



# Seasonal influenza in Wales 2018/19

## Annual Report

# Summary

## The season

The 2018/19 influenza season in Wales was less severe than the 2017/18 season, although it still presented a significant burden of disease. There were fewer cases diagnosed in general practices, confirmed in hospitals or confirmed in Intensive Care Units than in 2017/18. The intensity of the season, according to at least some surveillance indicators, appeared similar to the 2015/16 and 2016/17 seasons. However, the numbers of cases diagnosed in the community and confirmed in hospitals, were higher than all seasons after 2010/11 and prior to 2017/18. There were fewer outbreaks of influenza reported to Public Health Wales this season, compared to last. The proportion of outbreaks which were in care homes decreased from 2017/18, whereas the proportion reported in hospitals increased.

Surveillance indicators of circulation in the community began to increase from mid-December and by Christmas week 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 three weeks later at medium intensity levels. In total, the sentinel GP ILI consultation rate was above the threshold for seasonal activity for nine weeks, including four weeks at medium intensity. 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. However, there was an extended tail to the season in hospitals, with the proportion of patients testing positive for influenza not returning to baseline levels for an additional 10 additional weeks. There was a change in testing patterns in hospitals this season, with the roll-out of rapid testing services for influenza. The subsequent increase in the number of tests being carried out will have contributed to the overall number of patients confirmed in hospitals this season and care should be taken when making comparisons to previous seasons. Due to this change in testing patterns, there was a higher proportion of influenza A viruses detected in patients attending hospitals that were not further subtyped this season.

Overall, influenza A(H1N1)pdm09 was the dominant influenza type for the 2018/19 season, however the proportion of cases which were accounted for by A(H3N2) increased throughout February and it was the dominant influenza virus detected for the latter weeks of the season. Only small numbers of sporadic cases of influenza B were confirmed in Wales this season.

Genetic characterisation of influenza viruses from confirmed cases suggested that A(H1N1)pdm09 viruses were similar to the 2018/19 Northern hemisphere vaccine strain. There was evidence of some genetic diversity within influenza A(H3N2) viruses. The majority of influenza A(H3N2) characterised belonged to the 3C.2a1b clade, however, there was smaller numbers of 3C.2a2 and 3C.3a viruses seen. The 2018/19 Northern hemisphere influenza A(H3N2) vaccine strain was a 3C.2a virus and the recommended influenza A(H3N2) vaccine strain for the 2019/20 Northern hemisphere influenza vaccine is a 3C.3a virus.

## Vaccination uptake

Again, influenza vaccination was received by more individuals in at-risk and recommended groups last season than ever before. An estimated 868,668 people were vaccinated, representing 28% of the population of Wales. In those aged 65 years and older, 68.3% were vaccinated (457,200 individuals), a small decrease from last season which saw the highest ever uptake in this group. Uptake for clinical risk groups also decreased slightly to 44.1% (192,352 individuals) this season.

The childhood influenza vaccination programme this season was fully extended to all children aged two to 10 years, 209,066 of whom received vaccination. Uptake in two and three year olds was 49% and in four to 10 year olds increased to 70%. Coverage of influenza vaccination in pregnant women was stable at 74%, estimated in an annual point of delivery (post-natal) survey. In front-line NHS staff uptake decreased to 56%, after a long-term positive trend up to 2017/18.

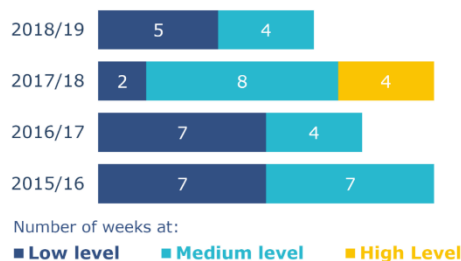
## Vaccine effectiveness

The provisional end of season estimate for effectiveness of 2018/19 seasonal influenza vaccine in the UK was 44.3% (95% CI 26.8% to 57.7%) against all laboratory-confirmed influenza. Against influenza A(H1N1)pdm09 specifically, effectiveness was 45.7% (95% CI 26.0% to 60.1%) against influenza A(H3N2) it was 35.1% (95% CI -3.7% to 59.3%).

This is the first season that an adjuvanted inactivated trivalent influenza vaccine was available in the United Kingdom and recommended for patients aged 65y and older and vaccine effectiveness within this group was estimated to be 62.0% (95% CI: 3.4%, 85.0%) against any influenza type. Effectiveness of the Live Attenuated Intranasal Vaccine spray was estimated to be 48.6% (95% CI: -4.4%, 74.7%) in two to 17 year olds.

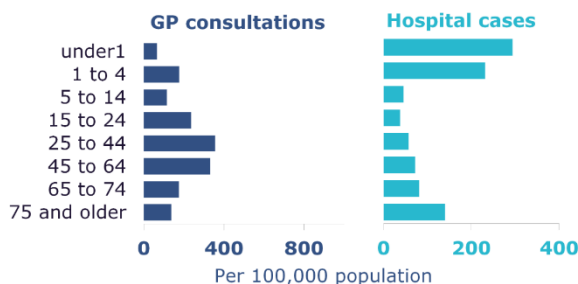
# INFLUENZA SEASON IN WALES 2018/19

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



2018/19 season was less intense than previous seasons

## Age of those affected by influenza



**62** Outbreaks

69% in hospital wards

16% in care homes



**9,256**  
patients diagnosed with influenza-like illness by GPs

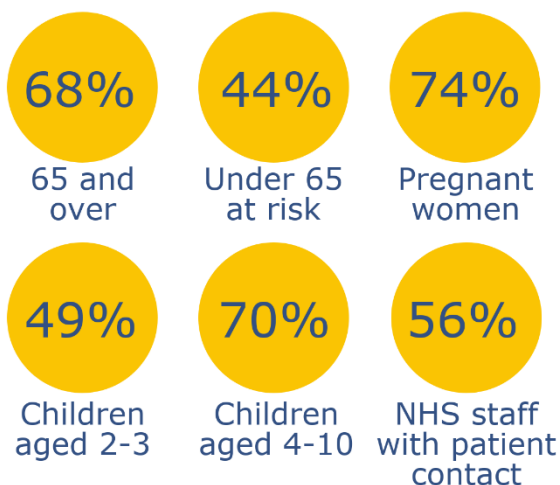


**2,419**  
patients confirmed with influenza in hospitals



**120**  
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 2018/19 there was a shorter duration of influenza activity compared to any of the five previous flu seasons, with similar levels of activity. At nine weeks the season was shorter than average (15 weeks) and peaked at just above the threshold for medium intensity levels for four weeks.
  - Based on information up to week 20 2019, a total of 9,813 patients with influenza-like illness (ILI) were reported by general practices in Wales throughout the season, almost half that of 2017/18. Consultation rates were highest in patients aged 25 to 44 years (520 per 100,000).
  - From week 40 2018 to week 15 2019, a total of 2,419 patients in hospitals were confirmed to have influenza, 120 of whom were in intensive care units.
  - Sixty-two outbreaks of ILI or acute respiratory illness (ARI) were reported to Public Health Wales, 69% were in hospitals, 16% in residential homes and 15% in other settings.
  - All-cause mortality did not significantly exceed expected weekly seasonal levels during 2018/19, this is in contrast to 2017/18 which saw the highest levels of seasonal winter excess mortality in over 40 years.
- Overall, influenza A(H1N1)pdm09 was the dominant influenza virus, however influenza A(H3N2) was dominant in latter weeks of the season. Influenza B accounted for only a few cases this season.
- As at April 2019, 173 influenza A(H1N1)pdm09 viruses had undergone genetic characterisation by whole genome sequencing (WGS), all of which fell within the 6b1.a clade. At the same time, 34 influenza A(H3N2) viruses had also been characterised: 32 were 3C.2a1b viruses, one was a 3C.2a2 virus and one was a 3C.3a virus. Northern hemisphere influenza vaccines for 2018/19 were recommended to contain an A/Michigan/45/2015 (H1N1)pdm09-like virus (6b1.a clade) and an A/Singapore/INFIMH-16-0019/2016 (H3N2)-like virus (3c.2a1 clade)
- The provisional end of season vaccine effectiveness estimate against laboratory confirmed influenza, was 44.3% (95% CI 26.8% to 57.7%). Estimated effectiveness of the new adjuvanted trivalent vaccine in those aged 65 years and above was promising and higher than overall vaccine effectiveness in this age group.
- The antiviral prescribing rate peaked at 5.5 per 100,000 practice population during week 06 2019, almost half that of the 2017/18 peak prescribing rate (9.5 per 100,000 practice population) but slightly higher than prescribing rates from 2011/12 to 2016/17; almost all viruses were fully sensitive with small numbers of A(H1N1) viruses resistant to oseltamivir.

- During 2018/19 percentage uptake of influenza vaccine in the eligible population increased in pregnant women and older children immunised in school but decreased in all other eligible groups compared to last year.
  - Influenza vaccine uptake in those aged 65 years and older in Wales was 68.3% (n=457,200), compared to 68.8% (n=451,346) last season.
  - Uptake of influenza vaccine in people aged six months to 64 years in a clinical risk group was 44.1% (n=192,352), and for the first time this group includes those who are morbidly obese and not otherwise at risk. Excluding those morbidly obese not otherwise at risk, uptake was 47.1% (n=183,605) compared to 48.5% (n=184,055) last season. Uptake among clinical risk groups was highest in people with diabetes (59.4%) and lowest in the morbidly obese (33.6%).
  - Uptake of influenza vaccine in pregnant women was 74.2% (95% CI 69.7% to 78.3%) (measured in an annual survey of women in major maternity units who gave birth during January 2019), an increase from 72.7% (95% CI 67.8% to 77.2%) last year.
  - 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 49.1% (n=15,932).
  - Uptake of influenza vaccine in children aged two and three years, mainly immunised in general practices, was 49.4% (n=34,541) compared to 50.2% (n=30,057) in 2017/18.
  - Uptake of influenza vaccine in children aged four to 10 years, immunised in schools, was 69.9% (n=174,525), compared to 68.3% (n=122,460) in four to eight year olds during 2017/18.
  - Uptake in staff with direct patient contact was 55.5% (n=33,653), compared to 57.9% (n=34,832) last season. Uptake in all NHS staff was 53.4% (n=47,061) during 2018/19, a decrease of 2.0 from 55.4% (n=48,074) last season.
- The total number of individuals in Wales who were immunised against influenza was 868,688 for 2018/19, compared to an estimated 820,183 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 53,883 influenza vaccinations through the NHS community pharmacy influenza service in 2018/19, an increase from 36,130 in 2017/18. This is an estimated 7.0% 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 2018/19, 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 2018/19, 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 or have a BMI greater than 40), 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, members of voluntary organisations providing planned emergency first aid and community first responder scheme members. For the first time, in 2018/19 staff working in all adult residential care homes and nursing care homes were also offered free vaccination [2].

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. Employing organisations are responsible for arranging immunisation of frontline health and social care workers.

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®) was further expanded in the 2018/19 season to include children aged nine and 10 years old (School Years 5 and 6) [1]. This is the first 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 University Health Board (UHB) have been offered LAIV nasal spray immunisation through school nursing services, in addition to being able to receive the vaccine through general practice. Vaccination delivery in primary school year groups (four to 10 year olds) was through school nursing services in Wales.

Public Health Wales monitor influenza immunisation uptake rates in 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 23<sup>rd</sup> April 2019 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.

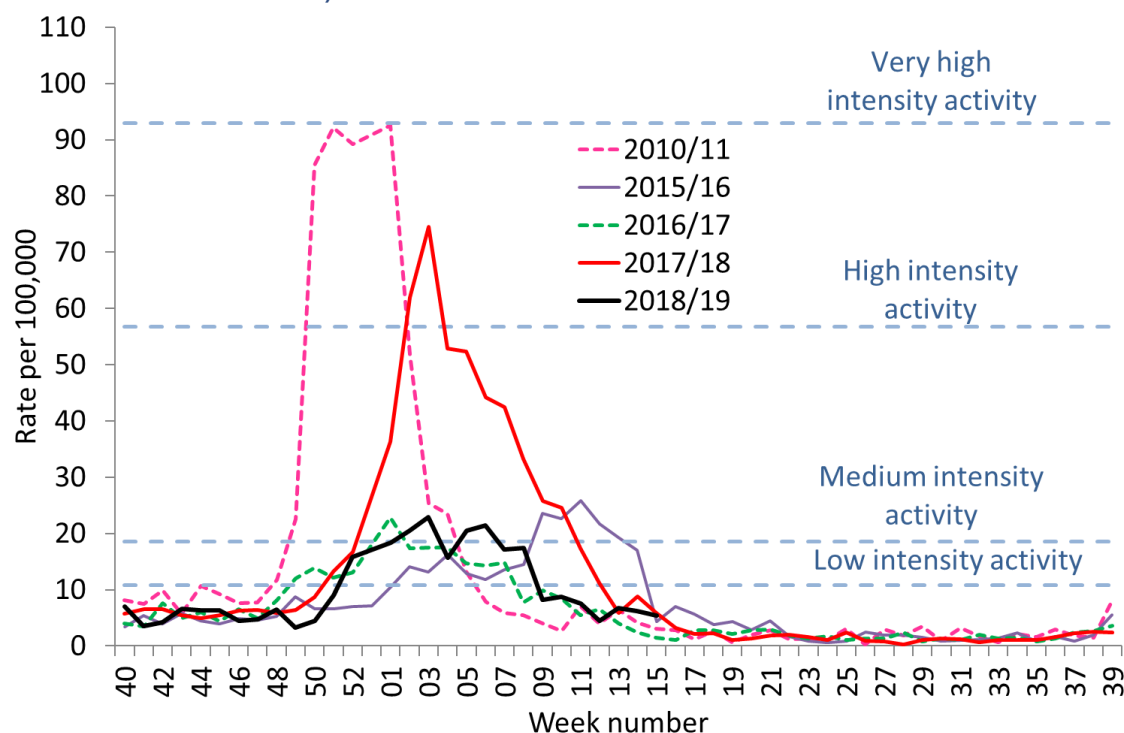
## 2. Influenza Surveillance in 2018/19

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

A low intensity (or baseline) threshold level of 10.8 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) [3]. The sentinel GP ILI thresholds, for medium, high and very high intensity activity in the community were 18.6, 56.7 and 92.9 per 100,000 consultations respectively.

The ILI baseline threshold level for low level activity was first exceeded in sentinel practices during week 52 of 2018 (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 below the threshold to baseline levels in week 09 2019.

**Figure 2.1.1.** Public Health Wales sentinel GP weekly consultation rate for influenza-like illness 2018/19



The sentinel GP ILI consultation rate exceeded the threshold for medium intensity in week 02 2019, dropping back down to low intensity activity during week 04 2019. During week 05 2019 the sentinel GP ILI consultation rate once again increased to medium intensity for a further two weeks. Activity was at low intensity for a total of five weeks and at medium intensity for a total of four weeks.

The peak sentinel GP ILI consultation rate was 22.9 per 100,000 practice population, during week 03 2019.

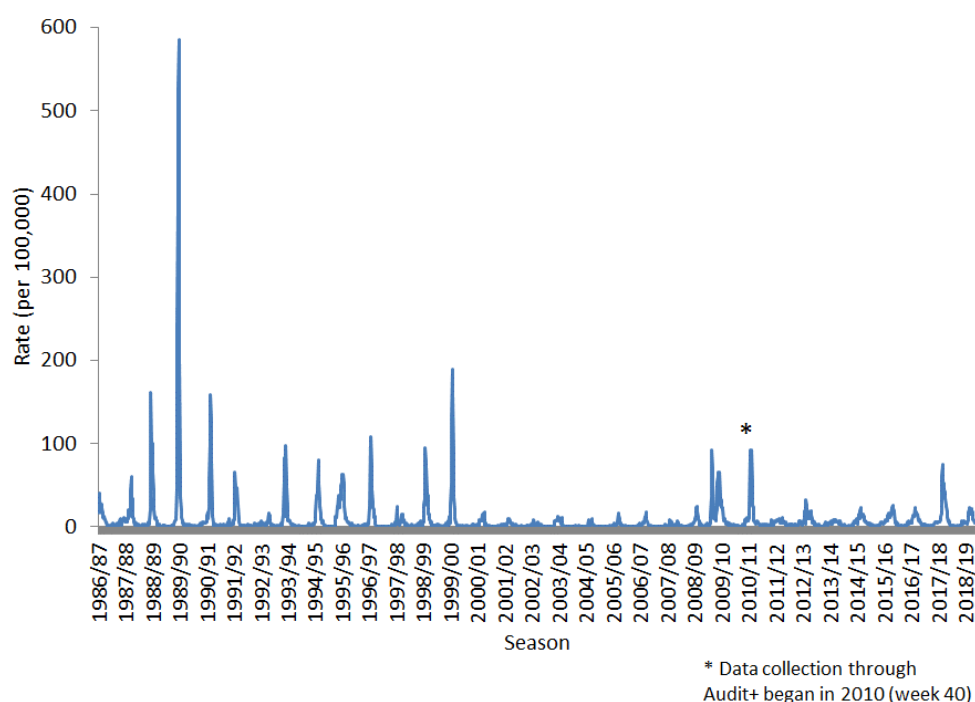
The sentinel GP consultation rate for ILI was above the threshold for low (baseline) intensity seasonal activity for a total of nine weeks in 2018/19, compared to 14 weeks in 2017/18 (Table 2.1.1). Four of the nine weeks were above medium intensity levels of activity, compared to 12 weeks observed above medium intensity in 2017/18. Unlike the 2017/18 season the sentinel GP ILI consultation rate did not exceed the threshold for high intensity (Table 2.1.1 and Figure 2.1.1).

**Table 2.1.1. Comparison of sentinel GP consultation rates from 2012/13 to 2018/19**

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

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

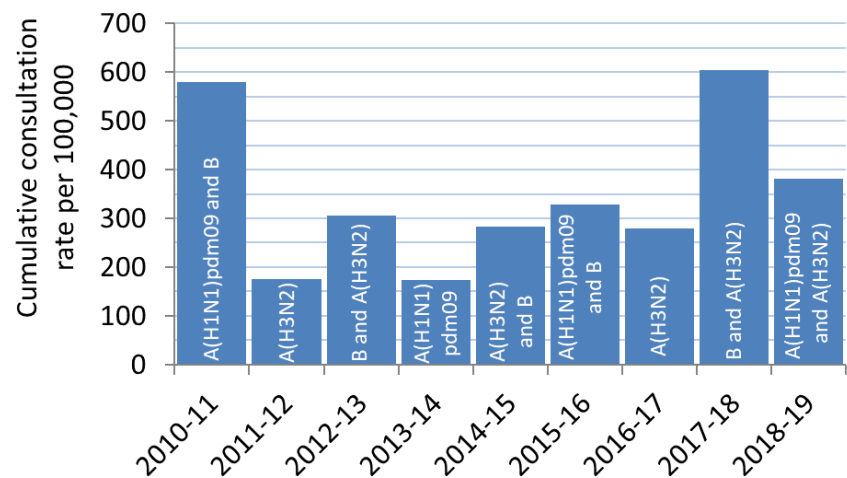
**Figure 2.1.2. Public Health Wales sentinel GP weekly consultation rate for influenza-like illness 1986 to 2019**



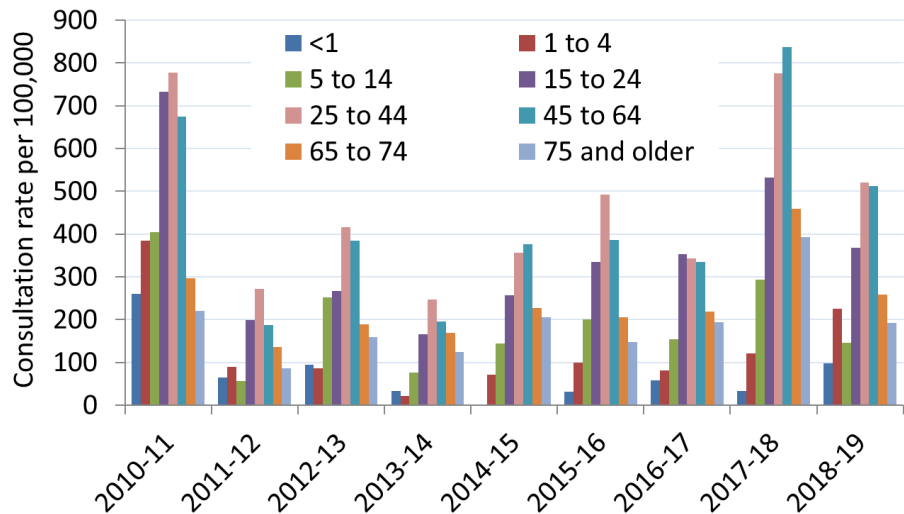
The cumulative sentinel GP ILI rate for the whole 2018/19 season was lower than that seen in the previous year, at 382 per 100,000 practice population compared to 604 per 100,000 practice population in 2017/18 (Figure 2.1.3). During the period 2018 week 40 to 2019 week 20 (October 1<sup>st</sup> 2018 to May 19<sup>th</sup> 2019), 9,813 consultations with general practices in Wales due to ILI were reported to Public Health Wales through Audit+. This does not represent the total number of people with ILI as only a proportion of those with symptoms of ILI will consult with their GP.

During 2018/19, the consultation rate for ILI was highest in patients aged 25 to 44 years (520 per 100,000 for the period 2018 week 40 to 2019 week 20). This contrasts to 2017/18, where highest rates were seen in the range of 45 to 64 years old (influenza A(H3N2) and influenza B co-circulated in 2017/18 (Figure 2.1.4)).

**Figure 2.1.3.** Cumulative consultation rates for influenza-like illness, per season (from week 40 to week 20), in sentinel GP patients 2010/11 to 2018/19. Dominant circulating types of influenza are indicated for each season.



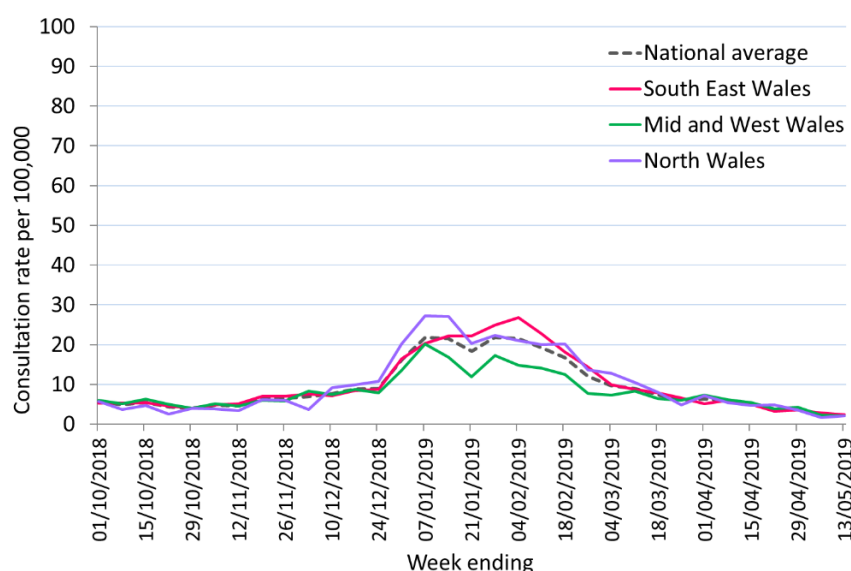
**Figure 2.1.4.** Age-group specific cumulative consultation rates for influenza-like illness, per season (from week 40 to week 20), in sentinel GP patients 2010/11 to 2018/19



Regional differences in timing and intensity of the influenza season were assessed using data from all practices in Wales provided through Audit+ (Figure 2.1.5). 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 UHB areas), the peak in ILI consultation rate was seen during week 06 (ending 10<sup>th</sup> February), at 26.8 per 100,000 practice population.
- In Mid and West Wales (Abertawe Bro Morgannwg UHB and Hywel Dda UHB areas, and Powys THB area) the peak in ILI consultation rate was seen during week 02 (ending 13<sup>th</sup> January), at 20.2 per 100,000 practice population.
- In North Wales (Betsi Cadwaladr UHB area) the peak in ILI consultation rate was seen during week 02 (ending 13<sup>th</sup> January), at 27.3 per 100,000 practice population.

**Figure 2.1.5.** Weekly consultation rates for influenza-like illness in regions of Wales, data from all available practices submitted through Audit+, compared to the national average, 2018/19



## 2.2 Community indicators - Virological surveillance in the community

Between 2018 week 40 and 2019 week 15 (1<sup>st</sup> October 2018 to 14<sup>th</sup> April 2019), 21 sentinel GPs submitted 236 samples for virological testing, a mean of 11 samples per participating practice. This is the second 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, 174 were clinically diagnosed with ILI (73.7%), 37 with acute bronchitis (15.7%), 24 with ARI (10.2%), and one with bronchiolitis (0.4%).

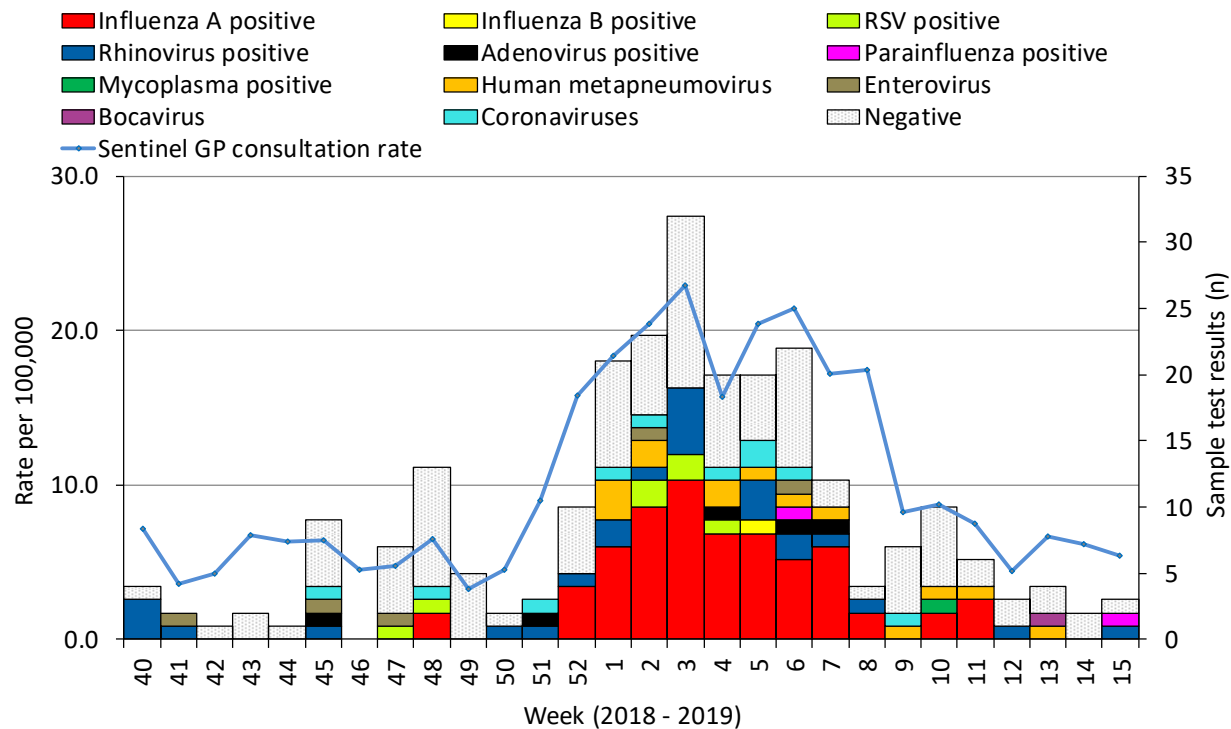
Of the 236 patient samples submitted, 99.6% (n=235) were tested. Of these, 30.6% (n=72) were positive for influenza. Of the samples testing positive for influenza, 83.3% (n=60) were due to influenza A(H1N1), 9.7% (n=7) were influenza A(H3), 5.6% (n=4) were influenza A(not subtyped), and one was influenza B (1.4%).

Surveillance samples are routinely tested for: influenza, RSV, adenovirus, *Mycoplasma pneumoniae*, rhinovirus, parainfluenza, human metapneumovirus, human bocavirus, coronaviruses, enterovirus D-68 and other enteroviruses. One or more other causes of seasonal respiratory infection were detected in 27.7% (n=65) of samples, and 45.1% (n=106) were negative for all routinely tested pathogens.

Sample submissions by sentinel GPs peaked in week 03 of 2019 (week ending 20<sup>th</sup> January 2019, 28 patient samples) (Figure 2.2.1). Influenza was first detected in sentinel samples during 2018 week 48, and was last detected in 2019 week 11. Influenza was consistently detected in weekly sentinel samples from 2018 week 52 to 2019 week 08 (from 30<sup>th</sup> December 2018 to 24<sup>th</sup> February 2019). The number of influenza positive samples peaked during 2019 week 03 (12 samples, all influenza A(H1N1)).

Influenza A(H1N1) was first detected during 2018 week 48 (two patient samples) and was detected in most weeks until week 11 2019. Influenza A(H3) was first detected in 2019 week 06 (one sample) and was detected sporadically in small numbers until 2019 week 11. Only one influenza B positive sample was confirmed, during 2019 week 05.

**Figure 2.2.1.** Results from Public Health Wales GP sentinel virological surveillance for influenza and other seasonal causes of respiratory illness by Week, 2018/19. 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 2018 week 40 and 2019 week 15 by age group<sup>1,2</sup>

| Age Group    | Samples Tested |             | All Influenza |             | Other     |             | Negative   |             |
|--------------|----------------|-------------|---------------|-------------|-----------|-------------|------------|-------------|
|              | n              | %           | n             | %           | n         | %           | n          | %           |
| Under 1      | 2              | 0.9%        | 0             | 0.0%        | 2         | 3.1%        | 0          | 0.0%        |
| 1 to 4       | 4              | 1.7%        | 2             | 2.8%        | 2         | 3.1%        | 0          | 0.0%        |
| 5 to 9       | 8              | 3.4%        | 2             | 2.8%        | 2         | 3.1%        | 4          | 3.8%        |
| 10 to 14     | 6              | 2.6%        | 0             | 0.0%        | 2         | 3.1%        | 4          | 3.8%        |
| 15 to 24     | 34             | 14.5%       | 16            | 22.2%       | 7         | 10.8%       | 14         | 13.2%       |
| 25 to 34     | 39             | 16.6%       | 7             | 9.7%        | 12        | 18.5%       | 20         | 18.9%       |
| 35 to 44     | 43             | 18.3%       | 19            | 26.4%       | 10        | 15.4%       | 16         | 15.1%       |
| 45 to 64     | 66             | 28.1%       | 22            | 30.6%       | 18        | 27.7%       | 29         | 27.4%       |
| 65 to 74     | 22             | 9.4%        | 3             | 4.2%        | 5         | 7.7%        | 14         | 13.2%       |
| 75 and older | 11             | 4.7%        | 1             | 1.4%        | 5         | 7.7%        | 5          | 4.7%        |
| <b>Total</b> | <b>235</b>     | <b>100%</b> | <b>72</b>     | <b>100%</b> | <b>65</b> | <b>100%</b> | <b>106</b> | <b>100%</b> |

<sup>1</sup> There were 13 samples from sentinel GP patients which tested positive for two respiratory pathogens. Of these, eight 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, 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 2018 and week 15 2019, 28.1% were aged 45 to 64 years (Table 2.2.1), the median age of patients tested was 40 years. Out of the sentinel GP patients testing positive for influenza 30.6% were aged 45 to 64 years, and the median patient age was 39 years.

## 2.3 Hospital indicators - Virological surveillance

From 2018 week 40 to 2019 week 15, there were 13,903 samples collected and tested by Public Health Wales Microbiology services from 10,669 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. 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 human 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 was tested through more than one of the systems in use per episode of respiratory illness; patients who only had one sample collected and tested using the third platform are not included in the denominator for the number patients screened for other pathogens included in respiratory surveillance.



Of the 10,669 hospital patients that had a sample collected from a hospital setting, all were tested for influenza and RSV, with 88.1% (9,400/10,669) tested for all respiratory pathogens included for surveillance purposes and 11.9% (n=1,269/10,669) tested for influenza and RSV only.

The weekly number of patient samples tested for seasonal respiratory illness peaked during week 06 of 2019 (week ending 10<sup>th</sup> February 2019, n=695). Of the samples from patients in hospital, 49.2% (n=5,253) were collected from patients in general inpatient and outpatient wards, 41.0% (n=4,372) were collected from patients attending A&E settings or urgent care wards and 9.8% (n=1,044) were collected from patients admitted to an intensive care ward.

Of the hospital patients tested, 22.7% (n=2,419) were confirmed with influenza, of whom 99.6% (n=2,410) had influenza A only, six 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, 47.0% (n=1,134) were A(H1N1)pdm09, 23.9% (n=576) were influenza A(H3N2) and 29.1% (n=703) were untyped.

The most commonly detected non-influenza respiratory pathogens, from the patients tested, were rhinovirus (15.4%, 1,446/9,400), coronavirus (5.8%, 548/9,400) and RSV (5.8%, 618/10,669). Other detected causes of respiratory infection included: human metapneumovirus (4.1% 388/9,400), parainfluenza (3.9%, 367/9,400), enterovirus (3.9%, 366/9,400), adenovirus (3.5%, 332/9,400), and *Mycoplasma pneumoniae* (0.4%, 35/9,400). Fifty-five percent (5,199/9,400) of patients tested for all nine routinely screened pathogens were negative, and from the patients that were only tested for influenza and RSV, 58% (732/1,269) were negative for both pathogens.

**Table 2.3.1. Results from patients tested for influenza and RSV in Wales between 2018 week 40 and 2019 week 15, by sample location<sup>2,3</sup>**

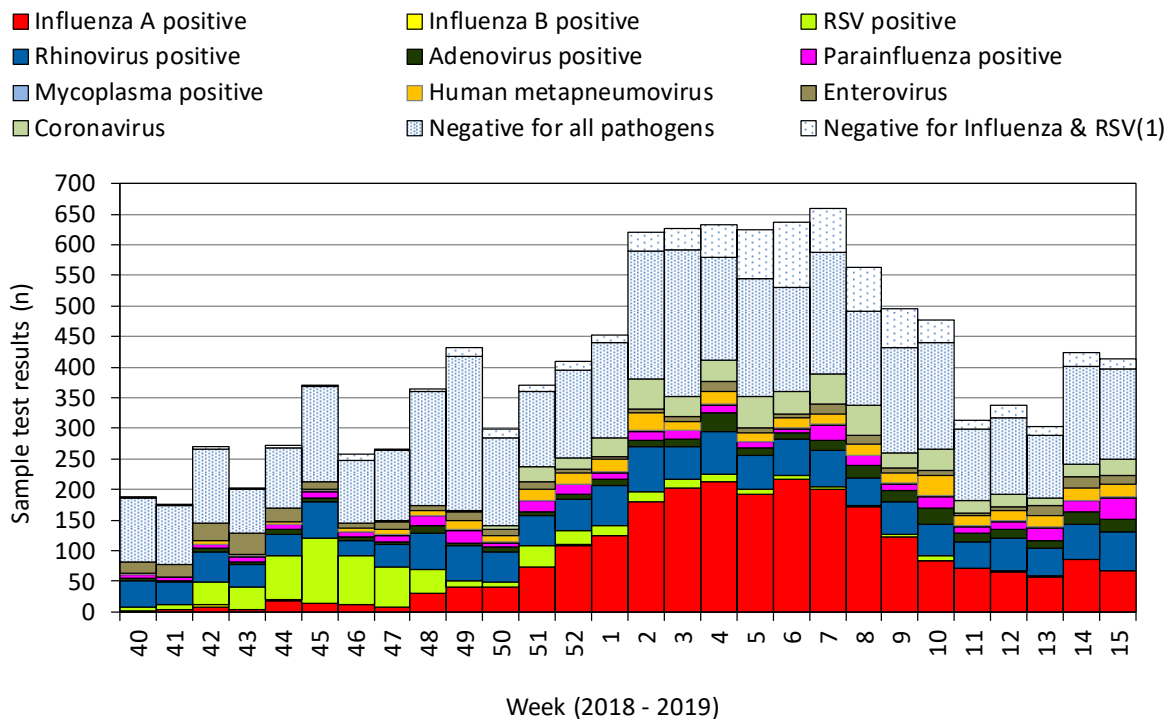
| Sample Location                | Samples tested |              | Influenza A |              | Influenza B |              | RSV        |              | Negative <sup>1</sup> |              |
|--------------------------------|----------------|--------------|-------------|--------------|-------------|--------------|------------|--------------|-----------------------|--------------|
|                                | n              | %            | n           | %            | n           | %            | n          | %            | n                     | %            |
| Sentinel Practice              | 235            | 2.0%         | 71          | 2.6%         | 1           | 10.0%        | 7          | 1.0%         | 106                   | 1.9%         |
| Non-sentinel Practice          | 605            | 5.1%         | 163         | 6.0%         | 0           | 0.0%         | 3          | 0.4%         | 284                   | 5.2%         |
| <b>Total Community Samples</b> | <b>840</b>     | <b>7.0%</b>  | <b>234</b>  | <b>8.6%</b>  | <b>1</b>    | <b>10.0%</b> | <b>10</b>  | <b>1.5%</b>  | <b>390</b>            | <b>7.1%</b>  |
| Hospital - General             | 5253           | 44.1%        | 1055        | 38.6%        | 4           | 40.0%        | 357        | 53.0%        | 2370                  | 43.4%        |
| Hospital - A&E                 | 4372           | 36.7%        | 1238        | 45.3%        | 5           | 50.0%        | 216        | 32.1%        | 1908                  | 34.9%        |
| Hospital - ITU                 | 1044           | 8.8%         | 120         | 4.4%         | 0           | 0.0%         | 45         | 6.7%         | 655                   | 12.0%        |
| <b>Total Hospital Samples</b>  | <b>10669</b>   | <b>89.5%</b> | <b>2413</b> | <b>88.3%</b> | <b>9</b>    | <b>90.0%</b> | <b>618</b> | <b>91.8%</b> | <b>4933</b>           | <b>90.2%</b> |
| Other / Unknown locations      | 409            | 3.4%         | 87          | 3.2%         | 0           | 0.0%         | 45         | 6.7%         | 143                   | 2.6%         |
| <b>Total</b>                   | <b>11918</b>   | <b>100%</b>  | <b>2734</b> | <b>100%</b>  | <b>10</b>   | <b>100%</b>  | <b>673</b> | <b>100%</b>  | <b>5466</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, 2018/19



<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 43 2018 (Figure 2.3.1). The number of samples testing positive for influenza began to increase from 2018 week 44, and the proportion of samples tested which were positive for influenza reached levels consistent with seasonal circulation of influenza in week 49. Influenza positivity in hospital samples exceeded 9% (the threshold suggestive of seasonal circulation) from 2018 week 49 and remained above this level through 2019 week 15. The number of samples tested peaked in week 06 2019 (n=611), but the proportion of samples testing positive for influenza peaked in week 04 (n=213/596, 36.2% positivity). The peak week for sample test positivity for RSV was week 46 of 2018 (week ending 11 November 2018, 80/238, 33.6%).

**Table 2.3.2.** Patient samples from all hospital locations testing positive for influenza and RSV between 2018 week 40 and 2019 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      | 1280           | 12.0%       | 96            | 4.0%        | 250        | 40.5%       | 447                   | 9.1%        |
| 1 to 4       | 1453           | 13.6%       | 323           | 13.4%       | 132        | 21.4%       | 416                   | 8.4%        |
| 5 to 9       | 453            | 4.2%        | 106           | 4.4%        | 14         | 2.3%        | 178                   | 3.6%        |
| 10 to 14     | 222            | 2.1%        | 52            | 2.1%        | 4          | 0.6%        | 110                   | 2.2%        |
| 15 to 24     | 594            | 5.6%        | 149           | 6.2%        | 11         | 1.8%        | 294                   | 6.0%        |
| 25 to 34     | 763            | 7.2%        | 244           | 10.1%       | 19         | 3.1%        | 361                   | 7.3%        |
| 35 to 44     | 670            | 6.3%        | 178           | 7.4%        | 11         | 1.8%        | 348                   | 7.1%        |
| 45 to 64     | 2120           | 19.9%       | 587           | 24.3%       | 55         | 8.9%        | 1081                  | 21.9%       |
| 65 to 74     | 1334           | 12.5%       | 288           | 11.9%       | 44         | 7.1%        | 735                   | 14.9%       |
| 75 and older | 1780           | 16.7%       | 396           | 16.4%       | 78         | 12.6%       | 963                   | 19.5%       |
| <b>Total</b> | <b>10669</b>   | <b>100%</b> | <b>2419</b>   | <b>100%</b> | <b>618</b> | <b>100%</b> | <b>4933</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.

**Table 2.3.3a.** Patients testing positive for influenza in Wales, between 2018 week 40 and 2019 week 15, by hospital location and age group

| Age Group    | General In & Out Patient |             | Urgent Care & A/E Wards |             | ICU Wards  |             |
|--------------|--------------------------|-------------|-------------------------|-------------|------------|-------------|
|              | n                        | %           | n                       | %           | n          | %           |
| Under 1      | 70                       | 6.6%        | 21                      | 1.7%        | 5          | 4.2%        |
| 1 to 4       | 226                      | 21.4%       | 94                      | 7.6%        | 3          | 2.5%        |
| 5 to 9       | 65                       | 6.1%        | 40                      | 3.2%        | 1          | 0.8%        |
| 10 to 14     | 37                       | 3.5%        | 15                      | 1.2%        | 0          | 0.0%        |
| 15 to 24     | 43                       | 4.1%        | 103                     | 8.3%        | 3          | 2.5%        |
| 25 to 34     | 69                       | 6.5%        | 170                     | 13.7%       | 5          | 4.2%        |
| 35 to 44     | 35                       | 3.3%        | 140                     | 11.3%       | 3          | 2.5%        |
| 45 to 64     | 162                      | 15.3%       | 375                     | 30.2%       | 50         | 41.7%       |
| 65 to 74     | 122                      | 11.5%       | 136                     | 11.0%       | 30         | 25.0%       |
| 75 and older | 229                      | 21.6%       | 147                     | 11.8%       | 20         | 16.7%       |
| <b>Total</b> | <b>1058</b>              | <b>100%</b> | <b>1241</b>             | <b>100%</b> | <b>120</b> | <b>100%</b> |

**Table 2.3.3b.** *Patients testing positive for RSV in Wales, between 2018 week 40 and 2019 week 15, by hospital location and age group*

| Age Group    | General In & Out Patient |             | Urgent Care & A/E Wards |             | ICU Wards |             |
|--------------|--------------------------|-------------|-------------------------|-------------|-----------|-------------|
|              | n                        | %           | n                       | %           | n         | %           |
| Under 1      | 160                      | 44.8%       | 75                      | 34.7%       | 15        | 33.3%       |
| 1 to 4       | 103                      | 28.9%       | 27                      | 12.5%       | 2         | 4.4%        |
| 5 to 9       | 12                       | 3.4%        | 2                       | 0.9%        | 0         | 0.0%        |
| 10 to 14     | 4                        | 1.1%        | 0                       | 0.0%        | 0         | 0.0%        |
| 15 to 24     | 6                        | 1.7%        | 5                       | 2.3%        | 0         | 0.0%        |
| 25 to 34     | 5                        | 1.4%        | 12                      | 5.6%        | 2         | 4.4%        |
| 35 to 44     | 3                        | 0.8%        | 5                       | 2.3%        | 3         | 6.7%        |
| 45 to 64     | 15                       | 4.2%        | 33                      | 15.3%       | 7         | 15.6%       |
| 65 to 74     | 19                       | 5.3%        | 17                      | 7.9%        | 8         | 17.8%       |
| 75 and older | 30                       | 8.4%        | 40                      | 18.5%       | 8         | 17.8%       |
| <b>Total</b> | <b>357</b>               | <b>100%</b> | <b>216</b>              | <b>100%</b> | <b>45</b> | <b>100%</b> |

Of all the symptomatic patients in hospitals who were tested for seasonal respiratory pathogens between 2018 week 40 and 2019 week 15, 19.9% were aged 45 to 64 years and 16.7% were 75 or older (Table 2.3.2), the median age of patients tested was 43 years.

For those testing positive for influenza, 24.3% were aged 45 to 64 years and 16.4% were aged 75 years and older; the median patient age was 47 years. The median age of patients testing positive for RSV was 19 months, 40.5% of all these patients were younger than 12 months of age, 21.4% were aged one to four years, and 12.6 % were 75 years and older (Table 2.3.2).

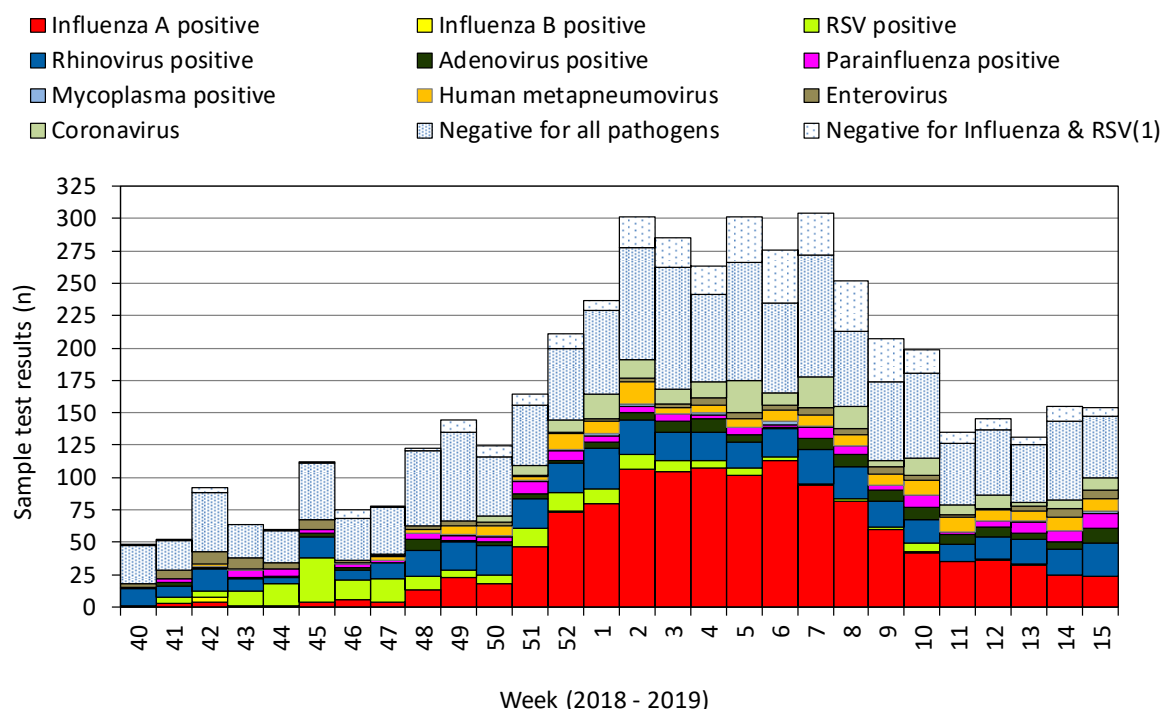
Patients who were aged 75 years and older and patients aged one to four accounted for the highest proportion of confirmed influenza cases in general inpatient and outpatient hospital wards (21.6% and 21.4% respectively). Patients who were aged 45 to 64 years of age accounted for the highest proportion of confirmed influenza cases in patients attending an accident & emergency or urgent care ward (30.2%, median age 46) and who were tested while in an intensive care ward (41.7%, median age 46). Patients aged 65 to 74 years of age and 75 years and older accounted for a high proportion of patients tested (25.0% and 16.7% respectively) (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 (44.8% and 28.9% respectively). Children aged under one and aged one to four as well as adults aged 75 and older accounted for the highest proportion of confirmed RSV cases in patients attending an A&E or urgent care ward (34.7%, 12.5% and 18.5% respectively). Children aged under one, adults aged 64 to 74 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 (33.3%, 17.8% and 17.8% respectively) (Table 2.3.3b).

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

During the period 2018 week 40 to 2019 week 15, 4,372 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 4,372 patients attending an A&E ward that had a sample collected, all were tested for influenza and RSV, 75.0% (n=3,279/4,372) were tested for all respiratory pathogens included for surveillance purposes and 14.7% (n=643/4,372) 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, 2018/19



<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 2018 week 41 (week ending 14<sup>th</sup> October 2018), and was detected every week through 2019 week 15. The peak in influenza A(H1N1) positive influenza samples was 2019 week 03 (week ending 20 January 2019; 271 patient samples; 68 influenza A(H1N1) and 8 influenza A(H3)). The proportion of samples testing positive for influenza A(H3) increased from 2019 week 06, which aligned with the overall peak in influenza positive samples (267 patient samples, 58 influenza A(H3) and 12 influenza A(H1)) (Figure 2.4.1).

From the A&E patients tested, 28.4% (n=1,241) were confirmed with influenza, of whom 99.8% (n=1,238) were positive for influenza A only, three patients had influenza B only, and two had dual infections of both influenza A and influenza B. Subtyping of influenza A positive samples breaks down as follows: 49.1% (n=610) were influenza A(H1N1), 28.8% (n=357) were not subtyped, and 21.9% (n=271) were influenza A(H3).

The most commonly detected non-influenza respiratory pathogens, from the A&E patients tested, were rhinovirus (14.1%, n= 526/3,729), coronavirus (5.6%, n=209/3,729), RSV (4.9%, n=216/4,372) and human

metapneumovirus (4.8% n= 178/3,729). Other detected causes of respiratory infection included: parainfluenza (3.8%, n=142/3,729), enterovirus (3.1%, n=116/3,729), adenovirus (3.7%, n=138/3,729), and *Mycoplasma pneumoniae* (0.4%, n=16/3,729). Forty-one percent of the 3,729 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, 57.5% (370/643) were negative for both pathogens (Table 2.4.1).

**Table 2.4.1. Samples from patients in A&E testing positive for influenza and RSV between 2018 week 40 and 2019 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      | 352            | 8.1%        | 21          | 1.7%        | 1           | 20.0%     | 75         | 34.7%       | 100                   | 5.2%        |
| 1 to 4       | 427            | 9.8%        | 93          | 7.5%        | 1           | 20.0%     | 27         | 12.5%       | 112                   | 5.9%        |
| 5 to 9       | 122            | 2.8%        | 40          | 3.2%        | 0           | 0.0%      | 2          | 0.9%        | 48                    | 2.5%        |
| 10 to 14     | 48             | 1.1%        | 15          | 1.2%        | 0           | 0.0%      | 0          | 0.0%        | 22                    | 1.2%        |
| 15 to 24     | 308            | 7.0%        | 103         | 8.3%        | 0           | 0.0%      | 5          | 2.3%        | 128                   | 6.7%        |
| 25 to 34     | 443            | 10.1%       | 169         | 13.7%       | 1           | 20.0%     | 12         | 5.6%        | 194                   | 10.2%       |
| 35 to 44     | 391            | 8.9%        | 140         | 11.3%       | 0           | 0.0%      | 5          | 2.3%        | 183                   | 9.6%        |
| 45 to 64     | 1032           | 23.6%       | 375         | 30.3%       | 1           | 20.0%     | 33         | 15.3%       | 465                   | 24.4%       |
| 65 to 74     | 551            | 12.6%       | 135         | 10.9%       | 1           | 20.0%     | 17         | 7.9%        | 288                   | 15.1%       |
| 75 and older | 698            | 16.0%       | 147         | 11.9%       | 0           | 0.0%      | 40         | 18.5%       | 368                   | 19.3%       |
| <b>Total</b> | <b>4372</b>    | <b>100%</b> | <b>1238</b> | <b>100%</b> | <b>5</b>    | <b>0%</b> | <b>216</b> | <b>100%</b> | <b>1908</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

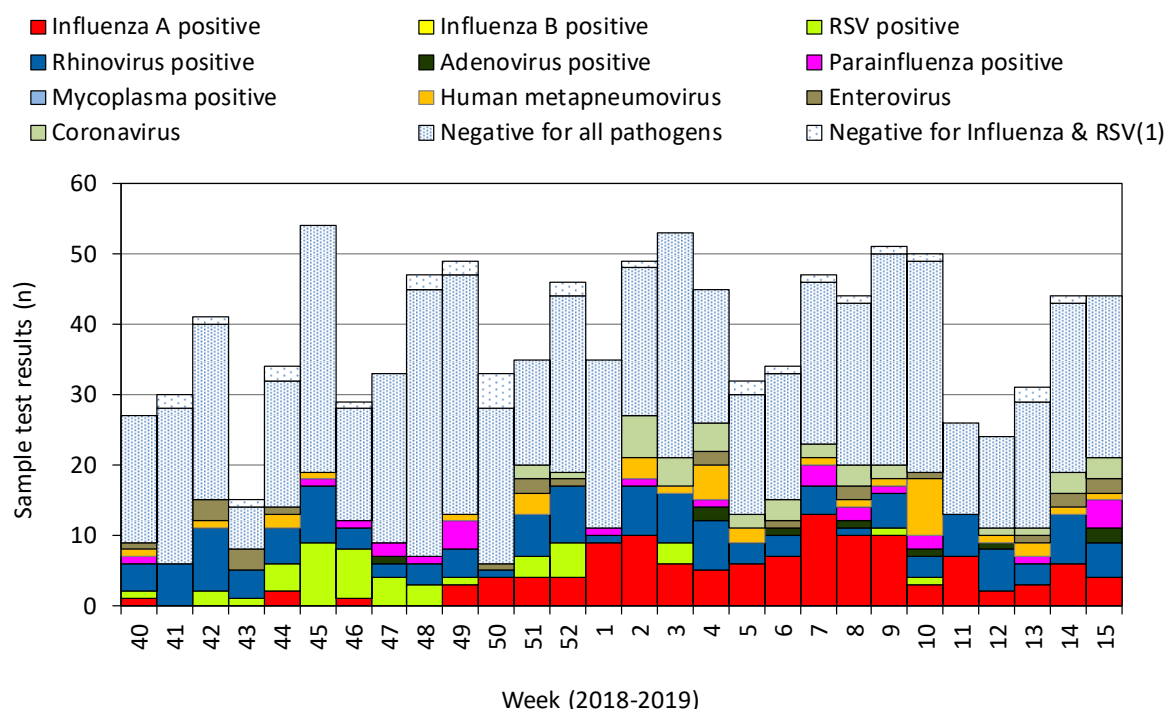
<sup>2</sup>Samples positive and negative will not add up to total screens as some individuals tested positive for more than one pathogen.

<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 2018 week 40 to 2019 week 15, 1,044 samples were collected from patients in an intensive care setting with symptoms of an acute respiratory infection, and were tested. Of the 1,044 patients in an intensive care unit that had a sample collected, all were tested for influenza and RSV, with 95.9% (n=1,001/1,044) tested for all respiratory pathogens included for surveillance purposes and 4.1% (n=43/1,044) 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, 2018/19



<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 2018 week 40, and was detected every week from 2018 week 49 through 2019 week 15. The peak in influenza A(H1N1) positive samples from patients in an intensive care ward was 2019 week 02 (week ending 13 January 2019; 42 patient samples; 9 influenza A(H1N1)) and the overall peak in influenza positive samples was week 07 of 2019 (week ending 17 February 2019; 46 patient samples, 5 influenza A(H1N1) and 6 influenza A(H3)) (Figure 2.5.1).

Of the ICU patients tested, 11.5% (n=120) were confirmed with influenza, of whom all were confirmed with influenza A. Subtyping of influenza A positive samples breaks down as follows: 49.2% (n=59) were influenza A(H1N1), 29.2 (n=35) were influenza A(H3) and 21.7% (n=26) were not subtyped.

The most commonly detected non-influenza respiratory pathogens, from the ICU patients tested, were rhinovirus (13.1%, n= 131/1,001), coronavirus (3.7%, n=37/1,001) and RSV (4.3%, n=45/1,044). Other detected causes of respiratory infection included: human metapneumovirus (3.6% n= 36/1,001), parainfluenza (2.6%, n=26/1,001), enterovirus (2.3%, n=23/1,001), adenovirus (0.9%, n=9/1,001), *Mycoplasma pneumoniae* was not detected in any ICU samples. Sixty-three percent (n=626/1,001) of ICU patient samples screened for all nine pathogens tested negative, and from the ICU patients that were only tested for influenza and RSV, 67.4% (n=29/43) 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 2018 week 40 and 2019 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      | 161            | 15.4%       | 5           | 4.2%        | 0           | 0.0%      | 15        | 33.3%       | 97                    | 14.2%       |
| 1 to 4       | 28             | 2.7%        | 3           | 2.5%        | 0           | 0.0%      | 2         | 4.4%        | 6                     | 0.9%        |
| 5 to 9       | 10             | 1.0%        | 1           | 0.8%        | 0           | 0.0%      | 0         | 0.0%        | 5                     | 0.7%        |
| 10 to 14     | 10             | 1.0%        | 0           | 0.0%        | 0           | 0.0%      | 0         | 0.0%        | 7                     | 1.0%        |
| 15 to 24     | 28             | 2.7%        | 3           | 2.5%        | 0           | 0.0%      | 0         | 0.0%        | 19                    | 2.8%        |
| 25 to 34     | 45             | 4.3%        | 5           | 4.2%        | 0           | 0.0%      | 2         | 4.4%        | 32                    | 4.7%        |
| 35 to 44     | 49             | 4.7%        | 3           | 2.5%        | 0           | 0.0%      | 3         | 6.7%        | 32                    | 4.7%        |
| 45 to 64     | 301            | 28.8%       | 50          | 41.7%       | 0           | 0.0%      | 7         | 15.6%       | 196                   | 28.8%       |
| 65 to 74     | 205            | 19.6%       | 30          | 25.0%       | 0           | 0.0%      | 8         | 17.8%       | 139                   | 20.4%       |
| 75 and older | 207            | 19.8%       | 20          | 16.7%       | 0           | 0.0%      | 8         | 17.8%       | 148                   | 21.7%       |
| <b>Total</b> | <b>1044</b>    | <b>100%</b> | <b>120</b>  | <b>100%</b> | <b>0</b>    | <b>0%</b> | <b>45</b> | <b>100%</b> | <b>681</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

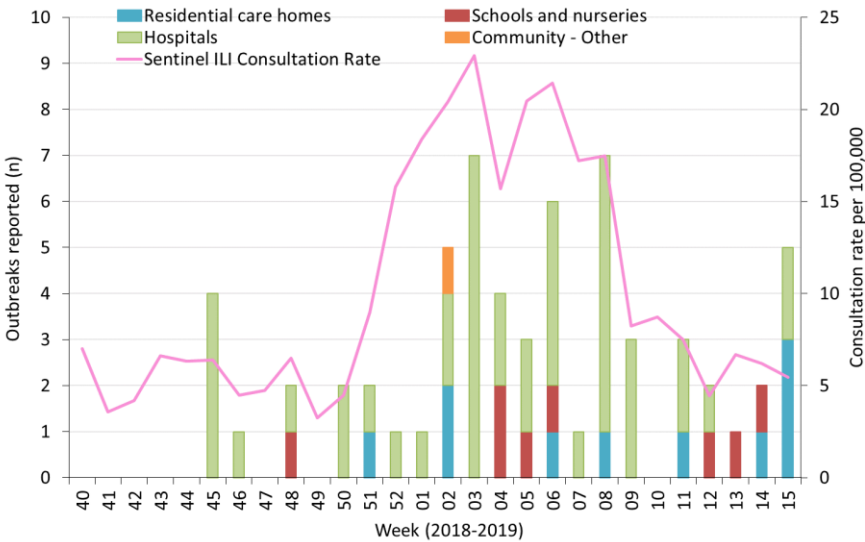
<sup>2</sup> Samples are routinely tested for: influenza, RSV, adenovirus, *Mycoplasma pneumoniae*, rhinovirus, enterovirus, parainfluenza and human metapneumovirus.

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

During the 2018/19 influenza season in Wales there were 62 outbreaks of influenza, ILI or acute respiratory illness (ARI) reported to Public Health Wales Health Protection Teams (Figure 2.6.1), compared to 88 reported outbreaks during the 2017/18 season. Outbreaks were reported from 2018 week 45 to 2019 week 15. Influenza A was laboratory confirmed in 53.2% of the outbreaks reported this season; 11 A(H3), 10 A(H1) and 12 A(untyped). Of the other 29 outbreaks, 11 were influenza not typed, three were confirmed as RSV, one was confirmed *Mycoplasma pneumonia* and 14 had no respiratory test result. Sixty-nine percent (n=43) of the outbreaks were reported from hospital wards, 16.1% (n=10) were reported from residential homes, 12.9% (n=8) were reported from school or nursery settings and 1.6% (n=1) were reported from prisons. Seventy-six percent (n=47) of the outbreaks reported occurred in South East Wales (covering Aneurin Bevan UHB, Cardiff and Vale UHB and Cwm Taf UHB areas), 16.1% (n=10) of the outbreaks occurred in Mid and West Wales (covering Abertawe Bro Morgannwg UHB, Hywel Dda UHB and Powys THB), and 8.1% (n=5) of the outbreaks were reported from North Wales (covering Betsi Cadwaladr UHB).



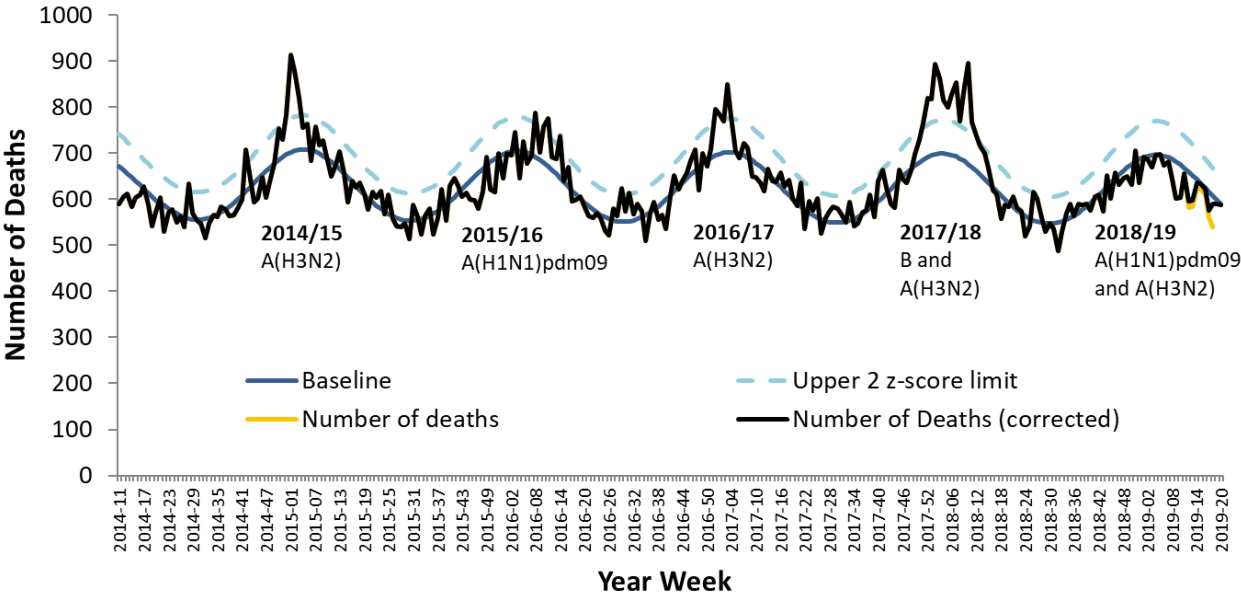
**Figure 2.6.1.** Outbreaks of acute respiratory illness reported to Public Health Wales Health Protection Team during the 2018/19 season, and sentinel GP ILI consultation rate per 100,000



**2.7 Excess mortality during the influenza season**

Surveillance of weekly all-cause mortality in Wales during 2018/19 was carried out using the EuroMoMo method by Public Health England [4]. In Wales, there was no significant excess mortality seen when looking at the population as a whole. This is in contrast to the 2017/18 season which saw the highest excess mortality observed for more than 40 years. Age-group specific significant excesses in mortality were observed in Wales only in week 08 2019 in the 15 to 64 year old age group. For children younger than fifteen years and those aged 65 and over there was no observed excess mortality.

**Figure 2.7.1.** Excess winter mortality, Wales; 2014-2019



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

### 3.1 Laboratory characterisation of influenza viruses

During 2018/19, whole-genome genetic characterisation of 173 influenza A(H1N1)pdm09 viruses was performed in Wales, with clading performed on the basis of the hemagglutinin (HA) protein. Of these, all fell within clade 6b1.a (carrying the mutations S74R, S164T, I295V). Seventy-one percent (n=123), carried the 183P mutation. A whole-genome phylogeny of A(H1N1)pdm09 viruses from the 2018/19 season is also given in Appendix C1, demonstrating several separate lineages. As such, characterisation of the influenza A(H1N1)pdm09 viruses showed that in Wales, as in other UK countries, there was genetic variation in the form of several co-circulating clades. The clades of the A(H1N1)pdm09 viruses were also similar to those observed in England, where they were antigenically characterized and found to be similar to the 2018/19 Northern Hemisphere A(H1N1)pdm09 vaccine strain A/Michigan/45/2015, which was believed to be well matched [4].

One influenza A(H1N1)pdm09 sample virus carried a neuraminidase (NA) gene substitution H275Y associated with oseltamivir and peramivir resistance. No other substitutions associated with oseltamivir, peramivir, or zanamivir resistance were observed (e.g. R292K, E119V, R152K, I223R).

In total, 34 A(H3N2) viruses were also characterized by whole-genome sequencing and claded on the basis of the HA protein, all of which belonged to the 3C clade. Of these, one belonged to 3C.3a (characterised by L3I, S91N, N144K, F193S and K326R), one to 3C.2a2 (characterized by T131K, R142K, and R261Q), and 32 to 3C.2a1b (characterised by K92R, H311Q). Of the 32 3C.2a1b viruses, 18 exhibited T131K, and 15 exhibited T135K. A whole-genome phylogeny of A(H3N2) viruses from the 2018/19 season can be found in Appendix C2. Characterisation of the influenza A(H3N2) viruses showed that in Wales, as in other UK countries, there was genetic variation in the form of several co-circulating subclades. The majority were shown to belong to the 3C.2a1 clade, which also contains the 2018/19 Northern Hemisphere A(H3N2) vaccine strain A/Singapore/INFIMH-16-0019/2016. These viruses are of similar clade distribution to those observed in England, which were genetically well matched, however complications in hemagglutinin inhibition for A(H3N2) make the interpretation of this data regarding antigenic matching more difficult.

No mutations associated with oseltamivir, peramivir, or zanamivir resistance were observed in the A(H3N2) samples sequenced.

### 3.2 Effectiveness of the 2018/19 seasonal influenza vaccine in the UK

Provisional end of season estimates of influenza vaccine effectiveness against laboratory confirmed influenza in the UK were published in the PHE annual report [4]. Estimated overall adjusted vaccine effectiveness for the 2018/19 season measured using a test-negative case control design was 44.3% (95% CI 26.8% to 57.7%). At 45.7% (95% CI 26.0% to 60.1%) effectiveness was estimated to be slightly higher against influenza A(H1N1)pdm09 compared to A(H3), 35.1% (95% CI -3.7% to 59.3%).

For the first time this season a newly licensed trivalent adjuvanted vaccine (aTIV) was recommended for those aged 65 years and over. The estimated effectiveness of this new vaccine in this age group was 62.0% (95% CI 3.4% to 85.0%) compared to the overall vaccine effectiveness in this age group of 49.9% (95%CI -13.7% to 77.9%). The overall adjusted vaccine effectiveness for LAIV in those two to 17 years of age was 48.6% (95% CI -4.4% to 74.7%).

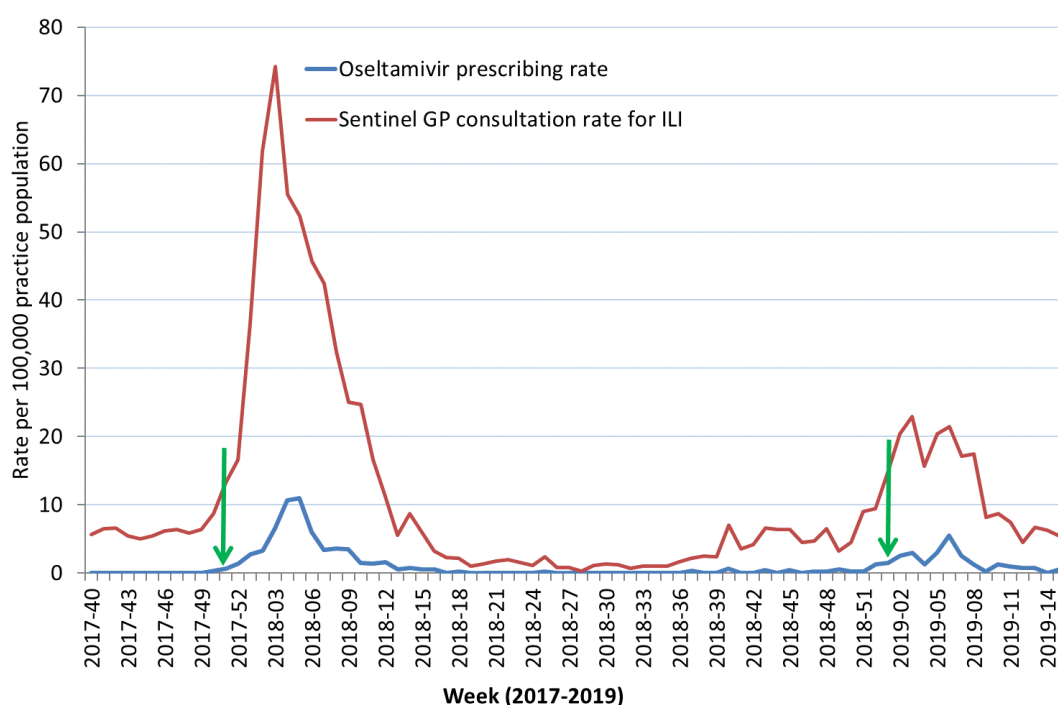
Data published in February 2019 contained information from six vaccine effectiveness studies carried out in 11 European countries, including the United Kingdom. Estimates of overall effectiveness against laboratory confirmed influenza varied from 32% to 43%, depending on study country [5].

The reasons for poor effectiveness of current influenza vaccines against influenza A(H3N2) are not fully understood, but may relate to genetic diversity within the 3c2a clade of influenza A(H3N2) viruses or potential issues of egg-adaption in the influenza A(H3N2) vaccine virus [6]. Next season, the adjuvanted trivalent vaccine will continue to be available for older adults alongside a cell-based vaccine which is recommended for older adults in addition to adults under 65 years of age in a clinical risk group [7].

### **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 2<sup>nd</sup> January 2019 to 24<sup>th</sup> May 2019. Prescribing rates followed a similar trend to the sentinel GP consultation rate for ILI. The rate peaked at 5.5 prescriptions per 100,000 practice population during week 06 2019 (week ending 10<sup>th</sup> February, Figure 3.3.1), which was three weeks after the peak for ILI consultations in sentinel practices. The peak in prescribing rate during 2018/19 was lower than the 2017/18 peak prescribing rate in Wales (Table 3.3.1). During the 2018/19 season in the UK, 901 influenza A(H1N1)pdm09 viruses were tested for oseltamivir resistance, 21 of which resistant. All resistant viruses had the H275Y amino acid substitution. None of the 713 influenza A(H1N1)pdm09 viruses tested were resistant to zanamivir. All influenza A(H3N2) viruses tested this season were susceptible to both oseltamivir and zanamivir [4].

**Figure 3.3.1.** Prescribing rate for oseltamivir per 100,000 practice population in Wales from 2017 week 40 to 2019 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 2018/19

| 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  |

## 4. Influenza immunisation in Wales 2018/19

### 4.1 Data collection

#### 4.1.1 Primary Care data

Data on influenza immunisation for the 2018/19 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 2018 and 23<sup>rd</sup> April 2019.

If data from individual General Practices were not received for a particular week, the most recent previous submission of data from the relevant practice was identified and used. This report is based on data submitted from all 416 practices in Wales through Audit+.

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 2018). 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 2018 to January 2019 who had received an influenza vaccine since 1<sup>st</sup> September 2018. Risk categories were based on the Read code groups defined in the [PRIMIS Seasonal Influenza Vaccine Uptake Reporting Specification for 2018/19](#) [8].

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

During January 2019 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 [9]. During the five-day period, information was collected from 418 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 2018) 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 UHB were also manually submitted by the health board Immunisation Coordinator throughout the campaign as part of a nursery school based influenza

immunisation pilot. 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.

#### **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 2018 to March 2019 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 General practice staff data**

An internet-based survey of immunisation uptake in staff working in general practices in Wales was conducted between 29/03/2019 and 05/05/2019. A link to the uptake data submission survey hosted on SmartSurvey was circulated to all Practice Managers in Wales on 29/03/2019 with explanatory information and a request to participate. A reminder of the survey closing date was circulated on 23/04/2019. The survey enquired about immunisation uptake, by staff group, in each of the practices and also the number of staff who had declined influenza immunisation.

## 4.2 Influenza immunisation uptake

### 4.2.1 Uptake in children

Of a total 69,896 children aged two and three years old (as at 31 August 2018), 49.4% (n=34,541) were immunised against influenza in general practice between 1<sup>st</sup> Sept 2018 and 31<sup>st</sup> March 2019. The number of immunisations given to children aged two and three years old in general practice decreased by 516 in 2018/19 compared to 2017/18. Uptake in two and three year olds varied by health board, ranging from 44.6% (Hywel Dda UHB) to 60.6% (Powys Teaching HB). Uptake in two year olds (50.4%) was slightly higher compared to uptake in three year olds (48.4%) (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, 2018/19<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 (%)  |                     |
| Abertawe Bro Morgannwg UHB | 2974                  | 5877            | 50.6        | 2661                  | 5946            | 44.8        | 47.7                |
| Aneurin Bevan UHB          | 3498                  | 6940            | 50.4        | 3210                  | 7140            | 45.0        | 47.6                |
| Betsi Cadwaladr UHB        | 4067                  | 7237            | 56.2        | 3927                  | 7338            | 53.5        | 54.8                |
| Cardiff and Vale UHB       | 2889                  | 5943            | 48.6        | 2665                  | 5968            | 44.7        | 46.6                |
| Cwm Taf UHB                | 1515                  | 3454            | 43.9        | 2039                  | 3539            | 57.6        | 50.8                |
| Hywel Dda UHB              | 1733                  | 3910            | 44.3        | 1830                  | 4074            | 44.9        | 44.6                |
| Powys Teaching HB          | 790                   | 1260            | 62.7        | 743                   | 1270            | 58.5        | 60.6                |
| <b>Wales</b>               | <b>17466</b>          | <b>34621</b>    | <b>50.4</b> | <b>17075</b>          | <b>35275</b>    | <b>48.4</b> | <b>49.4</b>         |

<sup>1</sup>Children aged three years from Cwm Taf UHB were offered influenza immunisation in nurseries attached to primary schools. Data presented in Table 4.2.3 are provided by general practices and it is likely information for a small proportion of children immunised in nursery sessions in Cwm Taf UHB was not entered in to GP records. As a result, uptake presented here for three year olds in Cwm Taf UHB is likely to underestimate true uptake (see Table 4.2.4 for further information).

In Cwm Taf UHB, LAIV was offered to children aged three years old in nursery classes attached to primary schools. Uptake in this group of children was 66.1% (Table 4.2.2), an increase from 62.8% in 2017-18 in this same age group. Of a total of 3,539 three year old children registered with a GP in Cwm Taf UHB, 3,372 (95.3%) were recorded in the nursery data.

**Table 4.2.2.** *Uptake of influenza immunisation in children aged three years in nursery classes in Cwm Taf Health Board, 2018/19*

| Health Board | Nurseries visited (n) | Children aged 3 (Nursery classes) |                 |            |
|--------------|-----------------------|-----------------------------------|-----------------|------------|
|              |                       | Immunised (n)                     | Denominator (n) | Uptake (%) |
| Cwm Taf UHB  | 127                   | 2228                              | 3372            | 66.1%      |

All health boards provided uptake data for immunisations given to children in school.

LAIV was offered in 1,373 schools in Wales to children in reception class, and School Years 1 to 6. Of the 249,827 eligible children who were aged four to 10 years on 31<sup>st</sup> August 2018, 69.9% (174,525) were immunised against influenza. This is an increase from 68.3% in 2017/18 in eligible children immunised in schools. Uptake ranged by HB from 61.0% (Cardiff and Vale UHB) to 75.3% (Abertawe Bro Morgannwg UHB) (Table 4.2.3).



Uptake in school reception classes (children four to five years of age) increased to 72.1% (24,465/33,920) from 68.5% in the same age group last year. Uptake varied by HB, ranging from 66.5% (Cardiff and Vale UHB) to 76.0% (Hywel Dda UHB) (Table 4.2.4).

Uptake in School Year 1 (children five to six years of age) increased to 71.8% (25,023/34,859) from 69.2% in the same age group last year. Uptake varied by HB, ranging from 63.3% (Cardiff and Vale UHB) to 76.9% (Abertawe Bro Morgannwg UHB) (Table 4.2.4).

Uptake in School Year 2 (children six to seven years of age) increased to 71.2% (25,721/36,132) from 69.6% in the same age group last year. Uptake varied by HB, ranging from 62.4% (Cardiff and Vale UHB) to 76.7% (Abertawe Bro Morgannwg UHB) (Table 4.2.4).

Uptake in School Year 3 (children seven to eight years of age) increased to 70.8% (26,059/36,807) from 67.2% in the same age group last year. Uptake varied by HB, ranging from 61.3% (Cardiff and Vale UHB) to 76.7% (Abertawe Bro Morgannwg UHB) (Table 4.2.4).

Uptake in School Year 4 (children eight to nine years of age) increased to 68.7% (24,723/36,009) from 66.7% in the same age group last year. Uptake varied by HB, ranging from 60.7% (Cardiff and Vale UHB) to 74.3% (Abertawe Bro Morgannwg UHB) (Table 4.2.4).

This is the first year LAIV has been offered to School Years 5 and 6 in school-based immunisation sessions. Uptake in School Year 5 (children nine to 10 years of age) was to 68.1% (24,240/35,604) and varied by HB from 57.7% (Cardiff and Vale UHB) to 74.2% (Abertawe Bro Morgannwg UHB) (Table 4.2.4).

Uptake in School Year 6 (children 10 to 11 years of age) was 66.6% (24,294/36,496) and varied by HB from 55.7% (Cardiff and Vale UHB) to 73.2% (Abertawe Bro Morgannwg UHB) (Table 4.2.4).

**Table 4.2.3.** *Uptake of influenza immunisation in all eligible school children by health board, Wales, 2018/19*

| Health Board               | Schools<br>targeted (n) | All children aged 4 to 10 years |                 |             |
|----------------------------|-------------------------|---------------------------------|-----------------|-------------|
|                            |                         | Immunised (n)                   | Denominator (n) | Uptake (%)  |
| Abertawe Bro Morgannwg UHB | 192                     | 31037                           | 41203           | 75.3        |
| Aneurin Bevan UHB          | 204                     | 35051                           | 49349           | 71.0        |
| Betsi Cadwaladr UHB        | 405                     | 38538                           | 54974           | 70.1        |
| Cardiff and Vale UHB       | 157                     | 25543                           | 41841           | 61.0        |
| Cwm Taf UHB                | 127                     | 17696                           | 25459           | 69.5        |
| Hywel Dda UHB              | 206                     | 20793                           | 28192           | 73.8        |
| Powys Teaching HB          | 82                      | 5867                            | 8809            | 66.6        |
| <b>Wales</b>               | <b>1373</b>             | <b>174525</b>                   | <b>249827</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, 2018/19**

| 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 (%)  |
| Abertawe Bro Morgannwg UHB | 192                  | 75.3                  | 76.9        | 76.7        | 76.7        | 74.3        | 74.2        | 73.2        |
| Aneurin Bevan UHB          | 204                  | 71.9                  | 71.6        | 71.7        | 71.8        | 70.8        | 69.9        | 69.5        |
| Betsi Cadwaladr UHB        | 405                  | 73.5                  | 72.4        | 72.6        | 70.9        | 67.7        | 67.9        | 66.0        |
| Cardiff and Vale UHB       | 157                  | 66.5                  | 63.3        | 62.4        | 61.3        | 60.7        | 57.7        | 55.7        |
| Cwm Taf UHB                | 127                  | 69.2                  | 73.1        | 70.4        | 71.4        | 67.2        | 68.1        | 67.2        |
| Hywel Dda UHB              | 206                  | 76.0                  | 76.2        | 74.3        | 74.5        | 72.3        | 72.5        | 70.8        |
| Powys Teaching HB          | 82                   | 74.0                  | 68.1        | 67.3        | 67.3        | 65.0        | 66.4        | 59.6        |
| <b>Wales</b>               | <b>1373</b>          | <b>72.1</b>           | <b>71.8</b> | <b>71.2</b> | <b>70.8</b> | <b>68.7</b> | <b>68.1</b> | <b>66.6</b> |

Uptake in children at risk aged two to three years was 58.2% and ranged by health board from 52.0% (Abertawe Bro Morgannwg UHB) to 76.7% (Powys THB). Uptake in children at risk aged four to 10 years was 55.4% and ranged by health board from 37.1% (Cardiff & Vale UHB) to 67.0% (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 34.5% and ranged by health board from 29.6% (Hywel Dda UHB) to 38.0% (Aneurin Bevan 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, 2018/19<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 (%)  |
| Abertawe Bro Morgannwg UHB | 211                     | 406             | 52.0        | 1913                     | 2945            | 65.0        | 1201                      | 3855            | 31.2        |
| Aneurin Bevan UHB          | 249                     | 428             | 58.2        | 2356                     | 3514            | 67.0        | 1520                      | 4147            | 36.7        |
| Betsi Cadwaladr UHB        | 296                     | 447             | 66.2        | 2122                     | 3811            | 55.7        | 1827                      | 4812            | 38.0        |
| Cardiff and Vale UHB       | 205                     | 375             | 54.7        | 1138                     | 3071            | 37.1        | 1245                      | 3470            | 35.9        |
| Cwm Taf UHB                | 153                     | 263             | 58.2        | 1167                     | 1781            | 65.5        | 669                       | 2120            | 31.6        |
| Hywel Dda UHB              | 119                     | 228             | 52.2        | 748                      | 1818            | 41.1        | 757                       | 2554            | 29.6        |
| Powys Teaching HB          | 66                      | 86              | 76.7        | 299                      | 654             | 45.7        | 329                       | 945             | 34.8        |
| <b>Wales</b>               | <b>1299</b>             | <b>2233</b>     | <b>58.2</b> | <b>9743</b>              | <b>17594</b>    | <b>55.4</b> | <b>7548</b>               | <b>21903</b>    | <b>34.5</b> |

<sup>1</sup>Age as at 31/08/2018.

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

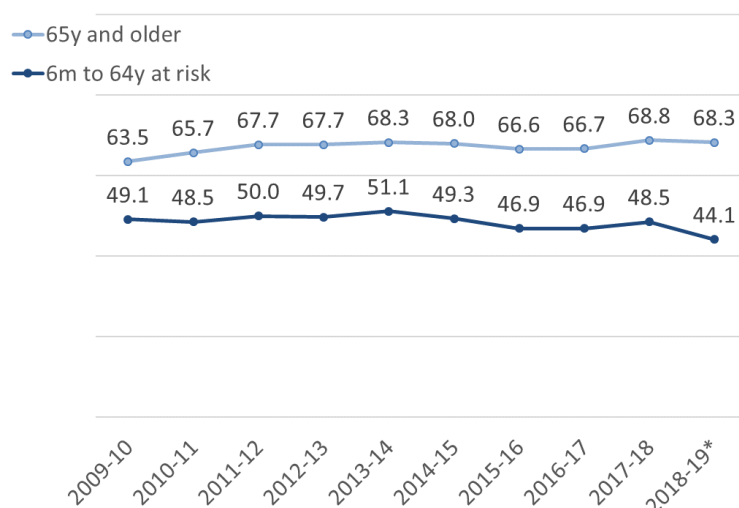
<sup>3</sup>All children aged four to 10 years are eligible for immunisation through school vaccination sessions. Data presented here for four to 10 year olds in clinical risk groups show the numbers of patients at clinical risk, whose GP record contains appropriate influenza vaccination Read codes; 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 68.3%, a decrease compared to 68.8% in the 2017/18 season (Figure 4.2.1). Of all influenza immunisations given to those aged 65 years and over, 90% were delivered by the week ending 9<sup>th</sup> December 2018 (Figure 4.2.2). Uptake varied by HB from 62.9% (Hywel Dda UHB) to 71.0% (Betsi Cadwaladr UHB), (Table 4.2.6, Figure 4.2.3) and ranged by Local Authority (LA) area from 57.9% (Ceredigion) to 74.3% (Monmouthshire and Flintshire) (Appendix Table A1). For patients aged 65 years or older, 11.6% were recorded as having declined immunisation, compared to 12.5% in the 2017/18 season. No HB or LA area achieved the 75% target. Immunisation plans in those age 65 and over were affected by a staggered delivery of the aTIV vaccine early in the season.

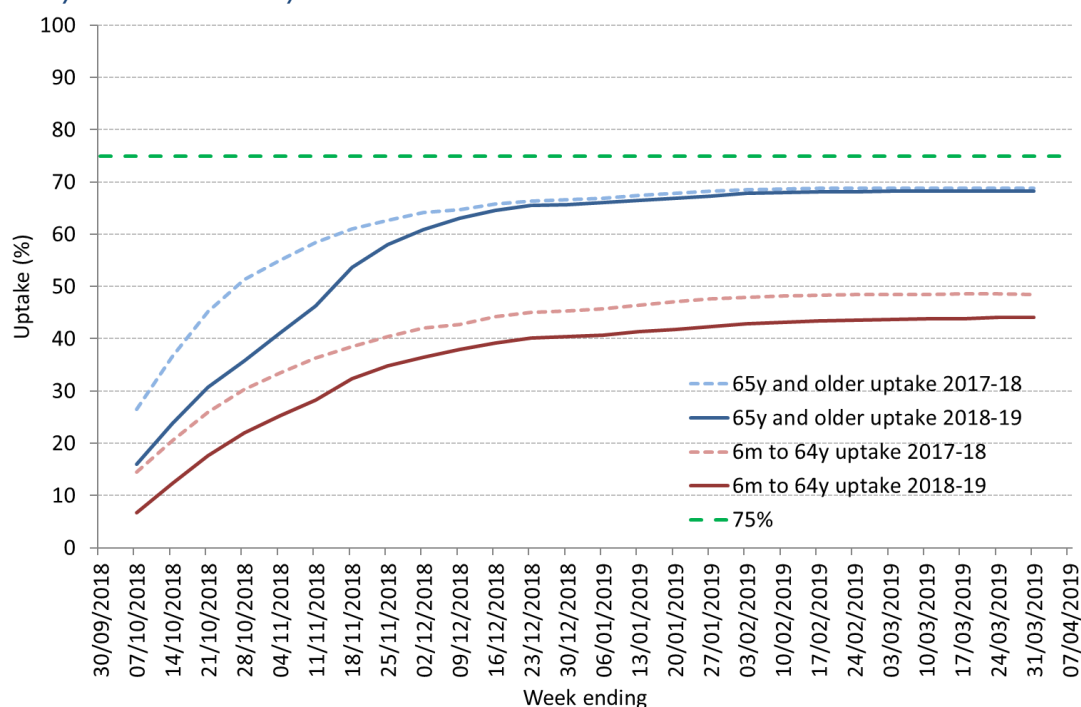
Uptake in those aged six months to 64 years in a clinical risk group was 44.1%, a decrease from 2017/18 (48.5%) (Figure 4.2.1). For the first time this season, morbidly obese patients not otherwise at risk were included in the total clinical risk group measure, when excluding this group as in previous years, uptake was still lower than last season at 47.1%. Of all immunisations given to those aged six months to 64 years in clinical risk groups, 90% were delivered by the week ending 23<sup>rd</sup> December 2018 (Figure 4.2.2). Uptake ranged by HB from 38.1% (Hywel Dda UHB) to 47.9% (Betsi Cadwaladr UHB) (Table 4.2.6, Figure 4.2.4) and by LA area from 37.7% (Carmarthenshire) to 53.5% (Monmouthshire) (Appendix Table A1). The proportion of all people aged six months to 64 years recorded in one or more clinical risk categories was 16.8% (an increase from 14.7% in 2017/18). Of those aged six months to 64 years in clinical risk groups, 9.7% were recorded as having declined immunisation, compared to 9.6% in 2017/18. 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 – 2018/19



\*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, 2017/18 and 2018/19<sup>1</sup>



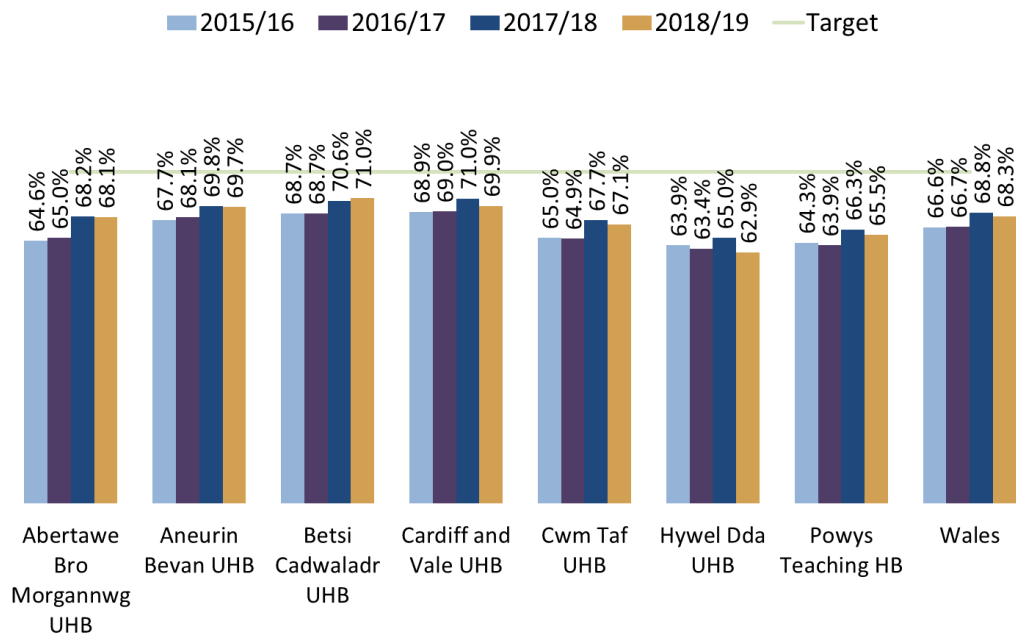
<sup>1</sup> Data for those aged six months to 64 years at risk in 2018/19 includes those morbidly obese not otherwise at risk. 2017/18 data do not include this group in the overall uptake figures for this category.

**Table 4.2.6.** Trends in uptake (%) of influenza immunisation in health boards, Wales, 2015/16 - 2018/19

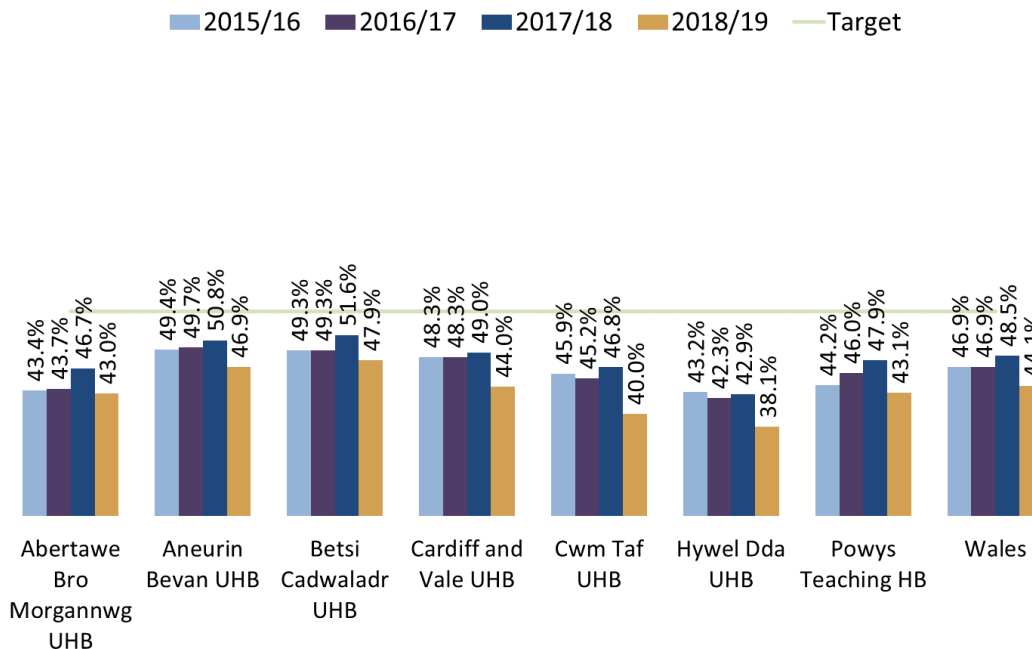
| Health Board               | Uptake in patients aged 65y and older |             |             |             | Uptake in patients younger than 65y at risk |             |             |                      |
|----------------------------|---------------------------------------|-------------|-------------|-------------|---|-------------|-------------|----------------------|
|                            | 2015/16                               | 2016/17     | 2017/18     | 2018/19     | 2015/16                                     | 2016/17     | 2017/18     | 2018/19 <sup>1</sup> |
| Abertawe Bro Morgannwg UHB | 64.6                                  | 65.0        | 68.2        | 68.1        | 43.4  | 43.7        | 46.7        | 43.0                 |
| Aneurin Bevan UHB          | 67.7                                  | 68.1        | 69.8        | 69.7        | 49.4  | 49.7        | 50.8        | 46.9                 |
| Betsi Cadwaladr UHB        | 68.7                                  | 68.7        | 70.6        | 71.0        | 49.3  | 49.3        | 51.6        | 47.9                 |
| Cardiff and Vale UHB       | 68.9                                  | 69.0        | 71.0        | 69.9        | 48.3  | 48.3        | 49.0        | 44.0                 |
| Cwm Taf UHB                | 65.0                                  | 64.9        | 67.7        | 67.1        | 45.9  | 45.2        | 46.8        | 40.0                 |
| Hywel Dda UHB              | 63.9                                  | 63.4        | 65.0        | 62.9        | 43.2  | 42.3        | 42.9        | 38.1                 |
| Powys Teaching UHB         | 64.3                                  | 63.9        | 66.3        | 65.5        | 44.2  | 46.0        | 47.9        | 43.1                 |
| <b>Wales</b>               | <b>66.6</b>                           | <b>66.7</b> | <b>68.8</b> | <b>68.3</b> | <b>46.9</b>                                 | <b>46.9</b> | <b>48.5</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, 2015/16 – 2018/19



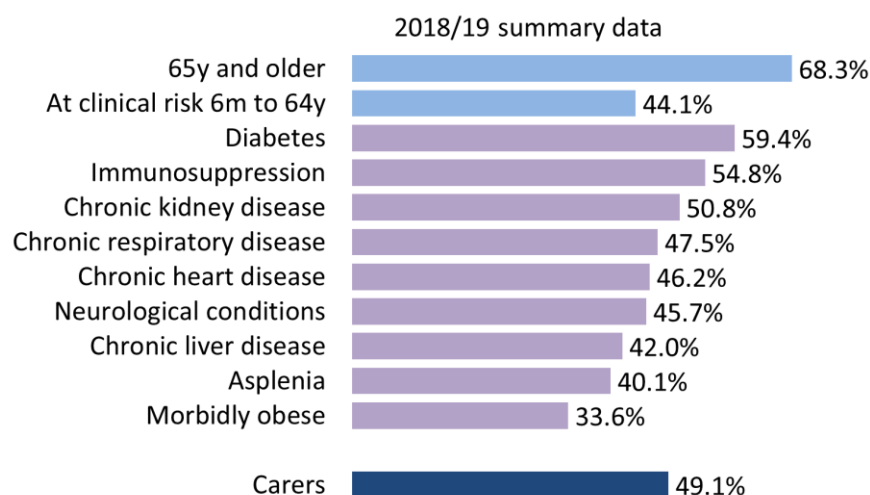
**Figure 4.2.4.** Uptake of influenza immunisation in health boards in Wales in patients aged six months to 64 years in clinical risk groups, 2015/16 – 2018/19



### 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, 2018/19**



- Chronic heart disease was recorded in 2.6% of patients aged six months to 64 years, of whom 46.2% were immunised against influenza (Figure 4.2.5, Appendix Table A2). Uptake by HB ranged from 40.6% (Hywel Dda UHB) to 50.6% (Betsi Cadwaladr UHB).
- Chronic respiratory disease was recorded in 7.6% of patients aged six months to 64 years, of whom 47.5% were immunised against influenza (Figure 4.2.5, Appendix Table A2), ranging by HB from 40.2% (Hywel Dda UHB) to 51.3% (Anuerin Bevan UHB).
- Chronic kidney disease was recorded in 0.6% of patients aged six months to 64 years, of whom 50.8% were immunised against influenza (Figure 4.2.5, Appendix Table A2), ranging by HB from 44.4% (Cwm Taf UHB) to 56.0% (Betsi Cadwaladr UHB).
- Diabetes was recorded in 3.3% of patients aged six months to 64 years, of whom 59.4% were immunised against influenza (Figure 4.2.5, Appendix Table A2), ranging by HB from 53.2% (Hywel Dda UHB) to 62.0% (Betsi Cadwaladr UHB).
- Immunosuppression due to disease or treatment was recorded in 1.0% of patients aged six months to 64 years, of whom 54.8% were immunised against influenza (Figure 4.2.5, Appendix Table A2), ranging by HB from 46.0% (Cwm Taf UHB) to 60.6% (Betsi Cadwaladr UHB).
- Chronic liver disease was recorded in 0.4% of patients aged six months to 64 years, of whom 42.0% were immunised against influenza (Figure 4.2.5, Appendix Table A2), ranging by HB from 35.8% (Cwm Taf UHB) to 48.2% (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 45.7% were immunised against influenza (Figure 4.2.5, Appendix Table A2), ranging by HB from 40.7% (Hywel Dda UHB) to 49.5% (Betsi Cadwaladr UHB).
- Morbidly obese was recorded in 3.1% of patients aged six months to 64 years, of whom 33.6% were immunised against influenza (Figure 4.2.5, Appendix Table A2). Uptake ranged by HB from 27.8% (Cwm Taf UHB) to 38.1% (Betsi Cadwaladr UHB). For those aged 18 to 64 years, 40.1% were immunised against influenza.
- Being asplenic (or having a dysfunctional spleen) was recorded in 0.4% of patients aged six months to 64 years, of whom 40.1% were immunised against influenza (Figure 4.2.5, Appendix Table A2), ranging by HB from 35.5% (Hywel Dda UHB) to 44.5% (Betsi Cadwaladr UHB).
- A total of 32,417 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 49.1% 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 41.4% (Hywel Dda UHB) to 53.9% (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 2018 to 31<sup>st</sup> January 2019, 27,019 women were coded in General Practice with Read codes associated with pregnancy. Out of these women, 3,016 (11.2%) had an existing risk (as defined by the CMO letter [1]), the remainder (24,003) did not have another identified clinical risk (Appendix Table A3). Uptake of influenza vaccination in all pregnant women, measured using GP data was 46.6% and ranged by HB from 41.7% (Cwm Taf UHB) to 55.0% (Powys THB). Uptake in pregnant women with another existing risk condition was 59.1% and ranged by HB from 51.1% (Hywel Dda UHB) to 63.1% (Betsi Cadwaladr UHB). Uptake in pregnant women without another existing risk condition was 45.0%, and ranged by HB from 39.9% (Cwm Taf UHB) to 54.2% (Powys THB).

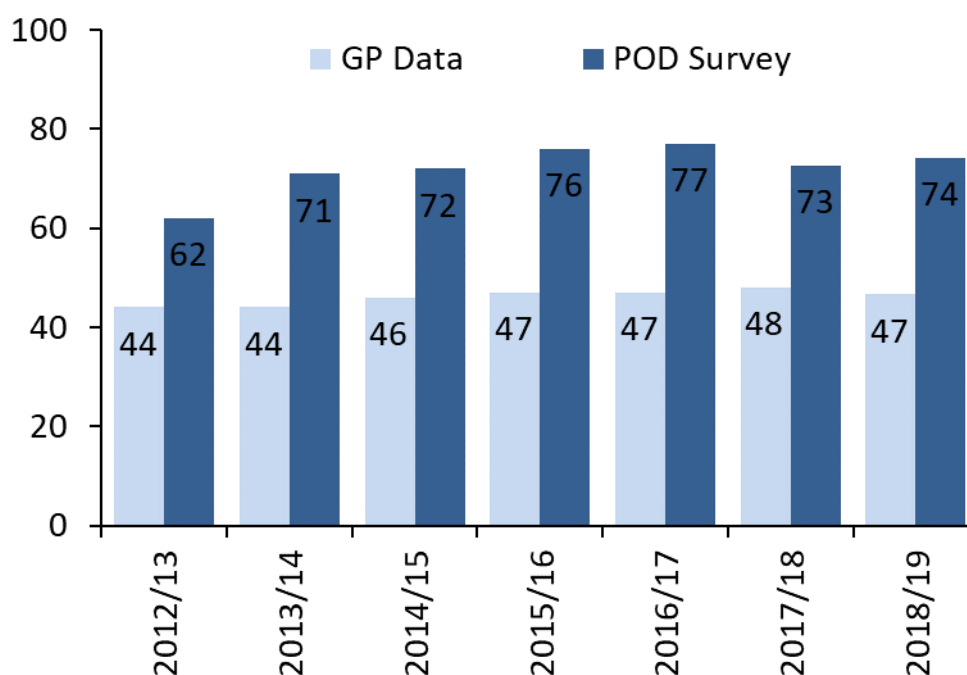
The point of delivery (POD) survey included 418 women giving birth during a five-day period in January 2019 [9]. Data were submitted by all health boards in Wales. Uptake of influenza immunisation recalled in this group was 74.2% (95% CI 69.7% to 78.3%), an increase compared to 72.7% (95% CI 67.8% to 77.2%) last year and just below the 75% vaccination target set by Welsh Government. Uptake increased in two HBs (Betsi Cadwaladr UHB and Aneurin Bevan UHB) compared to the 2017/18 survey, and

decreased in the remaining five HBs [9]. The survey also found that 93.3% of the women could recall being offered influenza immunisation, an increase of 3.5% from 89.8% 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, 2018/19 (Data source: 2018/19 point of delivery survey)*

| Women offered influenza vaccination while pregnant |            |            |
|--|------------|------------|
|  | n          | %          |
| Yes  | 390        | 93.3       |
| No   | 7          | 1.7        |
| Not known/missing                                  | 21         | 5.0        |
| <b>Total</b>                                       | <b>418</b> | <b>100</b> |

**Figure 4.2.6.** *Uptake (%) of influenza vaccination in pregnant women by data source, Wales, 2012/13-2018/19*



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 2018/19 winter, 12,591 women whose GP record contained Read codes relating to pregnancy were recorded as having received influenza vaccination. This is a decrease from the 2017/18 total of 13,922 women vaccinated.



#### 4.2.5 Estimated numbers of individuals immunised in Wales in 2018/19

The estimated total number of individuals immunised against influenza was 868,688 as at 23<sup>rd</sup> April 2019, based on Read coded data reported from all practices in Wales for 2018/19. This represents an estimated 28% of the population of Wales.

This includes 457,200 individuals aged 65 years and over, 192,352 aged six months to 64 years in a clinical risk group, 12,591 pregnant women, 34,541 children aged two and three years and 15,932 carers. Vaccinated individuals are ascertained using Read codes which broadly correspond to eligibility criteria [8].

The remaining 156,072 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 868,688 individuals immunised in 2018/19 is an increase on the estimated 820,183 individuals immunised during the 2017/18 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 55.5% (n=33,653) (Table 4.2.8). Uptake in staff with direct patient contact ranged by organisation from 40.3% (Welsh Ambulance Service NHS Trust) to 65.5% (Velindre NHS Trust). Uptake in staff groups ranged from 39.6% (Estates and Ancillary) to 62.6% (Medical and Dental), (Table 4.2.9).

There were a total of 88,098 NHS health board or trust staff reported under the care of NHS Occupational Health departments in Wales and offered influenza vaccination, of whom 53.4% (n=47,061) were immunised during 2018/19, a decrease of 2.0% from 55.4% in 2017/18. This is the first decrease in uptake following an eight-year upward trend starting in 2009/10 (11.6%). Uptake in all staff ranged by organisation from 40.6% (Welsh Ambulance Service NHS Trust) to 61.8% (Velindre NHS Trust). Three health boards and NHS Trusts showed an increase in uptake compared to the previous season (Figure 4.2.7 and Figure 4.2.8).



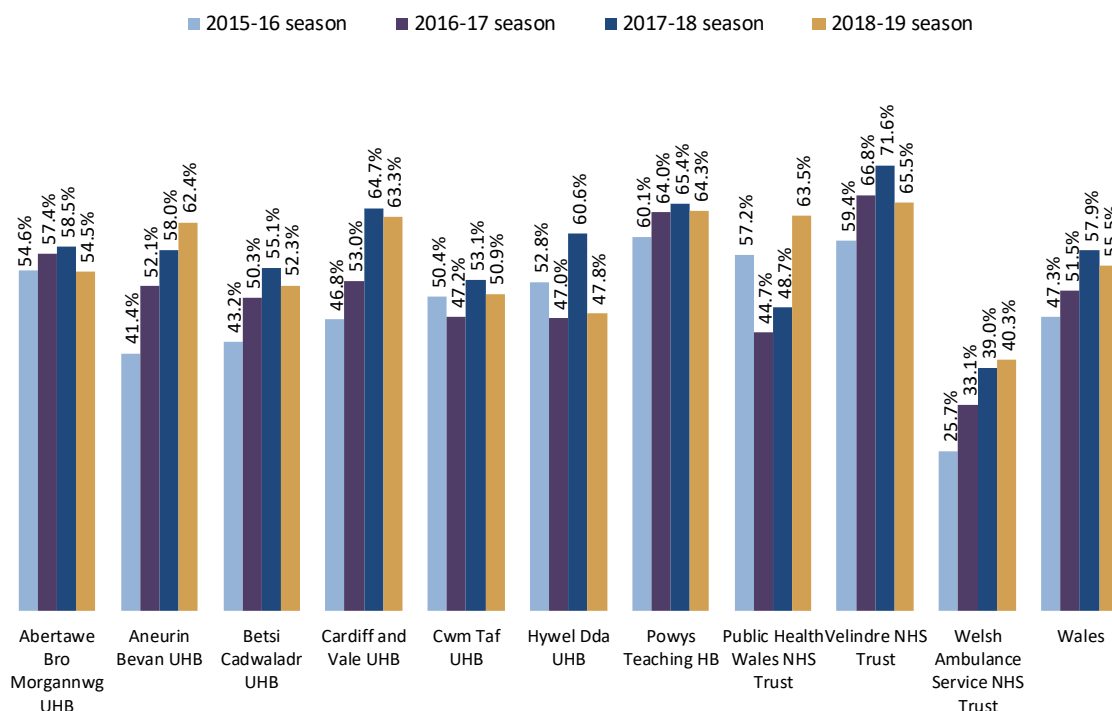
In three HBs (Aneurin Bevan UHB, Cardiff and Vale UHB and Powys Teaching HB) and in two NHS Trusts (Public Health Wales NHS Trust and Velindre NHS Trust), uptake of influenza vaccination in staff with direct patient contact exceeded the Welsh Government target of 60% (Table 4.2.8).

**Table 4.2.8. Uptake of influenza immunisation in NHS staff in Wales, 2018/19**

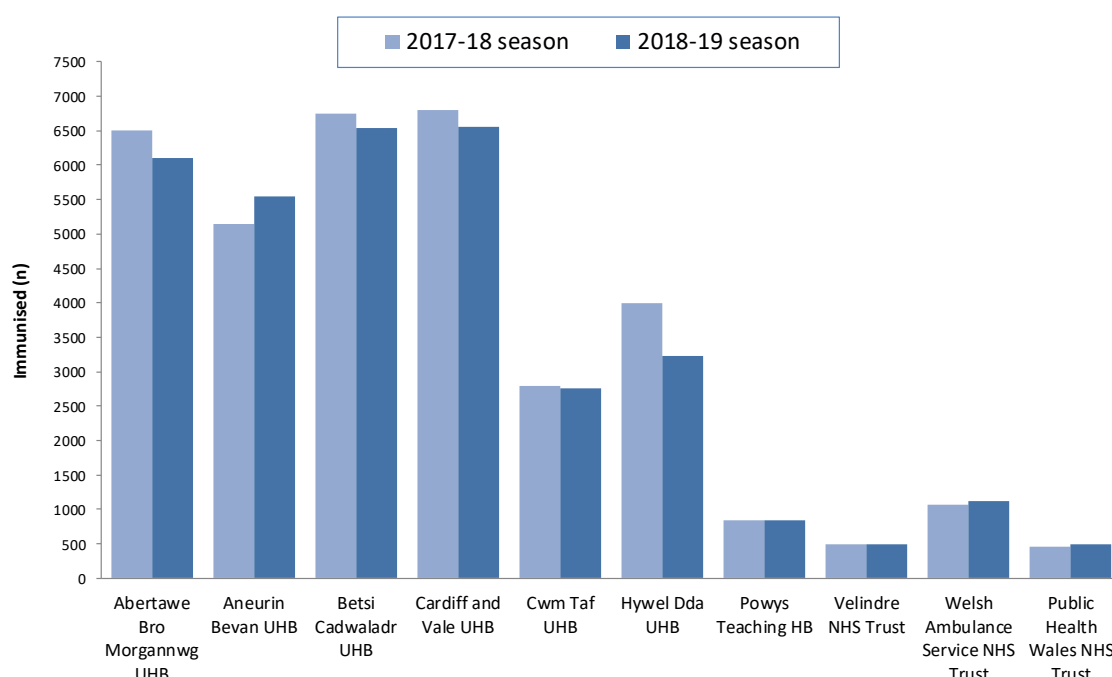
| Health Board                      | Total Staff   |                 |             | Staff with direct patient contact <sup>1</sup> |                 |             |
|-----------------------------------|---------------|-----------------|-------------|--|-----------------|-------------|
|                                   | Immunised (n) | Denominator (n) | Uptake (%)  | Immunised (n)                                  | Denominator (n) | Uptake (%)  |
| Abertawe Bro Morgannwg UHB        | 8579          | 16138           | 53.2        | 6103   | 11190           | 54.5        |
| Aneurin Bevan UHB                 | 7913          | 13086           | 60.5        | 5554   | 8901            | 62.4        |
| Betsi Cadwaladr UHB               | 9101          | 17778           | 51.2        | 6532   | 12490           | 52.3        |
| Cardiff and Vale UHB              | 8482          | 14493           | 58.5        | 6552   | 10350           | 63.3        |
| Cwm Taf UHB                       | 3944          | 8225            | 48.0        | 2754   | 5406            | 50.9        |
| Hywel Dda UHB                     | 4453          | 9671            | 46.0        | 3221   | 6736            | 47.8        |
| Powys Teaching HB                 | 1192          | 1975            | 60.4        | 847  | 1317            | 64.3        |
| Velindre NHS Trust                | 906           | 1466            | 61.8        | 485  | 740             | 65.5        |
| Welsh Ambulance Service NHS Trust | 1363          | 3355            | 40.6        | 1117   | 2773            | 40.3        |
| Public Health Wales NHS Trust     | 1128          | 1911            | 59.0        | 488  | 768             | 63.5        |
| <b>Wales</b>                      | <b>47061</b>  | <b>88098</b>    | <b>53.4</b> | <b>33653</b>                                   | <b>60671</b>    | <b>55.5</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, 2015/16 - 2018/19**



**Figure 4.2.8.** Number of influenza immunisations in Welsh Health Board & NHS Trust staff with direct patient contact – seasonal comparison 2017/18 and 2018/19.



**Table 4.2.9.** Uptake of influenza immunisation in NHS staff groups, Wales, 2018/19

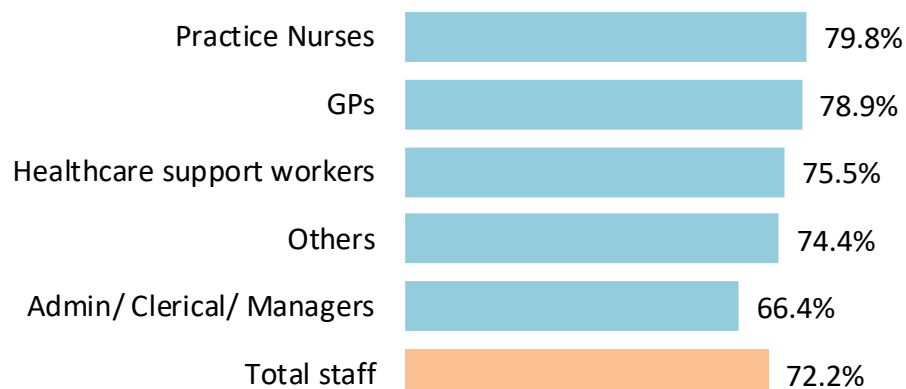
| ESR staff group                          | Staff         |                 |            |
|--|---------------|-----------------|------------|
|  | Immunised (n) | Denominator (n) | Uptake (%) |
| Additional Clinical Services             | 9075          | 18080           | 50.2       |
| Additional Prof Scientific and Technical | 1824          | 3236            | 56.4       |
| Administrative and Clerical              | 8586          | 16015           | 53.6       |
| Allied Health Professionals              | 3577          | 6242            | 57.3       |
| Estates and Ancillary                    | 3310          | 8358            | 39.6       |
| Healthcare Scientists                    | 872           | 1911            | 45.6       |
| Medical and Dental                       | 4282          | 6838            | 62.6       |
| Nursing & Midwifery Registered           | 14407         | 25507           | 56.5       |

#### 4.2.7 Uptake in general practice staff

In April 2019, Public Health Wales carried out an internet-based survey of influenza immunisation uptake in General Practice staff in Wales. The response rate for this survey was 34.6% (n=144) out of 416 practices in Wales, varying by HB from 12.5% (Powys THB) to 44.8% (Betsi Cadwaladr UHB).

Overall uptake in all staff from responding practices was 72.2%. Uptake of influenza immunisation ranged by identified staff group from 66.4% (admin/clerical/managers) to 79.8% (practice nurses) and was 78.9% for GPs and 75.5% for healthcare support workers (Figure 4.2.9). Of those individuals not vaccinated, 22.6% had declined. Although response rate was more than twice that of previous years, it remains low. Results must be interpreted with caution and may not be representative across Wales.

**Figure 4.2.9.** *Uptake of influenza immunisation in general practice staff - 2018/19 (based on information from 34.6% of general practices in Wales)*



#### 4.2.8 Immunisations given in pharmacy

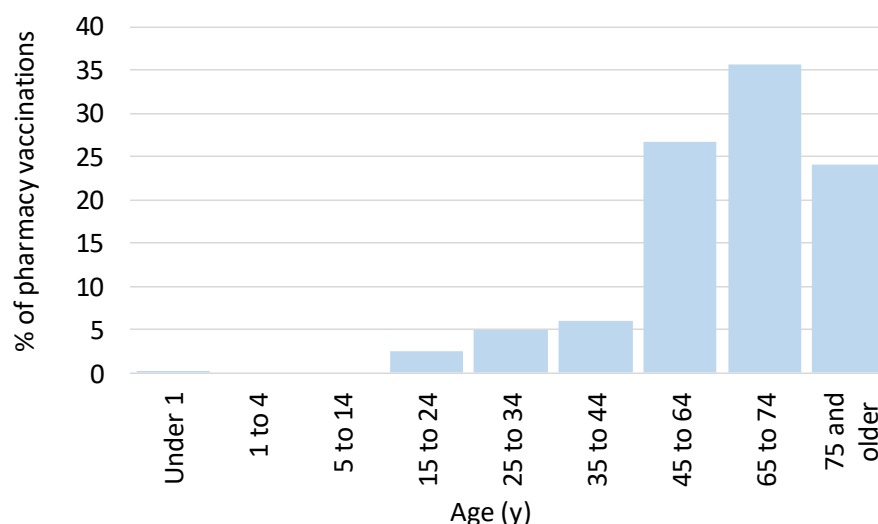
A total of 53,883 people were immunised against influenza in community pharmacies in Wales, as at 16<sup>th</sup> April 2019, an increase from 36,130 in 2017/18. The highest number of influenza immunisations given in pharmacies was in Betsi Cadwaladr UHB (21.5%) whilst the lowest number of influenza immunisations given was in Powys Teaching HB (3.5%) (Table 4.2.10).

Most individuals immunised in community pharmacy were aged 15 or older, and the majority of influenza immunisations were given to individuals aged 65 years and older (59.6%); whilst 25.0% of immunisations were given to those in one or more risk group (Table 4.2.11, Figure 4.2.10). Of the influenza immunisations given to those in a risk group, the majority were given to individuals with chronic respiratory disease (55.0%) and individuals with diabetes (24.8%) (Table 4.2.12).

**Table 4.2.10.** *Number of influenza immunisations given in community pharmacies in Wales, by health board, 2017/18 - 2018/19*

| Health board               | Immunised 2017/18 |              | Immunised 2018/19 |              |
|----------------------------|-------------------|--------------|-------------------|--------------|
|                            | (n)               | (%)          | (n)               | (%)          |
| Abertawe Bro Morgannwg UHB | 8009              | 22.2         | 11467             | 21.3         |
| Aneurin Bevan UHB          | 5264              | 14.6         | 9355              | 17.4         |
| Betsi Cadwaladr UHB        | 7911              | 21.9         | 11558             | 21.5         |
| Cardiff and Vale UHB       | 5388              | 14.9         | 8256              | 15.3         |
| Cwm Taf UHB                | 2945              | 8.2          | 4379              | 8.1          |
| Hywel Dda UHB              | 5156              | 14.3         | 6993              | 13.0         |
| Powys Teaching HB          | 1457              | 4.0          | 1875              | 3.5          |
| <b>Wales</b>               | <b>36130</b>      | <b>100.0</b> | <b>53883</b>      | <b>100.0</b> |

**Figure 4.2.10.** Proportion of influenza immunisations given in community pharmacies in Wales, by age-group distribution 2018/19



**Table 4.2.11.** Number of influenza immunisations given in community pharmacies, by eligibility group, 2018/19

| 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    | 32095                   | 59.6                                       | 457200  | 7.0   |
| Risk group         | 13485                   | 25.0                                       | 192352  | 7.0   |
| Carer <sup>2</sup> | 2145                    | 4.0  | 15932   | 13.5  |
| Pregnancy          | 826                     | 1.5  | 12591   | 6.6   |
| Care home staff    | 3164                    | 5.9  | -   | -   |
| Other <sup>3</sup> | 2168                    | 4.0  | -   | -   |
| <b>Total</b>       | <b>53883</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; 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, 2018/19

| 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 | 66                      | 0.5  | 4618  | 1.4   |
| Chronic Heart Disease           | 1456                    | 10.8                                       | 31218   | 4.7   |
| Chronic Kidney Disease          | 184                     | 1.4  | 7339  | 2.5   |
| Chronic Liver Disease           | 104                     | 0.8  | 4221  | 2.5   |
| Chronic Neurological Disease    | 696                     | 5.2  | 16409   | 4.2   |
| Chronic Respiratory Disease     | 7421                    | 55.0                                       | 94303   | 7.9   |
| Diabetes                        | 3344                    | 24.8                                       | 51724   | 6.5   |
| Immuno-suppressed               | 36                      | 0.3  | 14287   | 0.3   |
| Morbidly obese adults           | 178                     | 1.3  | 26954   | 0.7   |
| <b>Total</b>                    | <b>13485</b>            | <b>100.0</b>                               | <b>192352</b>   | <b>7.0</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.

## 5. Conclusions

Although it was less severe than the 2017/18 influenza seasons, the 2018/19 season still presented a substantial burden of disease to the population of Wales and additional pressures to health care services in Wales. The dominance of influenza A(H1N1)pdm09 viruses this season is reflected in younger age-profile of those most affected and fewer outbreaks reported from residential/ care settings.

The successful roll-out of rapid influenza testing for those attending hospital has raised difficulties in interpreting long-term trends, however a lower proportion of patients tested this season were confirmed with influenza, supporting the view that 2018/19 was a less severe. Nevertheless, there still nearly 2,500 patients in hospitals with confirmed flu, and a nearly 10,000 diagnosed in the community.

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 now complete for all primary school ages and uptake remains high in the school-aged groups.

Effectiveness of the 2018/19 Northern hemisphere vaccines appears higher than was seen in 2017/18, and effectiveness of the adjuvanted trivalent inactivated vaccine in patients aged 65y and older is especially encouraging. The rapidly evolving nature of influenza A(H3N2) and genetic diversity within these viruses remains a cause for concern and there remains the potential for reduced effectiveness from vaccine strain viruses against circulating strains.

## 6. References

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**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

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## 8. Appendix A: Influenza immunisation data tables

**Table A1.** Uptake of influenza immunisation in Wales 2018/19.

| 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>Abertawe Bro Morgannwg UHB</b> |                             |                    |               |                                 |                    |               |
| Bridgend LA                       | 22,620                      | 32,202             | 70.2          | 9,613                           | 23,014             | 41.8          |
| Neath Port Talbot LA              | 19,811                      | 29,398             | 67.4          | 9,076                           | 20,465             | 44.3          |
| Swansea LA                        | 33,540                      | 49,888             | 67.2          | 14,294                          | 33,227             | 43.0          |
| <b>Health Board Total</b>         | <b>75,971</b>               | <b>111,488</b>     | <b>68.1</b>   | <b>32,983</b>                   | <b>76,706</b>      | <b>43.0</b>   |
| <b>Aneurin Bevan UHB</b>          |                             |                    |               |                                 |                    |               |
| Blaenau Gwent LA                  | 9,518                       | 14,306             | 66.5          | 5,061                           | 11,233             | 45.1          |
| Caerphilly LA                     | 24,736                      | 36,242             | 68.3          | 12,104                          | 26,677             | 45.4          |
| Monmouthshire LA                  | 18,221                      | 24,518             | 74.3          | 6,824                           | 12,756             | 53.5          |
| Newport LA                        | 18,607                      | 27,374             | 68.0          | 9,721                           | 21,200             | 45.9          |
| Torfaen LA                        | 14,538                      | 20,477             | 71.0          | 7,139                           | 15,256             | 46.8          |
| <b>Health Board Total</b>         | <b>85,620</b>               | <b>122,917</b>     | <b>69.7</b>   | <b>40,849</b>                   | <b>87,122</b>      | <b>46.9</b>   |
| <b>Betsi Cadwaladr UHB</b>        |                             |                    |               |                                 |                    |               |
| Anglesey LA                       | 12,056                      | 16,684             | 72.3          | 4,750                           | 9,136              | 52.0          |
| Conwy LA                          | 21,379                      | 30,672             | 69.7          | 6,629                           | 14,653             | 45.2          |
| Denbighshire LA                   | 16,713                      | 24,367             | 68.6          | 6,269                           | 13,916             | 45.0          |
| Flintshire LA                     | 23,599                      | 31,774             | 74.3          | 10,205                          | 20,219             | 50.5          |
| Gwynedd LA                        | 18,861                      | 27,622             | 68.3          | 7,021                           | 15,450             | 45.4          |
| Wrexham LA                        | 21,066                      | 29,012             | 72.6          | 9,619                           | 19,607             | 49.1          |
| <b>Health Board Total</b>         | <b>113,674</b>              | <b>160,131</b>     | <b>71.0</b>   | <b>44,493</b>                   | <b>92,981</b>      | <b>47.9</b>   |
| <b>Cardiff and Vale UHB</b>       |                             |                    |               |                                 |                    |               |
| Cardiff LA                        | 37,424                      | 53,993             | 69.3          | 21,769                          | 48,542             | 44.8          |
| Vale of Glamorgan LA              | 19,037                      | 26,836             | 70.9          | 6,834                           | 16,491             | 41.4          |
| <b>Health Board Total</b>         | <b>56,461</b>               | <b>80,829</b>      | <b>69.9</b>   | <b>28,603</b>                   | <b>65,033</b>      | <b>44.0</b>   |
| <b>Cwm Taf UHB</b>                |                             |                    |               |                                 |                    |               |
| Merthyr Tydfil LA                 | 7,953                       | 11,679             | 68.1          | 3,932                           | 9,584              | 41.0          |
| Rhondda Cynon Taff LA             | 31,713                      | 47,443             | 66.8          | 14,084                          | 35,484             | 39.7          |
| <b>Health Board Total</b>         | <b>39,666</b>               | <b>59,122</b>      | <b>67.1</b>   | <b>18,016</b>                   | <b>45,068</b>      | <b>40.0</b>   |
| <b>Hywel Dda UHB</b>              |                             |                    |               |                                 |                    |               |
| Carmarthenshire LA                | 27,053                      | 41,659             | 64.9          | 9,130                           | 24,249             | 37.7          |
| Ceredigion LA                     | 14,677                      | 25,349             | 57.9          | 4,434                           | 11,715             | 37.8          |
| Pembrokeshire LA                  | 19,936                      | 31,107             | 64.1          | 6,382                           | 16,442             | 38.8          |
| <b>Health Board Total</b>         | <b>61,666</b>               | <b>98,115</b>      | <b>62.9</b>   | <b>19,946</b>                   | <b>52,406</b>      | <b>38.1</b>   |
| <b>Powys Teaching HB</b>          | <b>24,142</b>               | <b>36,870</b>      | <b>65.5</b>   | <b>7,462</b>                    | <b>17,310</b>      | <b>43.1</b>   |
| <b>Wales Total</b>                | <b>457,200</b>              | <b>669,472</b>     | <b>68.3</b>   | <b>192,352</b>                  | <b>436,626</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 2018/19.

| Local Authority                   | Total patients<br>aged 6m to 64y | Chronic heart disease |            |               |               | Chronic respiratory disease |            |               |               | Chronic kidney disease |            |               |               | Diabetes              |            |               |               |
|-----------------------------------|----------------------------------|-----------------------|------------|---------------|---------------|-----------------------------|------------|---------------|---------------|------------------------|------------|---------------|---------------|-----------------------|------------|---------------|---------------|
|                                   |                                  | With condition<br>(n) | (%)        | Immunised (n) | Uptake<br>(%) | With condition<br>(n)       | (%)        | Immunised (n) | Uptake<br>(%) | With condition<br>(n)  | (%)        | Immunised (n) | Uptake<br>(%) | With condition<br>(n) | (%)        | Immunised (n) | Uptake<br>(%) |
| <b>Abertawe Bro Morgannwg UHB</b> |                                  |                       |            |               |               |                             |            |               |               |                        |            |               |               |                       |            |               |               |
| Bridgend LA                       | 127,337                          | 3,993                 | 3.1        | 1,764         | 44.2          | 10,283                      | 8.1        | 4,632         | 45.0          | 921                    | 0.7        | 441           | 47.9          | 4,702                 | 3.7        | 2,688         | 57.2          |
| Neath Port Talbot LA              | 110,145                          | 3,259                 | 3.0        | 1,528         | 46.9          | 9,000                       | 8.2        | 4,217         | 46.9          | 963                    | 0.9        | 484           | 50.3          | 4,257                 | 3.9        | 2,489         | 58.5          |
| Swansea LA                        | 205,711                          | 5,193                 | 2.5        | 2,336         | 45.0          | 15,297                      | 7.4        | 7,185         | 47.0          | 995                    | 0.5        | 458           | 46.0          | 6,635                 | 3.2        | 3,908         | 58.9          |
| <b>Health Board Total</b>         | <b>443,193</b>                   | <b>12,445</b>         | <b>2.8</b> | <b>5,628</b>  | <b>45.2</b>   | <b>34,580</b>               | <b>7.8</b> | <b>16,034</b> | <b>46.4</b>   | <b>2,879</b>           | <b>0.6</b> | <b>1,383</b>  | <b>48.0</b>   | <b>15,594</b>         | <b>3.5</b> | <b>9,085</b>  | <b>58.3</b>   |
| <b>Aneurin Bevan UHB</b>          |                                  |                       |            |               |               |                             |            |               |               |                        |            |               |               |                       |            |               |               |
| Blaenau Gwent LA                  | 57,933                           | 1,699                 | 2.9        | 820           | 48.3          | 4,933                       | 8.5        | 2,522         | 51.1          | 389                    | 0.7        | 194           | 49.9          | 2,470                 | 4.3        | 1,426         | 57.7          |
| Caerphilly LA                     | 151,786                          | 4,071                 | 2.7        | 2,060         | 50.6          | 11,416                      | 7.5        | 5,773         | 50.6          | 716                    | 0.5        | 376           | 52.5          | 5,818                 | 3.8        | 3,642         | 62.6          |
| Monmouthshire LA                  | 75,992                           | 2,080                 | 2.7        | 1,129         | 54.3          | 5,679                       | 7.5        | 3,227         | 56.8          | 446                    | 0.6        | 270           | 60.5          | 2,402                 | 3.2        | 1,607         | 66.9          |
| Newport LA                        | 135,245                          | 3,000                 | 2.2        | 1,445         | 48.2          | 9,051                       | 6.7        | 4,560         | 50.4          | 647                    | 0.5        | 335           | 51.8          | 4,822                 | 3.6        | 2,905         | 60.2          |
| Torfaen LA                        | 82,475                           | 2,459                 | 3.0        | 1,180         | 48.0          | 6,834                       | 8.3        | 3,364         | 49.2          | 386                    | 0.5        | 239           | 61.9          | 3,095                 | 3.8        | 1,839         | 59.4          |
| <b>Health Board Total</b>         | <b>503,431</b>                   | <b>13,309</b>         | <b>2.6</b> | <b>6,634</b>  | <b>49.8</b>   | <b>37,913</b>               | <b>7.5</b> | <b>19,446</b> | <b>51.3</b>   | <b>2,584</b>           | <b>0.5</b> | <b>1,414</b>  | <b>54.7</b>   | <b>18,607</b>         | <b>3.7</b> | <b>11,419</b> | <b>61.4</b>   |
| <b>Betsi Cadwaladr UHB</b>        |                                  |                       |            |               |               |                             |            |               |               |                        |            |               |               |                       |            |               |               |
| Anglesey LA                       | 49,211                           | 1,184                 | 2.4        | 674           | 56.9          | 4,608                       | 9.4        | 2,413         | 52.4          | 268                    | 0.5        | 151           | 56.3          | 1,706                 | 3.5        | 1,132         | 66.4          |
| Conwy LA                          | 86,753                           | 2,304                 | 2.7        | 1,116         | 48.4          | 6,850                       | 7.9        | 3,329         | 48.6          | 520                    | 0.6        | 259           | 49.8          | 2,791                 | 3.2        | 1,626         | 58.3          |
| Denbighshire LA                   | 78,935                           | 2,254                 | 2.9        | 1,056         | 46.9          | 6,642                       | 8.4        | 3,207         | 48.3          | 466                    | 0.6        | 252           | 54.1          | 2,656                 | 3.4        | 1,531         | 57.6          |
| Flintshire LA                     | 122,236                          | 3,050                 | 2.5        | 1,634         | 53.6          | 9,421                       | 7.7        | 5,025         | 53.3          | 671                    | 0.5        | 417           | 62.1          | 3,866                 | 3.2        | 2,525         | 65.3          |
| Gwynedd LA                        | 98,178                           | 2,108                 | 2.1        | 1,017         | 48.2          | 7,620                       | 7.8        | 3,598         | 47.2          | 555                    | 0.6        | 289           | 52.1          | 2,707                 | 2.8        | 1,634         | 60.4          |
| Wrexham LA                        | 118,576                          | 3,000                 | 2.5        | 1,537         | 51.2          | 9,117                       | 7.7        | 4,805         | 52.7          | 650                    | 0.5        | 385           | 59.2          | 3,695                 | 3.1        | 2,351         | 63.6          |
| <b>Health Board Total</b>         | <b>553,889</b>                   | <b>13,900</b>         | <b>2.5</b> | <b>7,034</b>  | <b>50.6</b>   | <b>44,258</b>               | <b>8.0</b> | <b>22,377</b> | <b>50.6</b>   | <b>3,130</b>           | <b>0.6</b> | <b>1,753</b>  | <b>56.0</b>   | <b>17,421</b>         | <b>3.1</b> | <b>10,799</b> | <b>62.0</b>   |
| <b>Cardiff and Vale UHB</b>       |                                  |                       |            |               |               |                             |            |               |               |                        |            |               |               |                       |            |               |               |
| Cardiff LA                        | 337,079                          | 6,859                 | 2.0        | 3,049         | 44.5          | 23,077                      | 6.8        | 11,030        | 47.8          | 1,304                  | 0.4        | 675           | 51.8          | 9,774                 | 2.9        | 6,149         | 62.9          |
| Vale of Glamorgan LA              | 103,239                          | 2,537                 | 2.5        | 1,093         | 43.1          | 7,749                       | 7.5        | 3,366         | 43.4          | 492                    | 0.5        | 226           | 45.9          | 3,038                 | 2.9        | 1,754         | 57.7          |
| <b>Health Board Total</b>         | <b>440,318</b>                   | <b>9,396</b>          | <b>2.1</b> | <b>4,142</b>  | <b>44.1</b>   | <b>30,826</b>               | <b>7.0</b> | <b>14,396</b> | <b>46.7</b>   | <b>1,796</b>           | <b>0.4</b> | <b>901</b>    | <b>50.2</b>   | <b>12,812</b>         | <b>2.9</b> | <b>7,903</b>  | <b>61.7</b>   |
| <b>Cwm Taf UHB</b>                |                                  |                       |            |               |               |                             |            |               |               |                        |            |               |               |                       |            |               |               |
| Merthyr Tydfil LA                 | 52,135                           | 1,564                 | 3.0        | 656           | 41.9          | 4,223                       | 8.1        | 2,057         | 48.7          | 287                    | 0.6        | 117           | 40.8          | 2,020                 | 3.9        | 1,150         | 56.9          |
| Rhondda Cynon Taff LA             | 199,187                          | 5,241                 | 2.6        | 2,307         | 44.0          | 15,552                      | 7.8        | 6,940         | 44.6          | 1,367                  | 0.7        | 617           | 45.1          | 7,296                 | 3.7        | 4,152         | 56.9          |
| <b>Health Board Total</b>         | <b>251,322</b>                   | <b>6,805</b>          | <b>2.7</b> | <b>2,963</b>  | <b>43.5</b>   | <b>19,775</b>               | <b>7.9</b> | <b>8,997</b>  | <b>45.5</b>   | <b>1,654</b>           | <b>0.7</b> | <b>734</b>    | <b>44.4</b>   | <b>9,316</b>          | <b>3.7</b> | <b>5,302</b>  | <b>56.9</b>   |
| <b>Hywel Dda UHB</b>              |                                  |                       |            |               |               |                             |            |               |               |                        |            |               |               |                       |            |               |               |
| Carmarthenshire LA                | 139,431                          | 3,981                 | 2.9        | 1,601         | 40.2          | 10,827                      | 7.8        | 4,335         | 40.0          | 789                    | 0.6        | 371           | 47.0          | 4,822                 | 3.5        | 2,534         | 52.6          |
| Ceredigion LA                     | 77,743                           | 1,952                 | 2.5        | 809           | 41.4          | 5,244                       | 6.7        | 2,099         | 40.0          | 377                    | 0.5        | 178           | 47.2          | 2,270                 | 2.9        | 1,198         | 52.8          |
| Pembrokeshire LA                  | 93,336                           | 2,675                 | 2.9        | 1,089         | 40.7          | 7,396                       | 7.9        | 2,997         | 40.5          | 573                    | 0.6        | 266           | 46.4          | 3,094                 | 3.3        | 1,682         | 54.4          |
| <b>Health Board Total</b>         | <b>310,510</b>                   | <b>8,608</b>          | <b>2.8</b> | <b>3,499</b>  | <b>40.6</b>   | <b>23,467</b>               | <b>7.6</b> | <b>9,431</b>  | <b>40.2</b>   | <b>1,739</b>           | <b>0.6</b> | <b>815</b>    | <b>46.9</b>   | <b>10,186</b>         | <b>3.3</b> | <b>5,414</b>  | <b>53.2</b>   |
| <b>Powys Teaching HB</b>          |                                  |                       |            |               |               |                             |            |               |               |                        |            |               |               |                       |            |               |               |
| <b>Health Board Total</b>         | <b>102,769</b>                   | <b>3,084</b>          | <b>3.0</b> | <b>1,318</b>  | <b>42.7</b>   | <b>7,831</b>                | <b>7.6</b> | <b>3,622</b>  | <b>46.3</b>   | <b>653</b>             | <b>0.6</b> | <b>339</b>    | <b>51.9</b>   | <b>3,116</b>          | <b>3.0</b> | <b>1,802</b>  | <b>57.8</b>   |
| <b>Wales Total</b>                |                                  |                       |            |               |               |                             |            |               |               |                        |            |               |               |                       |            |               |               |
| <b>Wales Total</b>                | <b>2,605,432</b>                 | <b>67,547</b>         | <b>2.6</b> | <b>31,218</b> | <b>46.2</b>   | <b>198,650</b>              | <b>7.6</b> | <b>94,303</b> | <b>47.5</b>   | <b>14,435</b>          | <b>0.6</b> | <b>7,339</b>  | <b>50.8</b>   | <b>87,052</b>         | <b>3.3</b> | <b>51,724</b> | <b>59.4</b>   |

**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 2018/19.

| Local Authority                   | Total patients<br>aged 6m to 64y | Immuno-supression     |     |               |               | Chronic liver disease |     |               |               | Neurological conditions |     |               |               | Morbidly obese        |     |               |               | Asplenia/ splenic dysfunction |     |               |               |
|-----------------------------------|----------------------------------|-----------------------|-----|---------------|---------------|-----------------------|-----|---------------|---------------|-------------------------|-----|---------------|---------------|-----------------------|-----|---------------|---------------|-------------------------------|-----|---------------|---------------|
|                                   |                                  | With condition<br>(n) | (%) | Immunised (n) | Uptake<br>(%) | With condition<br>(n) | (%) | Immunised (n) | Uptake<br>(%) | With condition<br>(n)   | (%) | Immunised (n) | Uptake<br>(%) | With condition<br>(n) | (%) | Immunised (n) | Uptake<br>(%) | With condition<br>(n)         | (%) | Immunised (n) | Uptake<br>(%) |
| <b>Abertawe Bro Morgannwg UHB</b> |                                  |                       |     |               |               |                       |     |               |               |                         |     |               |               |                       |     |               |               |                               |     |               |               |
| Bridgend LA                       | 127,337                          | 1,024                 | 0.8 | 532           | 52.0          | 480                   | 0.4 | 208           | 43.3          | 2,017                   | 1.6 | 888           | 44.0          | 4,354                 | 3.4 | 1,415         | 32.5          | 531                           | 0.4 | 185           | 34.8          |
| Neath Port Talbot LA              | 110,145                          | 877                   | 0.8 | 478           | 54.5          | 448                   | 0.4 | 198           | 44.2          | 1,720                   | 1.6 | 810           | 47.1          | 4,331                 | 3.9 | 1,553         | 35.9          | 419                           | 0.4 | 191           | 45.6          |
| Swansea LA                        | 205,711                          | 1,633                 | 0.8 | 757           | 46.4          | 913                   | 0.4 | 385           | 42.2          | 2,883                   | 1.4 | 1,310         | 45.4          | 5,836                 | 2.8 | 1,896         | 32.5          | 844                           | 0.4 | 290           | 34.4          |
| Health Board Total                | 443,193                          | 3,534                 | 0.8 | 1,767         | 50.0          | 1,841                 | 0.4 | 791           | 43.0          | 6,620                   | 1.5 | 3,008         | 45.4          | 14,521                | 3.3 | 4,864         | 33.5          | 1,794                         | 0.4 | 666           | 37.1          |
| <b>Aneurin Bevan UHB</b>          |                                  |                       |     |               |               |                       |     |               |               |                         |     |               |               |                       |     |               |               |                               |     |               |               |
| Blaenau Gwent LA                  | 57,933                           | 735                   | 1.3 | 415           | 56.5          | 291                   | 0.5 | 138           | 47.4          | 879                     | 1.5 | 389           | 44.3          | 2,412                 | 4.2 | 810           | 33.6          | 240                           | 0.4 | 84            | 35.0          |
| Caerphilly LA                     | 151,786                          | 1,562                 | 1.0 | 860           | 55.1          | 563                   | 0.4 | 230           | 40.9          | 2,133                   | 1.4 | 972           | 45.6          | 5,906                 | 3.9 | 1,952         | 33.1          | 634                           | 0.4 | 256           | 40.4          |
| Monmouthshire LA                  | 75,992                           | 832                   | 1.1 | 525           | 63.1          | 280                   | 0.4 | 139           | 49.6          | 1,076                   | 1.4 | 585           | 54.4          | 2,189                 | 2.9 | 946           | 43.2          | 415                           | 0.5 | 204           | 49.2          |
| Newport LA                        | 135,245                          | 1,351                 | 1.0 | 767           | 56.8          | 478                   | 0.4 | 203           | 42.5          | 1,619                   | 1.2 | 751           | 46.4          | 4,326                 | 3.2 | 1,464         | 33.8          | 543                           | 0.4 | 221           | 40.7          |
| Torfaen LA                        | 82,475                           | 997                   | 1.2 | 623           | 62.5          | 349                   | 0.4 | 164           | 47.0          | 1,292                   | 1.6 | 616           | 47.7          | 2,964                 | 3.6 | 1,120         | 37.8          | 438                           | 0.5 | 209           | 47.7          |
| Health Board Total                | 503,431                          | 5,477                 | 1.1 | 3,190         | 58.2          | 1,961                 | 0.4 | 874           | 44.6          | 6,999                   | 1.4 | 3,313         | 47.3          | 17,797                | 3.5 | 6,292         | 35.4          | 2,270                         | 0.5 | 974           | 42.9          |
| <b>Betsi Cadwaladr UHB</b>        |                                  |                       |     |               |               |                       |     |               |               |                         |     |               |               |                       |     |               |               |                               |     |               |               |
| Anglesey LA                       | 49,211                           | 654                   | 1.3 | 443           | 67.7          | 204                   | 0.4 | 109           | 53.4          | 752                     | 1.5 | 410           | 54.5          | 1,567                 | 3.2 | 707           | 45.1          | 214                           | 0.4 | 106           | 49.5          |
| Conwy LA                          | 86,753                           | 906                   | 1.0 | 500           | 55.2          | 372                   | 0.4 | 155           | 41.7          | 1,230                   | 1.4 | 570           | 46.3          | 2,306                 | 2.7 | 783           | 34.0          | 435                           | 0.5 | 178           | 40.9          |
| Denbighshire LA                   | 78,935                           | 952                   | 1.2 | 541           | 56.8          | 339                   | 0.4 | 142           | 41.9          | 1,203                   | 1.5 | 556           | 46.2          | 2,225                 | 2.8 | 780           | 35.1          | 395                           | 0.5 | 170           | 43.0          |
| Flintshire LA                     | 122,236                          | 1,410                 | 1.2 | 886           | 62.8          | 483                   | 0.4 | 233           | 48.2          | 1,466                   | 1.2 | 792           | 54.0          | 3,479                 | 2.8 | 1,384         | 39.8          | 575                           | 0.5 | 281           | 48.9          |
| Gwynedd LA                        | 98,178                           | 1,086                 | 1.1 | 678           | 62.4          | 350                   | 0.4 | 135           | 38.6          | 1,146                   | 1.2 | 521           | 45.5          | 2,414                 | 2.5 | 869           | 36.0          | 399                           | 0.4 | 156           | 39.1          |
| Wrexham LA                        | 118,576                          | 1,233                 | 1.0 | 734           | 59.5          | 462                   | 0.4 | 191           | 41.3          | 1,408                   | 1.2 | 721           | 51.2          | 3,716                 | 3.1 | 1,466         | 39.5          | 537                           | 0.5 | 247           | 46.0          |
| Health Board Total                | 553,889                          | 6,241                 | 1.1 | 3,782         | 60.6          | 2,210                 | 0.4 | 965           | 43.7          | 7,205                   | 1.3 | 3,570         | 49.5          | 15,707                | 2.8 | 5,989         | 38.1          | 2,555                         | 0.5 | 1,138         | 44.5          |
| <b>Cardiff and Vale UHB</b>       |                                  |                       |     |               |               |                       |     |               |               |                         |     |               |               |                       |     |               |               |                               |     |               |               |
| Cardiff LA                        | 337,079                          | 3,002                 | 0.9 | 1,611         | 53.7          | 1,009                 | 0.3 | 409           | 40.5          | 3,718                   | 1.1 | 1,698         | 45.7          | 7,624                 | 2.3 | 2,614         | 34.3          | 1,549                         | 0.5 | 593           | 38.3          |
| Vale of Glamorgan LA              | 103,239                          | 951                   | 0.9 | 510           | 53.6          | 296                   | 0.3 | 118           | 39.9          | 1,394                   | 1.4 | 611           | 43.8          | 2,695                 | 2.6 | 844           | 31.3          | 512                           | 0.5 | 199           | 38.9          |
| Health Board Total                | 440,318                          | 3,953                 | 0.9 | 2,121         | 53.7          | 1,305                 | 0.3 | 527           | 40.4          | 5,112                   | 1.2 | 2,309         | 45.2          | 10,319                | 2.3 | 3,458         | 33.5          | 2,061                         | 0.5 | 792           | 38.4          |
| <b>Cwm Taf UHB</b>                |                                  |                       |     |               |               |                       |     |               |               |                         |     |               |               |                       |     |               |               |                               |     |               |               |
| Merthyr Tydfil LA                 | 52,135                           | 471                   | 0.9 | 196           | 41.6          | 221                   | 0.4 | 63            | 28.5          | 802                     | 1.5 | 342           | 42.6          | 2,143                 | 4.1 | 616           | 28.7          | 197                           | 0.4 | 84            | 42.6          |
| Rhondda Cynon Taff LA             | 199,187                          | 1,962                 | 1.0 | 922           | 47.0          | 892                   | 0.4 | 335           | 37.6          | 2,853                   | 1.4 | 1,213         | 42.5          | 7,798                 | 3.9 | 2,149         | 27.6          | 773                           | 0.4 | 290           | 37.5          |
| Health Board Total                | 251,322                          | 2,433                 | 1.0 | 1,118         | 46.0          | 1,113                 | 0.4 | 398           | 35.8          | 3,655                   | 1.5 | 1,555         | 42.5          | 9,941                 | 4.0 | 2,765         | 27.8          | 970                           | 0.4 | 374           | 38.6          |
| <b>Hywel Dda UHB</b>              |                                  |                       |     |               |               |                       |     |               |               |                         |     |               |               |                       |     |               |               |                               |     |               |               |
| Carmarthenshire LA                | 139,431                          | 1,377                 | 1.0 | 649           | 47.1          | 493                   | 0.4 | 182           | 36.9          | 2,216                   | 1.6 | 896           | 40.4          | 4,574                 | 3.3 | 1,274         | 27.9          | 535                           | 0.4 | 191           | 35.7          |
| Ceredigion LA                     | 77,743                           | 719                   | 0.9 | 361           | 50.2          | 280                   | 0.4 | 120           | 42.9          | 1,005                   | 1.3 | 416           | 41.4          | 1,952                 | 2.5 | 545           | 27.9          | 343                           | 0.4 | 117           | 34.1          |
| Pembrokeshire LA                  | 93,336                           | 1,197                 | 1.3 | 657           | 54.9          | 527                   | 0.6 | 207           | 39.3          | 1,509                   | 1.6 | 613           | 40.6          | 2,780                 | 3.0 | 837           | 30.1          | 467                           | 0.5 | 170           | 36.4          |
| Health Board Total                | 310,510                          | 3,293                 | 1.1 | 1,667         | 50.6          | 1,300                 | 0.4 | 509           | 39.2          | 4,730                   | 1.5 | 1,925         | 40.7          | 9,306                 | 3.0 | 2,656         | 28.5          | 1,345                         | 0.4 | 478           | 35.5          |
| <b>Powys Teaching HB</b>          |                                  |                       |     |               |               |                       |     |               |               |                         |     |               |               |                       |     |               |               |                               |     |               |               |
|                                   | 102,769                          | 1,129                 | 1.1 | 642           | 56.9          | 326                   | 0.3 | 157           | 48.2          | 1,599                   | 1.6 | 729           | 45.6          | 2,711                 | 2.6 | 930           | 34.3          | 507                           | 0.5 | 196           | 38.7          |
| <b>Wales Total</b>                |                                  |                       |     |               |               |                       |     |               |               |                         |     |               |               |                       |     |               |               |                               |     |               |               |
|                                   | 2,605,432                        | 26,060                | 1.0 | 14,287        | 54.8          | 10,056                | 0.4 | 4,221         | 42.0          | 35,920                  | 1.4 | 16,409        | 45.7          | 80,302                | 3.1 | 26,954        | 33.6          | 11,502                        | 0.4 | 4,618         | 40.1          |

**Table A3.** Uptake of influenza immunisation in pregnant women, with breakdown for those who have another clinical risk condition in Wales 2018/19.

| 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>Abertawe Bro Morgannwg UHB</u></b> |                                   |                    |               |                                      |                    |               |                      |                    |               |
| Bridgend LA                              | 78                                | 164                | 47.6          | 543                                  | 1,288              | 42.2          | 621                  | 1,452              | 42.8          |
| Neath Port Talbot LA                     | 48                                | 86                 | 55.8          | 263                                  | 643                | 40.9          | 311                  | 729                | 42.7          |
| Swansea LA                               | 115                               | 205                | 56.1          | 671                                  | 1,554              | 43.2          | 786                  | 1,759              | 44.7          |
| <b>Health Board Total</b>                | <b>241</b>                        | <b>455</b>         | <b>53.0</b>   | <b>1,477</b>                         | <b>3,485</b>       | <b>42.4</b>   | <b>1,718</b>         | <b>3,940</b>       | <b>43.6</b>   |
| <b><u>Aneurin Bevan UHB</u></b>          |                                   |                    |               |                                      |                    |               |                      |                    |               |
| Blaenau Gwent LA                         | 53                                | 93                 | 57.0          | 260                                  | 601                | 43.3          | 313                  | 694                | 45.1          |
| Caerphilly LA                            | 72                                | 126                | 57.1          | 454                                  | 1,020              | 44.5          | 526                  | 1,146              | 45.9          |
| Monmouthshire LA                         | 65                                | 80                 | 81.3          | 382                                  | 699                | 54.6          | 447                  | 779                | 57.4          |
| Newport LA                               | 112                               | 188                | 59.6          | 701                                  | 1,679              | 41.8          | 813                  | 1,867              | 43.5          |
| Torfaen LA                               | 64                                | 107                | 59.8          | 350                                  | 789                | 44.4          | 414                  | 896                | 46.2          |
| <b>Health Board Total</b>                | <b>366</b>                        | <b>594</b>         | <b>61.6</b>   | <b>2,147</b>                         | <b>4,788</b>       | <b>44.8</b>   | <b>2,513</b>         | <b>5,382</b>       | <b>46.7</b>   |
| <b><u>Betsi Cadwaladr UHB</u></b>        |                                   |                    |               |                                      |                    |               |                      |                    |               |
| Anglesey LA                              | 39                                | 58                 | 67.2          | 291                                  | 550                | 52.9          | 330                  | 608                | 54.3          |
| Conwy LA                                 | 52                                | 99                 | 52.5          | 421                                  | 948                | 44.4          | 473                  | 1,047              | 45.2          |
| Denbighshire LA                          | 75                                | 120                | 62.5          | 452                                  | 910                | 49.7          | 527                  | 1,030              | 51.2          |
| Flintshire LA                            | 112                               | 157                | 71.3          | 604                                  | 1,181              | 51.1          | 716                  | 1,338              | 53.5          |
| Gwynedd LA                               | 89                                | 152                | 58.6          | 535                                  | 1,113              | 48.1          | 624                  | 1,265              | 49.3          |
| Wrexham LA                               | 101                               | 156                | 64.7          | 601                                  | 1,301              | 46.2          | 702                  | 1,457              | 48.2          |
| <b>Health Board Total</b>                | <b>468</b>                        | <b>742</b>         | <b>63.1</b>   | <b>2,904</b>                         | <b>6,003</b>       | <b>48.4</b>   | <b>3,372</b>         | <b>6,745</b>       | <b>50.0</b>   |
| <b><u>Cardiff and Vale UHB</u></b>       |                                   |                    |               |                                      |                    |               |                      |                    |               |
| Cardiff LA                               | 240                               | 379                | 63.3          | 1,472                                | 3,298              | 44.6          | 1,712                | 3,677              | 46.6          |
| Vale of Glamorgan LA                     | 64                                | 106                | 60.4          | 462                                  | 957                | 48.3          | 526                  | 1,063              | 49.5          |
| <b>Health Board Total</b>                | <b>304</b>                        | <b>485</b>         | <b>62.7</b>   | <b>1,934</b>                         | <b>4,255</b>       | <b>45.5</b>   | <b>2,238</b>         | <b>4,740</b>       | <b>47.2</b>   |
| <b><u>Cwm Taf UHB</u></b>                |                                   |                    |               |                                      |                    |               |                      |                    |               |
| Merthyr Tydfil LA                        | 38                                | 56                 | 67.9          | 189                                  | 480                | 39.4          | 227                  | 536                | 42.4          |
| Rhondda Cynon Taff LA                    | 108                               | 203                | 53.2          | 671                                  | 1,673              | 40.1          | 779                  | 1,876              | 41.5          |
| <b>Health Board Total</b>                | <b>146</b>                        | <b>259</b>         | <b>56.4</b>   | <b>860</b>                           | <b>2,153</b>       | <b>39.9</b>   | <b>1,006</b>         | <b>2,412</b>       | <b>41.7</b>   |
| <b><u>Hywel Dda UHB</u></b>              |                                   |                    |               |                                      |                    |               |                      |                    |               |
| Carmarthenshire LA                       | 83                                | 153                | 54.2          | 442                                  | 1,051              | 42.1          | 525                  | 1,204              | 43.6          |
| Ceredigion LA                            | 37                                | 73                 | 50.7          | 209                                  | 486                | 43.0          | 246                  | 559                | 44.0          |
| Pembrokeshire LA                         | 63                                | 132                | 47.7          | 356                                  | 898                | 39.6          | 419                  | 1,030              | 40.7          |
| <b>Health Board Total</b>                | <b>183</b>                        | <b>358</b>         | <b>51.1</b>   | <b>1,007</b>                         | <b>2,435</b>       | <b>41.4</b>   | <b>1,190</b>         | <b>2,793</b>       | <b>42.6</b>   |
| <b><u>Powys Teaching HB</u></b>          | <b>75</b>                         | <b>123</b>         | <b>61.0</b>   | <b>479</b>                           | <b>884</b>         | <b>54.2</b>   | <b>554</b>           | <b>1,007</b>       | <b>55.0</b>   |
| <b>Wales Total</b>                       | <b>1,783</b>                      | <b>3,016</b>       | <b>59.1</b>   | <b>10,808</b>                        | <b>24,003</b>      | <b>45.0</b>   | <b>12,591</b>        | <b>27,019</b>      | <b>46.6</b>   |

**Table A4.** Uptake of influenza immunisation in those aged six months to 64 years and recorded as being a carer in Wales 2018/19.

| Local Authority                   | Total carers     |                    |               |
|-----------------------------------|------------------|--------------------|---------------|
|                                   | Immunised<br>(n) | Denominator<br>(n) | Uptake<br>(%) |
| <b>Abertawe Bro Morgannwg UHB</b> |                  |                    |               |
| Bridgend LA                       | 603              | 1,185              | 50.9          |
| Neath Port Talbot LA              | 651              | 1,097              | 59.3          |
| Swansea LA                        | 841              | 1,866              | 45.1          |
| <b>Health Board Total</b>         | <b>2,095</b>     | <b>4,148</b>       | <b>50.5</b>   |
| <b>Aneurin Bevan UHB</b>          |                  |                    |               |
| Blaenau Gwent LA                  | 238              | 462                | 51.5          |
| Caerphilly LA                     | 709              | 1,386              | 51.2          |
| Monmouthshire LA                  | 880              | 1,422              | 61.9          |
| Newport LA                        | 813              | 1,745              | 46.6          |
| Torfaen LA                        | 736              | 1,243              | 59.2          |
| <b>Health Board Total</b>         | <b>3,376</b>     | <b>6,258</b>       | <b>53.9</b>   |
| <b>Betsi Cadwaladr UHB</b>        |                  |                    |               |
| Anglesey LA                       | 572              | 961                | 59.5          |
| Conwy LA                          | 633              | 1,327              | 47.7          |
| Denbighshire LA                   | 730              | 1,475              | 49.5          |
| Flintshire LA                     | 991              | 2,066              | 48.0          |
| Gwynedd LA                        | 694              | 1,267              | 54.8          |
| Wrexham LA                        | 1,097            | 2,142              | 51.2          |
| <b>Health Board Total</b>         | <b>4,717</b>     | <b>9,238</b>       | <b>51.1</b>   |
| <b>Cardiff and Vale UHB</b>       |                  |                    |               |
| Cardiff LA                        | 1,103            | 2,368              | 46.6          |
| Vale of Glamorgan LA              | 536              | 1,206              | 44.4          |
| <b>Health Board Total</b>         | <b>1,639</b>     | <b>3,574</b>       | <b>45.9</b>   |
| <b>Cwm Taf UHB</b>                |                  |                    |               |
| Merthyr Tydfil LA                 | 236              | 427                | 55.3          |
| Rhondda Cynon Taff LA             | 978              | 2,001              | 48.9          |
| <b>Health Board Total</b>         | <b>1,214</b>     | <b>2,428</b>       | <b>50.0</b>   |
| <b>Hywel Dda UHB</b>              |                  |                    |               |
| Carmarthenshire LA                | 1,059            | 2,265              | 46.8          |
| Ceredigion LA                     | 474              | 1,211              | 39.1          |
| Pembrokeshire LA                  | 739              | 2,011              | 36.7          |
| <b>Health Board Total</b>         | <b>2,272</b>     | <b>5,487</b>       | <b>41.4</b>   |
| <b>Powys Teaching HB</b>          | <b>619</b>       | <b>1,284</b>       | <b>48.2</b>   |
| <b>Wales Total</b>                | <b>15,932</b>    | <b>32,417</b>      | <b>49.1</b>   |

**Table A5.** Uptake of influenza immunisation, through general practice, in children aged two and three years in Wales 2018/19.

| 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>Abertawe Bro Morgannwg UHB</b> |                  |                    |               |                  |                    |               |
| Bridgend LA                       | 897              | 1,783              | 50.3          | 803              | 1,779              | 45.1          |
| Neath Port Talbot LA              | 785              | 1,506              | 52.1          | 697              | 1,487              | 46.9          |
| Swansea LA                        | 1,292            | 2,588              | 49.9          | 1,161            | 2,680              | 43.3          |
| <b>Health Board Total</b>         | <b>2,974</b>     | <b>5,877</b>       | <b>50.6</b>   | <b>2,661</b>     | <b>5,946</b>       | <b>44.8</b>   |
| <b>Aneurin Bevan UHB</b>          |                  |                    |               |                  |                    |               |
| Blaenau Gwent LA                  | 326              | 752                | 43.4          | 294              | 775                | 37.9          |
| Caerphilly LA                     | 1,065            | 2,109              | 50.5          | 897              | 2,161              | 41.5          |
| Monmouthshire LA                  | 536              | 886                | 60.5          | 577              | 972                | 59.4          |
| Newport LA                        | 949              | 2,057              | 46.1          | 871              | 2,118              | 41.1          |
| Torfaen LA                        | 622              | 1,136              | 54.8          | 571              | 1,114              | 51.3          |
| <b>Health Board Total</b>         | <b>3,498</b>     | <b>6,940</b>       | <b>50.4</b>   | <b>3,210</b>     | <b>7,140</b>       | <b>45.0</b>   |
| <b>Betsi Cadwaladr UHB</b>        |                  |                    |               |                  |                    |               |
| Anglesey LA                       | 419              | 679                | 61.7          | 397              | 661                | 60.1          |
| Conwy LA                          | 560              | 1,077              | 52.0          | 550              | 1,117              | 49.2          |
| Denbighshire LA                   | 568              | 1,063              | 53.4          | 611              | 1,122              | 54.5          |
| Flintshire LA                     | 984              | 1,566              | 62.8          | 936              | 1,602              | 58.4          |
| Gwynedd LA                        | 687              | 1,276              | 53.8          | 632              | 1,207              | 52.4          |
| Wrexham LA                        | 849              | 1,576              | 53.9          | 801              | 1,629              | 49.2          |
| <b>Health Board Total</b>         | <b>4,067</b>     | <b>7,237</b>       | <b>56.2</b>   | <b>3,927</b>     | <b>7,338</b>       | <b>53.5</b>   |
| <b>Cardiff and Vale UHB</b>       |                  |                    |               |                  |                    |               |
| Cardiff LA                        | 2,191            | 4,543              | 48.2          | 1,949            | 4,492              | 43.4          |
| Vale of Glamorgan LA              | 698              | 1,400              | 49.9          | 716              | 1,476              | 48.5          |
| <b>Health Board Total</b>         | <b>2,889</b>     | <b>5,943</b>       | <b>48.6</b>   | <b>2,665</b>     | <b>5,968</b>       | <b>44.7</b>   |
| <b>Cwm Taf UHB</b>                |                  |                    |               |                  |                    |               |
| Merthyr Tydfil LA                 | 326              | 738                | 44.2          | 406              | 796                | 51.0          |
| Rhondda Cynon Taff LA             | 1,189            | 2,716              | 43.8          | 1,633            | 2,743              | 59.5          |
| <b>Health Board Total</b>         | <b>1,515</b>     | <b>3,454</b>       | <b>43.9</b>   | <b>2,039</b>     | <b>3,539</b>       | <b>57.6</b>   |
| <b>Hywel Dda UHB</b>              |                  |                    |               |                  |                    |               |
| Carmarthenshire LA                | 889              | 1,852              | 48.0          | 909              | 1,897              | 47.9          |
| Ceredigion LA                     | 355              | 842                | 42.2          | 394              | 894                | 44.1          |
| Pembrokeshire LA                  | 489              | 1,216              | 40.2          | 527              | 1,283              | 41.1          |
| <b>Health Board Total</b>         | <b>1,733</b>     | <b>3,910</b>       | <b>44.3</b>   | <b>1,830</b>     | <b>4,074</b>       | <b>44.9</b>   |
| <b>Powys Teaching HB</b>          |                  |                    |               |                  |                    |               |
|                                   | <b>790</b>       | <b>1,260</b>       | <b>62.7</b>   | <b>743</b>       | <b>1,270</b>       | <b>58.5</b>   |
| <b>Wales Total</b>                | <b>17,466</b>    | <b>34,621</b>      | <b>50.4</b>   | <b>17,075</b>    | <b>35,275</b>      | <b>48.4</b>   |

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

**Table B1.** Number and cumulative rate of influenza-like illness diagnosed in all general practices in Wales between 2018 week 40 and 2019 week 20, by health board.

| Health Board               | Influenza-like illness clinically diagnosed |                                      |
|----------------------------|---|--------------------------------------|
|                            | n   | Rate per 100,000 practice population |
| Abertawe Bro Morgannwg UHB | 1487  | 278.6                                |
| Aneurin Bevan UHB          | 2056  | 353.3                                |
| Betsi Cadwaladr UHB        | 2321  | 341.5                                |
| Cardiff and Vale UHB       | 1780  | 354.0                                |
| Cwm Taf UHB                | 809   | 278.5                                |
| Hywel Dda UHB              | 990   | 263.2                                |
| Powys Teaching HB          | 370   | 277.2                                |
| <b>Wales</b>               | <b>9813</b>                                 | <b>316.7</b>                         |

**Table B2.** General inpatient and outpatient hospital ward patients providing samples for respiratory screen testing, with numbers testing positive for influenza, RSV and other pathogens, Wales 2018/19, by health board.

| Health Board               | All screens |              | Influenza A |              | Influenza B |              | RSV        |              | Negative <sup>1</sup> |              |
|----------------------------|-------------|--------------|-------------|--------------|-------------|--------------|------------|--------------|-----------------------|--------------|
|                            | n           | %            | n           | %            | n           | %            | n          | %            | n                     | %            |
| Abertawe Bro Morgannwg UHB | 517         | 9.8          | 113         | 10.7         | 0           | 0.0          | 38         | 10.64        | 223                   | 9.4          |
| Aneurin Bevan UHB          | 821         | 15.6         | 293         | 27.8         | 0           | 0.0          | 21         | 5.88         | 442                   | 18.6         |
| Betsi Cadwaladr UHB        | 599         | 11.4         | 154         | 14.6         | 0           | 0.0          | 42         | 11.76        | 213                   | 9.0          |
| Cardiff & Vale UHB         | 2578        | 49.1         | 347         | 32.9         | 3           | 75.0         | 205        | 57.42        | 1153                  | 48.6         |
| Cwm Taf UHB                | 187         | 3.6          | 48          | 4.5          | 0           | 0.0          | 22         | 6.16         | 70                    | 3.0          |
| Hywel Dda UHB              | 548         | 10.4         | 100         | 9.5          | 1           | 25.0         | 29         | 8.12         | 266                   | 11.2         |
| Powys Teaching HB          | 3           | 0.1          | 0           | 0.0          | 0           | 0.0          | 0          | 0.00         | 3                     | 0.1          |
| <b>Wales</b>               | <b>5253</b> | <b>100.0</b> | <b>1055</b> | <b>100.0</b> | <b>4</b>    | <b>100.0</b> | <b>357</b> | <b>100.0</b> | <b>2370</b>           | <b>100.0</b> |

**Table B3.** Accident and Emergency ward patients providing samples for respiratory screen testing, with numbers testing positive for influenza, RSV and other pathogens, Wales 2018/19, by health board.

| Health Board               | All screens |              | Influenza A |              | Influenza B |              | RSV        |              | Negative <sup>1</sup> |              |
|----------------------------|-------------|--------------|-------------|--------------|-------------|--------------|------------|--------------|-----------------------|--------------|
|                            | n           | %            | n           | %            | n           | %            | n          | %            | n                     | %            |
| Abertawe Bro Morgannwg UHB | 702         | 16.1         | 123         | 9.9          | 0           | 0.0          | 86         | 39.81        | 268                   | 14.0         |
| Aneurin Bevan UHB          | 762         | 17.4         | 290         | 23.4         | 1           | 20.0         | 16         | 7.41         | 427                   | 22.4         |
| Betsi Cadwaladr UHB        | 740         | 16.9         | 288         | 23.3         | 1           | 20.0         | 26         | 12.04        | 261                   | 13.7         |
| Cardiff & Vale UHB         | 1365        | 31.2         | 336         | 27.1         | 3           | 60.0         | 62         | 28.70        | 538                   | 28.2         |
| Cwm Taf UHB                | 117         | 2.7          | 49          | 4.0          | 0           | 0.0          | 0          | 0.00         | 46                    | 2.4          |
| Hywel Dda UHB              | 686         | 15.7         | 152         | 12.3         | 0           | 0.0          | 26         | 12.04        | 368                   | 19.3         |
| Powys Teaching HB          | 0           | 0.0          | 0           | 0.0          | 0           | 0.0          | 0          | 0.00         | 0                     | 0.0          |
| <b>Wales</b>               | <b>4372</b> | <b>100.0</b> | <b>1238</b> | <b>100.0</b> | <b>5</b>    | <b>100.0</b> | <b>216</b> | <b>100.0</b> | <b>1908</b>           | <b>100.0</b> |

**Table B4.** ICU/ HDU ward patients providing samples for respiratory screen testing, with numbers testing positive for influenza, RSV and other pathogens, Wales 2018/19, by health board.

| Health Board               | All screens |              | Influenza A |              | Influenza B |            | RSV       |              | Negative <sup>1</sup> |              |
|----------------------------|-------------|--------------|-------------|--------------|-------------|------------|-----------|--------------|-----------------------|--------------|
|                            | n           | %            | n           | %            | n           | %          | n         | %            | n                     | %            |
| Abertawe Bro Morgannwg UHB | 287         | 27.5         | 20          | 16.7         | 0           | 0.0        | 14        | 31.11        | 200                   | 30.5         |
| Aneurin Bevan UHB          | 141         | 13.5         | 21          | 17.5         | 0           | 0.0        | 5         | 11.11        | 85                    | 13.0         |
| Betsi Cadwaladr UHB        | 133         | 12.7         | 22          | 18.3         | 0           | 0.0        | 3         | 6.67         | 76                    | 11.6         |
| Cardiff & Vale UHB         | 253         | 24.2         | 20          | 16.7         | 0           | 0.0        | 14        | 31.11        | 147                   | 22.4         |
| Cwm Taf UHB                | 38          | 3.6          | 7           | 5.8          | 0           | 0.0        | 0         | 0.00         | 25                    | 3.8          |
| Hywel Dda UHB              | 192         | 18.4         | 30          | 25.0         | 0           | 0.0        | 9         | 20.00        | 122                   | 18.6         |
| Powys Teaching HB          | 0           | 0.0          | 0           | 0.0          | 0           | 0.0        | 0         | 0.00         | 0                     | 0.0          |
| <b>Wales</b>               | <b>1044</b> | <b>100.0</b> | <b>120</b>  | <b>100.0</b> | <b>0</b>    | <b>0.0</b> | <b>45</b> | <b>100.0</b> | <b>655</b>            | <b>100.0</b> |

**Table B5.** Numbers of patients tested and confirmed with influenza, by location of patient at time of sampling in 2018/19, 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       | 2      | 2      | 0        | 16       | 7        | 19       | 22       | 3        | 1            |
| Non-sentinel practices          | 0       | 15     | 7      | 8        | 21       | 31       | 27       | 43       | 10       | 1            |
| A&E Wards                       | 21      | 94     | 40     | 15       | 103      | 170      | 140      | 375      | 136      | 147          |
| Other Hospital Wards            | 70      | 226    | 65     | 37       | 43       | 69       | 35       | 162      | 122      | 229          |
| Intensive care wards            | 5       | 3      | 1      | 0        | 3        | 5        | 3        | 50       | 30       | 20           |
| Unknown location                | 6       | 9      | 4      | 2        | 4        | 10       | 7        | 23       | 10       | 12           |

**Table B6.** Numbers of patients tested and confirmed with RSV, by location of patient at time of sampling in 2018/19, 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      | 0      | 0        | 1        | 3        | 0        | 0        | 2        | 1            |
| Non-sentinel practices          | 0       | 2      | 0      | 0        | 0        | 0        | 1        | 0        | 0        | 0            |
| A&E Wards                       | 75      | 27     | 2      | 0        | 5        | 12       | 5        | 33       | 17       | 40           |
| Other Hospital Wards            | 160     | 103    | 12     | 4        | 6        | 5        | 3        | 15       | 19       | 30           |
| Intensive care wards            | 15      | 2      | 0      | 0        | 0        | 2        | 3        | 7        | 8        | 8            |
| Unknown location                | 37      | 4      | 0      | 0        | 1        | 0        | 0        | 2        | 1        | 0            |

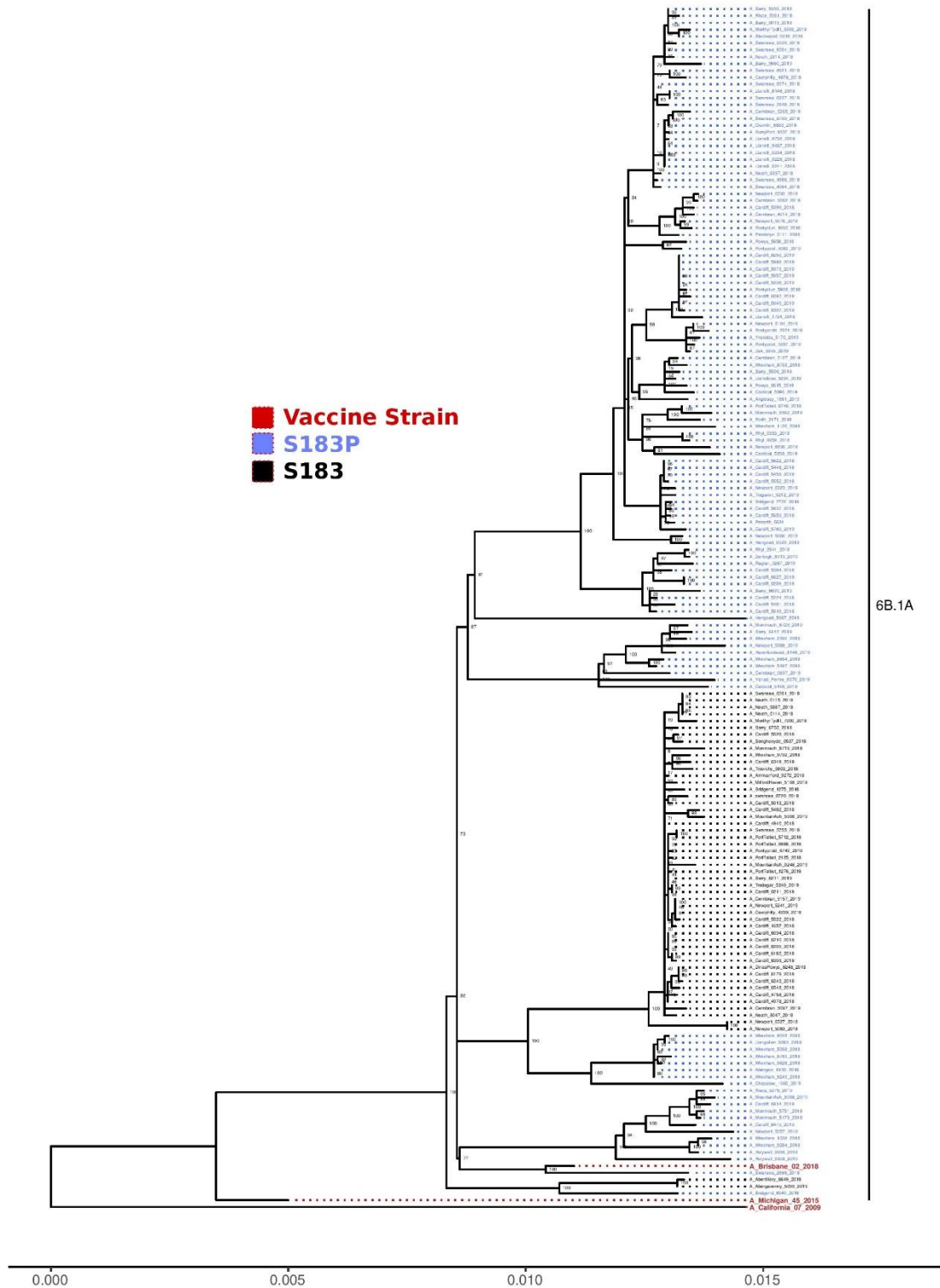
**Table B7.** Numbers of patients providing samples for respiratory screen testing, by location of patient at time of sampling in 2018/19, by age group.

| 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 | 2       | 4      | 4      | 2        | 23       | 20       | 29       | 43       | 8        | 7            |
| Non-sentinel practices          | 12      | 51     | 14     | 19       | 43       | 54       | 59       | 73       | 20       | 16           |
| A&E Wards                       | 341     | 392    | 85     | 26       | 203      | 269      | 225      | 596      | 291      | 354          |
| Other Hospital Wards            | 627     | 866    | 220    | 88       | 124      | 151      | 101      | 386      | 291      | 457          |
| Intensive care wards            | 78      | 27     | 5      | 4        | 12       | 17       | 22       | 115      | 77       | 70           |
| Unknown location                | 117     | 46     | 8      | 6        | 13       | 13       | 14       | 33       | 24       | 28           |



# Appendix C: Phylogenetic trees of influenza A viruses during the 2018/19 season

**Figure C1.** Phylogenetic tree showing full haemagglutinin sequence relationship of H1N1 influenza A viruses detected from across Wales 2018/19. Zoom in to see clades.



**Figure C2.** Phylogenetic tree showing full haemagglutinin sequence relationship of H3N2 influenza A viruses detected from across Wales 2018/19. Zoom in to see clades.

