b><u>Swansea Bay UHB</u></b>       |                                   |                    |               |                                      |                    |               |                      |                    |               |
| Neath Port Talbot                   | 32                                | 69                 | 46.4          | 228                                  | 494                | 46.2          | 260                  | 563                | 46.2          |
| Swansea LA                          | 96                                | 171                | 56.1          | 726                                  | 1,508              | 48.1          | 822                  | 1,679              | 49.0          |
| <b>Health Board Total</b>           | <b>128</b>                        | <b>240</b>         | <b>53.3</b>   | <b>954</b>                           | <b>2,002</b>       | <b>47.7</b>   | <b>1,082</b>         | <b>2,242</b>       | <b>48.3</b>   |
| <b>Wales Total</b>                  | <b>1,816</b>                      | <b>2,995</b>       | <b>60.6</b>   | <b>10,618</b>                        | <b>23,085</b>      | <b>46.0</b>   | <b>12,434</b>        | <b>26,080</b>      | <b>47.7</b>   |

**Table A4.** Uptake of influenza immunisation in those aged six months to 64 years and recorded as being a carer in Wales 2019/20.

| Local Authority                     | Total carers     |                    |               |
|-------------------------------------|------------------|--------------------|---------------|
|                                     | Immunised<br>(n) | Denominator<br>(n) | Uptake<br>(%) |
| <b><u>Aneurin Bevan UHB</u></b>     |                  |                    |               |
| Blaenau Gwent LA                    | 260              | 504                | 51.6          |
| Caerphilly LA                       | 785              | 1,462              | 53.7          |
| Monmouthshire LA                    | 898              | 1,505              | 59.7          |
| Newport LA                          | 763              | 1,663              | 45.9          |
| Torfaen LA                          | 677              | 1,232              | 55.0          |
| <b>Health Board Total</b>           | <b>3,383</b>     | <b>6,366</b>       | <b>53.1</b>   |
| <b><u>Betsi Cadwaladr UHB</u></b>   |                  |                    |               |
| Anglesey LA                         | 564              | 1,028              | 54.9          |
| Conwy LA                            | 681              | 1,400              | 48.6          |
| Denbighshire LA                     | 704              | 1,589              | 44.3          |
| Flintshire LA                       | 939              | 2,037              | 46.1          |
| Gwynedd LA                          | 747              | 1,436              | 52.0          |
| Wrexham LA                          | 1,045            | 2,154              | 48.5          |
| <b>Health Board Total</b>           | <b>4,680</b>     | <b>9,644</b>       | <b>48.5</b>   |
| <b><u>Cardiff and Vale UHB</u></b>  |                  |                    |               |
| Cardiff LA                          | 1,164            | 2,517              | 46.2          |
| Vale of Glamorgan LA                | 589              | 1,358              | 43.4          |
| <b>Health Board Total</b>           | <b>1,753</b>     | <b>3,875</b>       | <b>45.2</b>   |
| <b><u>Cwm Taf Morgannwg UHB</u></b> |                  |                    |               |
| Bridgend LA                         | 652              | 1,338              | 48.7          |
| Merthyr Tydfil LA                   | 223              | 414                | 53.9          |
| Rhondda Cynon Taff LA               | 1,026            | 2,223              | 46.2          |
| <b>Health Board Total</b>           | <b>1,901</b>     | <b>3,975</b>       | <b>47.8</b>   |
| <b><u>Hywel Dda UHB</u></b>         |                  |                    |               |
| Carmarthenshire LA                  | 1,155            | 2,386              | 48.4          |
| Ceredigion LA                       | 488              | 1,260              | 38.7          |
| Pembrokeshire LA                    | 818              | 2,115              | 38.7          |
| <b>Health Board Total</b>           | <b>2,461</b>     | <b>5,761</b>       | <b>42.7</b>   |
| <b><u>Powys Teaching HB</u></b>     |                  |                    |               |
|                                     | <b>709</b>       | <b>1,316</b>       | <b>53.9</b>   |
| <b><u>Swansea Bay UHB</u></b>       |                  |                    |               |
| Neath Port Talbot LA                | 684              | 1,155              | 59.2          |
| Swansea LA                          | 1,018            | 2,485              | 41.0          |
| <b>Health Board Total</b>           | <b>1,702</b>     | <b>3,640</b>       | <b>46.8</b>   |
| <b>Wales Total</b>                  | <b>16,589</b>    | <b>34,577</b>      | <b>48.0</b>   |

**Table A5.** Uptake of influenza immunisation, through general practice, in children aged two and three years in Wales 2019/20.

| Local Authority                     | Two year olds    |                    |               | Three year olds  |                    |               |
|-------------------------------------|------------------|--------------------|---------------|------------------|--------------------|---------------|
|                                     | Immunised<br>(n) | Denominator<br>(n) | Uptake<br>(%) | Immunised<br>(n) | Denominator<br>(n) | Uptake<br>(%) |
| <b><u>Aneurin Bevan UHB</u></b>     |                  |                    |               |                  |                    |               |
| Blaenau Gwent LA                    | 399              | 720                | 55.4          | 440              | 754                | 58.4          |
| Caerphilly LA                       | 1,040            | 2,031              | 51.2          | 1,050            | 2,113              | 49.7          |
| Monmouthshire LA                    | 586              | 918                | 63.8          | 574              | 941                | 61.0          |
| Newport LA                          | 1,001            | 2,004              | 50.0          | 1,115            | 2,008              | 55.5          |
| Torfaen LA                          | 564              | 1,075              | 52.5          | 575              | 1,058              | 54.3          |
| <b>Health Board Total</b>           | <b>3,590</b>     | <b>6,748</b>       | <b>53.2</b>   | <b>3,754</b>     | <b>6,874</b>       | <b>54.6</b>   |
| <b><u>Betsi Cadwaladr UHB</u></b>   |                  |                    |               |                  |                    |               |
| Anglesey LA                         | 422              | 653                | 64.6          | 453              | 693                | 65.4          |
| Conwy LA                            | 399              | 1,037              | 38.5          | 496              | 1,091              | 45.5          |
| Denbighshire LA                     | 437              | 1,021              | 42.8          | 552              | 1,081              | 51.1          |
| Flintshire LA                       | 977              | 1,617              | 60.4          | 931              | 1,573              | 59.2          |
| Gwynedd LA                          | 657              | 1,202              | 54.7          | 688              | 1,274              | 54.0          |
| Wrexham LA                          | 779              | 1,623              | 48.0          | 742              | 1,587              | 46.8          |
| <b>Health Board Total</b>           | <b>3,671</b>     | <b>7,153</b>       | <b>51.3</b>   | <b>3,862</b>     | <b>7,299</b>       | <b>52.9</b>   |
| <b><u>Cardiff and Vale UHB</u></b>  |                  |                    |               |                  |                    |               |
| Cardiff LA                          | 1,836            | 4,135              | 44.4          | 2,145            | 4,561              | 47.0          |
| Vale of Glamorgan LA                | 692              | 1,445              | 47.9          | 672              | 1,439              | 46.7          |
| <b>Health Board Total</b>           | <b>2,528</b>     | <b>5,580</b>       | <b>45.3</b>   | <b>2,817</b>     | <b>6,000</b>       | <b>47.0</b>   |
| <b><u>Cwm Taf Morgannwg UHB</u></b> |                  |                    |               |                  |                    |               |
| Bridgend LA                         | 770              | 1,697              | 45.4          | 829              | 1,779              | 46.6          |
| Merthyr Tydfil LA                   | 284              | 731                | 38.9          | 460              | 697                | 66.0          |
| Rhondda Cynon Taff LA               | 1,110            | 2,662              | 41.7          | 1,789            | 2,815              | 63.6          |
| <b>Health Board Total</b>           | <b>2,164</b>     | <b>5,090</b>       | <b>42.5</b>   | <b>3,078</b>     | <b>5,291</b>       | <b>58.2</b>   |
| <b><u>Hywel Dda UHB</u></b>         |                  |                    |               |                  |                    |               |
| Carmarthenshire LA                  | 973              | 1,840              | 52.9          | 939              | 1,863              | 50.4          |
| Ceredigion LA                       | 301              | 685                | 43.9          | 334              | 776                | 43.0          |
| Pembrokeshire LA                    | 560              | 1,157              | 48.4          | 540              | 1,202              | 44.9          |
| <b>Health Board Total</b>           | <b>1,834</b>     | <b>3,682</b>       | <b>49.8</b>   | <b>1,813</b>     | <b>3,841</b>       | <b>47.2</b>   |
| <b><u>Powys Teaching HB</u></b>     |                  |                    |               |                  |                    |               |
|                                     | <b>641</b>       | <b>1,243</b>       | <b>51.6</b>   | <b>688</b>       | <b>1,268</b>       | <b>54.3</b>   |
| <b><u>Swansea Bay UHB</u></b>       |                  |                    |               |                  |                    |               |
| Neath Port Talbot LA                | 734              | 1,423              | 51.6          | 794              | 1,509              | 52.6          |
| Swansea LA                          | 1,278            | 2,434              | 52.5          | 1,258            | 2,587              | 48.6          |
| <b>Health Board Total</b>           | <b>2,012</b>     | <b>3,857</b>       | <b>52.2</b>   | <b>2,052</b>     | <b>4,096</b>       | <b>50.1</b>   |
| <b>Wales Total</b>                  | <b>16,440</b>    | <b>33,353</b>      | <b>49.3</b>   | <b>18,064</b>    | <b>34,669</b>      | <b>52.1</b>   |

## Appendix B: Additional and health board level influenza surveillance data

**Table B1.** General inpatient and outpatient hospital ward patients providing samples for respiratory screen testing, with numbers testing positive for influenza, RSV and other pathogens, Wales 2019/20, by health board.

| Health Board          | All screens |              | Influenza A |              | Influenza B |              | RSV        |              | Negative <sup>1</sup> |              |
|-----------------------|-------------|--------------|-------------|--------------|-------------|--------------|------------|--------------|-----------------------|--------------|
|                       | n           | %            | n           | %            | n           | %            | n          | %            | n                     | %            |
| Aneurin Bevan UHB     | 543         | 10.0         | 107         | 16.3         | 4           | 10.0         | 73         | 10.18        | 263                   | 11.1         |
| Betsi Cadwaladr UHB   | 878         | 16.2         | 126         | 19.2         | 8           | 20.0         | 155        | 21.62        | 360                   | 15.2         |
| Cardiff & Vale UHB    | 2662        | 49.0         | 251         | 38.3         | 22          | 55.0         | 333        | 46.44        | 1121                  | 47.4         |
| Cwm Taf Morgannwg UHB | 358         | 6.6          | 38          | 5.8          | 5           | 12.5         | 68         | 9.48         | 129                   | 5.5          |
| Hywel Dda UHB         | 592         | 10.9         | 90          | 13.7         | 0           | 0.0          | 73         | 10.18        | 269                   | 11.4         |
| Powys Teaching HB     | 5           | 0.1          | 0           | 0.0          | 0           | 0.0          | 0          | 0.00         | 5                     | 0.2          |
| Swansea Bay UHB       | 396         | 7.3          | 44          | 6.7          | 1           | 2.5          | 15         | 2.09         | 216                   | 9.1          |
| <b>Wales</b>          | <b>5434</b> | <b>100.0</b> | <b>656</b>  | <b>100.0</b> | <b>40</b>   | <b>100.0</b> | <b>717</b> | <b>100.0</b> | <b>2363</b>           | <b>100.0</b> |

**Table B2.** Accident and Emergency ward patients providing samples for respiratory screen testing, with numbers testing positive for influenza, RSV and other pathogens, Wales 2019/20, by health board.

| Health Board          | All screens |              | Influenza A |              | Influenza B |              | RSV        |              | Negative <sup>1</sup> |              |
|-----------------------|-------------|--------------|-------------|--------------|-------------|--------------|------------|--------------|-----------------------|--------------|
|                       | n           | %            | n           | %            | n           | %            | n          | %            | n                     | %            |
| Aneurin Bevan UHB     | 549         | 12.8         | 136         | 15.9         | 6           | 12.5         | 26         | 6.55         | 360                   | 17.4         |
| Betsi Cadwaladr UHB   | 972         | 22.7         | 207         | 24.2         | 11          | 22.9         | 133        | 33.50        | 444                   | 21.5         |
| Cardiff & Vale UHB    | 1047        | 24.5         | 179         | 20.9         | 16          | 33.3         | 43         | 10.83        | 578                   | 28.0         |
| Cwm Taf Morgannwg UHB | 442         | 10.3         | 116         | 13.5         | 4           | 8.3          | 44         | 11.08        | 169                   | 8.2          |
| Hywel Dda UHB         | 632         | 14.8         | 93          | 10.9         | 4           | 8.3          | 35         | 8.82         | 349                   | 16.9         |
| Powys Teaching HB     | 0           | 0.0          | 0           | 0.0          | 0           | 0.0          | 0          | 0.00         | 0                     | 0.0          |
| Swansea Bay UHB       | 640         | 14.9         | 126         | 14.7         | 7           | 14.6         | 116        | 29.22        | 167                   | 8.1          |
| <b>Wales</b>          | <b>4282</b> | <b>100.0</b> | <b>857</b>  | <b>100.0</b> | <b>48</b>   | <b>100.0</b> | <b>397</b> | <b>100.0</b> | <b>2067</b>           | <b>100.0</b> |

**Table B3.** ICU/ HDU ward patients providing samples for respiratory screen testing, with numbers testing positive for influenza, RSV and other pathogens, Wales 2019/20, by health board.

| Health Board          | All screens |              | Influenza A |              | Influenza B |            | RSV        |              | Negative <sup>1</sup> |              |
|-----------------------|-------------|--------------|-------------|--------------|-------------|------------|------------|--------------|-----------------------|--------------|
|                       | n           | %            | n           | %            | n           | %          | n          | %            | n                     | %            |
| Aneurin Bevan UHB     | 122         | 11.6         | 14          | 23.7         | 0           | 0.0        | 22         | 21.36        | 62                    | 9.5          |
| Betsi Cadwaladr UHB   | 137         | 13.0         | 9           | 15.3         | 0           | 0.0        | 9          | 8.74         | 93                    | 14.3         |
| Cardiff & Vale UHB    | 331         | 31.3         | 11          | 18.6         | 0           | 0.0        | 42         | 40.78        | 188                   | 28.9         |
| Cwm Taf Morgannwg UHB | 60          | 5.7          | 8           | 13.6         | 0           | 0.0        | 7          | 6.80         | 32                    | 4.9          |
| Hywel Dda UHB         | 168         | 15.9         | 5           | 8.5          | 0           | 0.0        | 12         | 11.65        | 111                   | 17.1         |
| Powys Teaching HB     | 0           | 0.0          | 0           | 0.0          | 0           | 0.0        | 0          | 0.00         | 0                     | 0.0          |
| Swansea Bay UHB       | 238         | 22.5         | 12          | 20.3         | 0           | 0.0        | 11         | 10.68        | 164                   | 25.2         |
| <b>Wales</b>          | <b>1056</b> | <b>100.0</b> | <b>59</b>   | <b>100.0</b> | <b>0</b>    | <b>0.0</b> | <b>103</b> | <b>100.0</b> | <b>650</b>            | <b>100.0</b> |

**Table B4.** Numbers of patients tested and confirmed with influenza, by location of patient at time of sampling in 2019/20, by age group.

| Sample Location                 | Under 1 | 1 to 4 | 5 to 9 | 10 to 14 | 15 to 24 | 25 to 34 | 35 to 44 | 45 to 64 | 65 to 74 | 75 and older |
|---------------------------------|---------|--------|--------|----------|----------|----------|----------|----------|----------|--------------|
| Sentinel surveillance practices | 0       | 4      | 3      | 6        | 9        | 10       | 6        | 16       | 3        | 0            |
| Non-sentinel practices          | 2       | 6      | 10     | 16       | 23       | 31       | 21       | 32       | 5        | 9            |
| A&E Wards                       | 10      | 47     | 27     | 19       | 103      | 145      | 77       | 182      | 113      | 180          |
| Other Hospital Wards            | 47      | 112    | 64     | 46       | 38       | 50       | 31       | 83       | 75       | 146          |
| Intensive care wards            | 5       | 1      | 1      | 1        | 2        | 1        | 5        | 21       | 11       | 10           |
| Unknown location                | 3       | 15     | 8      | 6        | 10       | 6        | 5        | 16       | 9        | 12           |

**Table B5.** Numbers of patients tested and confirmed with RSV, by location of patient at time of sampling in 2019/20, by age group.

| Sample Location                 | Under 1 | 1 to 4 | 5 to 9 | 10 to 14 | 15 to 24 | 25 to 34 | 35 to 44 | 45 to 64 | 65 to 74 | 75 and older |
|---------------------------------|---------|--------|--------|----------|----------|----------|----------|----------|----------|--------------|
| Sentinel surveillance practices | 0       | 0      | 1      | 0        | 1        | 1        | 2        | 4        | 2        | 2            |
| Non-sentinel practices          | 3       | 8      | 1      | 3        | 2        | 6        | 4        | 9        | 4        | 5            |
| A&E Wards                       | 75      | 42     | 5      | 6        | 17       | 28       | 24       | 69       | 55       | 75           |
| Other Hospital Wards            | 308     | 159    | 29     | 10       | 7        | 13       | 9        | 50       | 46       | 86           |
| Intensive care wards            | 46      | 5      | 2      | 1        | 4        | 2        | 1        | 11       | 18       | 13           |
| Unknown location                | 32      | 7      | 2      | 2        | 5        | 2        | 1        | 7        | 2        | 3            |

**Table B6.** Numbers of patients providing samples for respiratory screen testing, by location of patient at time of sampling in 2019/20, by age group.

| Sample Location                 | Under 1 | 1 to 4 | 5 to 9 | 10 to 14 | 15 to 24 | 25 to 34 | 35 to 44 | 45 to 64 | 65 to 74 | 75 and older |
|---------------------------------|---------|--------|--------|----------|----------|----------|----------|----------|----------|--------------|
| Sentinel surveillance practices | 0       | 13     | 7      | 11       | 33       | 29       | 25       | 52       | 24       | 11           |
| Non-sentinel practices          | 17      | 49     | 33     | 38       | 72       | 77       | 75       | 104      | 30       | 30           |
| A&E Wards                       | 231     | 249    | 69     | 42       | 223      | 315      | 204      | 470      | 315      | 473          |
| Other Hospital Wards            | 867     | 926    | 247    | 117      | 114      | 176      | 113      | 358      | 293      | 506          |
| Intensive care wards            | 125     | 31     | 15     | 6        | 16       | 19       | 29       | 98       | 76       | 60           |
| Unknown location                | 99      | 94     | 34     | 32       | 38       | 51       | 29       | 94       | 37       | 55           |





**Figure C2. Phylogenetic tree showing full haemagglutinin sequence relationship of H3N2 influenza A viruses detected from across Wales 2019/20. Vaccine strains in blue**

