Public Health England

Protecting and improving the nation's health

Seasonal influenza vaccine uptake in GP patients: winter season 2017 to 2018

Final data for 1 September 2017 to 31 January 2018

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Contents

Key points

Cumulative influenza vaccine uptake in primary care patients from 1 September 2017 to 31 January 2018 in England was:

- 72.6% (7,426,917/10,235,533) for patients aged 65 years and over, compared to 70.5% in 2016 to 2017
- 48.9% (3,344,593 / 6,836,969) for younger patients (aged between 6 months and under 65 years) in one or more clinical at-risk group, compared to 48.6% in 2016 to 2017
- 47.2% (303,875/643,941) in all pregnant women, compared to 44.9% in 2016 to 2017)
- 42.8% (290,494/679,391) for all 2-year-olds, compared to 38.9% in 2016 to 2017)
- 44.2% (302,656/ 684,953) for all 3-year-olds, compared to 41.5% in 2016 to 2017)
- 39.9% (189,228/474,073) for carers (under 65 years and not at-risk), compared to 44.9% in 2016 to 2017
- based on NHS England Local Teams, regional variation in uptake was observed for patient aged 65 and over ranging from 66.9% (717,882/1,072,789) in London to 75.5% (367,834/487,147) in Cheshire and Merseyside
- regional variation based on NHS England Local Teams was also observed for patients aged between 6 months and under 65 years in risk groups with vaccine uptake ranging from 45.4% (476,158/1,049,611) in London to 52.4% (207,880/396,410) in Greater Manchester
- regional variation based on NHS England Local Teams was also observed for pregnant women ranging from 41.1% (55,186 / 134,243) in London to 52.1% (17,430/33,476) in Greater Manchester
- based on a subset of data with risk group data (97.0% of GP returns; 6,958/7,170) the highest uptake was in the diabetes risk group (65.2%) and lowest in the morbid obesity group (BMI ≥40) (39.2%)

The response rate from general practices in England (GP) over the survey period was:

- 99.8% (7,155/7,170) for the Main GP survey (elderly and at risk groups)
- 99.6% (7,143/7,169) for the Child survey (2 and 3 year olds)

Notes on the report

Intended audience

This report is aimed at professionals directly involved in the delivery of the influenza vaccine in children, GPs, pharmacy leads, midwives, Screening and Immunisation Teams, local commissioners involved in planning and financing of local health services, the wider public health community, governmental organisations and researchers with an interest in the influenza vaccination programme in England.

Aim of the report

This report provides an update on influenza vaccination uptake (%) in targeted eligible cohorts in England (patients aged 65 years and over, patients aged from 6 months to under 65 years in a clinical risk group, all children aged 2 and 3 years). Subnational level data is also presented to provide insight into progress at more local levels. Vaccine uptake data stratified by clinical risk group in patients aged between 6 months and under 65 years is also reviewed to identify groups where vaccine uptake can be improved in future seasons.

Background

The traditional purpose of the seasonal influenza immunisation programme in England is to protect clinical at-risk groups from serious illness or death following influenza infection. The eligible population currently includes patients aged 65 years or over, patients in clinical at risk groups and pregnant women.

In 2014, the Joint Committee on Vaccination and Immunisation (JCVI) recommended the roll-out of a universal childhood influenza vaccine programme with a newly licensed live attenuated influenza vaccine (LAIV). The childhood LAIV programme, which was first implemented in 2013 to 2014, continued its roll-out in 2017 to 2018, targeting 2 and 3 year olds in primary care and all children of school year reception, 1, 2 ,3 and 4 for the first time across the England. Ultimately this programme will target all children 2 to under 17 years of age[1] with the aim to both directly protect the vaccinated children themselves and by reducing influenza transmission, indirectly protect the rest of the population including those at elevated risk of the severe consequences of influenza infection.

NHS England has responsibility for commissioning the influenza programme with GPs, midwives, and other healthcare professionals. Immunisation managers and co-ordinators also play a key role in delivery within their CCG and Area Team boundaries[2].

The PHE influenza surveillance team has responsibility for collating the data and reporting on the progress in the uptake of the seasonal influenza vaccine.

The ImmForm collection monitors, tracks and reports provisional vaccine uptake weekly and monthly during the influenza season to provide a snapshot of the vaccination status in eligible groups who are registered at the GP practice on the day of data extraction.

This end-of-season campaign report provides the final uptake figures. It should be noted that the data is collated for surveillance purposes. The collection is not designed to support GP payments.

The programme for 2017 to 2018 was announced in the annual flu letter jointly issued to the NHS by Public Health England (PHE), the Department of Health (DH) and NHS England on 20

[1] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/663694/Greenbook_chapter_19_Influenza_.pdf

[2] NHS England has agreed responsibilities for commissioning the influenza programme under Section 7A agreement with the Secretary of State for Health. This describes in one place NHS England's public health responsibilities under that agreement as well as responsibilities arising from NHS England's duties to secure primary medical services for the population which includes securing influenza services under the Primary Medical Services (Directed Enhanced Service) Directions (the 'DES'). https://www.nhsemployers.org/-/media/Employers/Documents/Primary-care-contracts/GMS/GMS-contract---DES-Directions---2018.pdf?la=en&hash=C9CD9176AD4C6A33E87848E6BE05FFB7C0A6BB23

March 2017[3]. It was recommended that influenza vaccine be offered to the following eligible GP patient groups[4].

- all patients aged 65 years and over
- all patients aged 6 months to under 65 years, in a clinical at-risk group
- all patients aged 2 and 3 years
- all pregnant women
- carers (aged under 65 years, not at-risk, not pregnant and fulfils the 'carer' definition[5])
- all patients in school years reception,1, 2, 3 and 4 (aged 4 rising to 9 year olds), delivered through school delivery models with the exception of one area that delivered the vaccine through GP practices[6]

The ambition for vaccine coverage in 2017 to 2018 is to reach or exceed 75% uptake for people aged 65 years and over as recommended by the World Health Organization (WHO). In addition the uptake ambition for 2017 to 2018 as stated in the annual flu letter for those patients under 65 years at-risk is at least 55% in all clinical risk groups and maintaining higher rates where those have already been achieved.

This report describes the cumulative data on vaccine uptake among eligible GP patient groups in the GP-registered population in England[7]. Data from the final cumulative January 2018 survey are presented in this report gathered from GP practices online via the web-based reporting system, ImmForm. Uptake is shown by different eligible and clinical at-risk groups and by age, with comparisons to uptake achieved in the previous seasons' collection.

The survey of seasonal influenza vaccine uptake in GP practices was split into a Main GP Survey and Child GP survey in the 2017 to 2018 season. GP practices in England cover all 14 Local NHS Teams returning data for the final January 2018 survey on cumulative influenza vaccinations administered from 1 September 2017 to the end of 31 January 2018.

[3] The annual flu letter is accessible from the following link on the GOV.UK website https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/600880/annual_flu__letter_2017to2018.pdf

[4] For further description and detail regarding patient groups eligible for influenza vaccine see Appendix A of the annual flu letter, link above.

[5] The definition of a carer can be found in the annual flu letter, link in footnote 3.

[6] There is a specific report dedicated to the National Childhood Influenza Vaccination Programme can be accessed via https://www.gov.uk/government/collections/vaccine-uptake#seasonal-flu-vaccine-uptake-figures

[7] People who are currently registered at the GP practice on the day of data extraction. Therefore, the survey will not include vaccinations given to patients who have since moved practice or who have died, but will include those vaccinated by another healthcare provider (provided the GP patient electronic record is updated).

Methods

Prior to the start of the seasonal data collection, a standard specification on the eligible population for influenza vaccine is developed by PRIMIS, a leading specialist in primary care data in England, in consultation with PHE based on READ/CTV3 codes. The specification is based on Green book recommendations and sent to all GP system suppliers (GPSS) prior to the influenza season. GPSS then implement the codes in local practices for automated data extraction purposes,

Cumulative data on seasonal influenza vaccine uptake were collected for all GP practices in England between 1 September 2017 to 31 January 2018 using the ImmForm website hosted by Infomax Ltd. ImmForm provides a secure online platform for vaccine uptake data collection for several immunisation surveys, including the seasonal influenza vaccine uptake collection.

The data collections comprise of a weekly sentinel survey from GPs, using an automated XML bulk upload or web service only. This allows almost 'real time' monitoring of the programme at a national level from week ending 10 September 2017 to week ending 31 January 2018. In addition to this there will be 4 monthly surveys from all practices (i.e. automatic and manual submissions) on vaccinations up to end October, end November, end December and end January (with collection starting from November 2017 through to February 2018), to provide more complete data[8].

Data on influenza vaccine uptake were submitted at the GP practice level across England. Data were submitted on the ImmForm website either via an automated extraction (XML bulk upload or a web service) provided by GP System suppliers who extract data directly from GP practice computer systems[9] or a manual uploads. Automated data extraction results in an almost zero burden on GP practices in providing the data, reducing the burden on GP practices and ATs, and eliminating the typographical and transcription errors that may occur with manual data entry.

[8]The first collection was the 'October' survey which took place at the start of November 2017 for data on vaccinations administered from 01/09/2017 up to end 31/10/2017. The second was the 'November' survey which took place at the start of December 2017 for data on vaccinations administered from 01/09/2017 up to end 30/11/2017. The third was the 'December' survey which took place at the start of January 2018 for data on vaccinations administered from 01/09/2017 up to end 31/12/2017 and the final collection was the 'January' survey which took place in February 2018 for cumulative data on vaccinations administered from 01/09/2017 up to end 31/01/2018.

[9] The source of data is from GP practice systems only. It is assumed that vaccinations given in other settings by other healthcare providers (eg pharmacies, schools, special clinics) will be recorded onto GP systems in a timely manner. However, some vaccinations may be missed by the survey when recording onto a GP system, which may be more challenging or slow (eg vaccinations of travelling communities or homeless) or where patients are not registered.

The dataset and details of the survey can be found on the GOV.UK website via https://www.gov.uk/government/publications/seasonal-influenza-vaccine-uptake-gp-patient-survey-data-collection.

Extrapolated numbers are included in this report to provide a simplified estimate of the total eligible population and the total that would have been vaccinated if there was a 100% response rate. The extrapolated number of the eligible population is derived by multiplying the mean population based on observed data to the total number of practices. The extrapolated number on vaccinations is derived by multiplying the mean number of vaccinations to the total number of practices. This calculation assumes that the GP practice population is the same across all practices and that the uptake rate is the same as that seen nationally.

The Seasonal influenza vaccine uptake GP patients (Main and Child survey) have received full approval from the Data Coordination Board for the 2017 to 2018 influenza season[10].

ImmForm

Influenza vaccine uptake data are submitted via the ImmForm website (www.immform.dh.gov.uk). Data are submitted at GP practice level and can then be aggregated at sub-geographical levels as required (NHS England Local Team, CCG, Area Team, or national [England]) level.

During the data collection period specific tools and functions were available on the ImmForm website to enable local and regional management of the influenza programme. These functions include the ability to:

- view and evaluate influenza vaccine uptake rates by cohort broken down by age band and risk category allowing data providers to review and assess progress for their own area (ATs and CCGs can view data for all practices within their area)
- validate the data at point of entry and correct any errors before the end of the data submission period
- view uptake data at GP practice level compared to the CCG average and data from previous influenza seasons to compare with the current programme
- allows screening and immunisation teams and CCG leads to view a ‘non-responder’ report which highlights the GP practices within the area who have failed to submit data thus allowing follow-up with these practices to obtain and submit outstanding data

[10] DCB approval for these surveys can be found here:
https://digital.nhs.uk/binaries/content/assets/legacy/pdf/f/r/2211682017-certificate.pdf
https://digital.nhs.uk/binaries/content/assets/legacy/pdf/f/g/2205672017-certificate.pdf

Throughout the 2017 to 2018 season, provisional monthly uptake reports by eligible cohort and locality are published on the gov.uk website. Although the monthly data releases provide a good indication of progress of vaccine uptake they are provisional given the nature of local validation issues that may arise during the seasonal collection which may not resolved at time of reporting.

Following the end of the vaccine data collection period (31 January 2018), all data providers were contacted so that they can check their figures one final time. Validation error reports were sent highlighting specific errors which enabled GP practices to amend their data before the survey end date.

Due to reformulation of regional teams in 2017 to 2018, this report will be using 14 NHS England local teams. These new regional level boundaries will be used as the basis for comparison in future reports.

Data limitations

Denominator data for some localities and at risk groups should be interpreted with caution due to data validation and data quality issues. A summary of these limitations is discussed below.

Snapshot of influenza vaccine uptake data

It is important to note that influenza vaccine uptake data presented in this report is only a snapshot of the registered GP patients vaccinated at the time of data extraction/end of the data collection on 31 January 2018. Data captured at the time of data extraction will exclude for example updates to patient records on vaccination status or newly registered patients or changes in clinical risk status[11]. For example, patients who are vaccinated, but have not had their electronic patient record updated by the time of data extraction, will be included within the denominator, but will not be included in the count of 'number vaccinated'. The extract will also exclude the prison population, unless they were registered with a GP practice at the time of data extraction and their vaccination details were recorded on their primary care electronic record.

Pregnant women data: denominator variance

Since the introduction of the pregnant women category to the routine influenza vaccination programme, there have been difficulties in determining an accurate denominator through electronic means for this group of patients because of the complexities in the way pregnancy is recorded and coded on local clinical systems in primary care.

Consequently, monitoring vaccine uptake by pregnant women is particularly challenging and the context in which this data should be interpreted needs to consider the following conditions:

- the dynamic nature of the group with women continually entering and leaving the risk group
- the number and variable use of Read codes that can be used to identify pregnant women
- the delay in updating the individual's electronic GP clinical record following birth or loss of pregnancy.

In relation to the last point, it is noted that there may be appreciable delays in GP practices updating records to reflect coding of pregnant women and/or changes in pregnancy outcomes following birth or loss of pregnancy. Therefore, women who were no longer pregnant by 1 September 2017 may have been included in the denominator in error, due to the inaccuracy of the electronic record.

It is likely therefore, that influenza vaccine uptake by pregnant women is underestimated due to denominator inflation, although the scale of the underestimation is not clear and could vary considerably between GP practices[11].

Vaccination in other healthcare settings

The number of patients vaccinated in a school, pharmacy and other healthcare setting was also recorded. However it is important to note that the data captured in healthcare settings outside of the GP practice may not be standardised and may vary between GP practices depending on GP system suppliers.

Whilst the number of vaccinations reported as given in pharmacies can be taken as correct because there is a specific Read code associated with this, there is likely to be a lag in data being fed back into the GP record. Other healthcare settings for the pregnant women cohort seem to be relatively high and likely to be attributed to vaccinations administered by midwifery services.

The development of improved data transfer will be important to ensure accurate and timely data is fed back into the GP record and to reduce the administrative burden on GP practices.

As there is no Read code for ‘vaccinated in school,’ this was based upon an assumption that those aged 4 to 8 rising to 9 vaccinated outside of the GP practices will have been vaccinated in a school if not otherwise coded as ‘vaccinated in a pharmacy’. Due to clear problems with data reaching the GP record, the cohort for this survey remains experimental until data flows between the Child Health Information Systems and GP records[12] have been improved.

[11] For further details of pregnancy data limitations, please see the GP survey user guide which can be found here: https://www.gov.uk/government/publications/seasonal-influenza-vaccine-uptake-gp-patient-survey-data-collection

[12] Results for the LAIV programme in primary school aged children will be available in a separate report based on manual returns from Local NHS Teams. The National Childhood Influenza Vaccination Programme report can be accessed via https://www.gov.uk/government/collections/vaccine-uptake#seasonal-flu-vaccine-uptake-figures

Results

Full data tables showing final influenza vaccine uptake for each of the recommended target groups at NHS England Local team, old Area teams and CCG level described in the results section of this report are available to access at the following link: www.gov.uk/government/collections/vaccine-uptake.

GP practice response in England

The seasonal influenza vaccine uptake survey in GP practices was split into a Main GP Survey and Child GP survey[13] in 2017 to 2018. Overall the GP response rate for the main GP survey was 99.8% (7,155/ 7,170 all GP practices). The GP response rate for the Child GP survey was 99.6% (7,143/7,169 of all GP practices) (Figure 1).

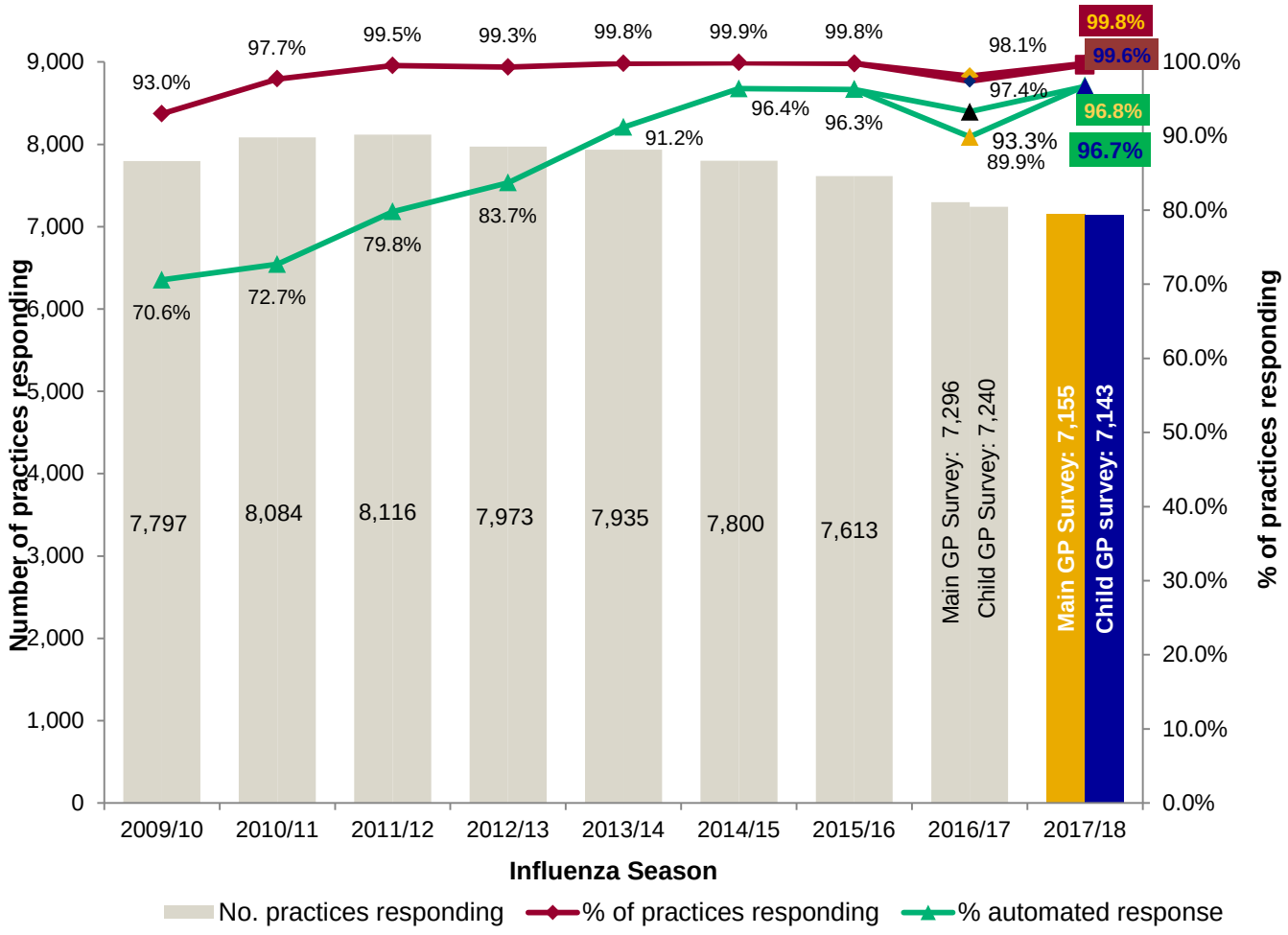
The data showed that half of NHS England Local teams (7/14) achieved a response rate of 100% for their GP practices in the Main GP Survey and the GP Child survey.

Based on geographical allocation of GP practices to the former Area Team boundaries, the data showed that the majority (17/25) achieved a response rate of 100% for their GP practices in the Main GP Survey and 60% of Area teams (15/25) for the Child GP Survey.

Based on allocation of GP practices to CCGs, the data showed that 93.8% of CCGs (198/211) achieved a response rate of 100% in the Main GP Survey and 90% of CCGs (190/211) for the Child GP Survey.

[13] The dataset and details of the survey can be found on the GOV.UK website via https://www.gov.uk/government/publications/seasonal-influenza-vaccine-uptake-gp-patient-survey-data-collection

Figure 1. Number and percentage of GP practices responding in 2017 to 2018 compared with recent survey years.



Response rate by data entry/extraction methods:

A high response rate was observed from automated submissions (~97%) for the GP main survey this season.

Manual submissions amounted to 3.1% for the GP main survey (213/7170) which showed a decrease compared to last season (Figure 1).

Weekly versus monthly vaccine uptake comparison (provisional data)

Weekly and monthly data were overall in good agreement, with the provisional national results from the 4 monthly returns closely matching their weekly equivalent, confirming that the weekly sentinel collection is an excellent indicator of uptake at a national level.

The weekly sentinel survey only used automated extracts, on average over 75% of GP practices submitted data. The response rate ranged from 76.0% in week 42 for the main GP

survey to 94.2% in week 2 for the child GP survey. The low response before week 42 was due to validation errors and technical issues from certain GP System suppliers at the start of the season.

GP registered population

GP registered population for those aged 65 and over as captured by this survey has increased by 1.2% which is slightly less than the increase seen based on ONS 2016 mid–year estimates which shows a 1.8% increase in the corresponding age cohort.

Overall extrapolated numbers of registered GP patients in England (All aged 6 months to under 65 and those aged 65 and over) have increased by 1.1% this season in comparison to 2016 to 2017.

Patients aged 65 years and over

Vaccine uptake in patients over 65 years old was 72.6% in the 2017 to 2018 season, an increase from 70.5% in 2016 to 2017. The uptake ambition was 75% based on the World Health Organization (WHO) target for this cohort.

The extrapolated estimate of the number of patients aged 65 years and over registered at a GP practice who would have been vaccinated by end of January 2018, was over 7.4 million (n= 7,442,487)[14].This is an increase of over 293,451 patients vaccinated aged 65 and over compared to 2016 to 2017 (n=7,149,036) (Table 1, Figure 2 and Figure 3).

Regional and local vaccine uptake:

Vaccine uptake in 2017 to 2018 by NHS England Local Teams for patients aged 65 years and over ranged from 66.9% (London) to 75.5% (Cheshire and Merseyside). The median uptake was 73.8%. Two NHS England Local Teams achieved the WHO target rate of 75% or more.

Using the former Area Team boundaries, vaccine uptake in this age group ranged from 66.9% (London) to 76.2% (Cheshire, Warrington and Wirral). The Median uptake was 73.6%. Four ATs achieved the WHO target uptake rate of 75% or more.

At CCG level, vaccine uptake in this age group ranged from 58.4% (Hammersmith and Fulham CCG) to 80.8% (Stockport CCG). The median uptake was 72.7%.A total of 96 CCGs achieved the WHO target uptake rate of 75% or more which is a substantial increase compared to last season (15 CCGs).

[14] This figure is extrapolated based on the actual number of patients registered in this cohort. It is calculated by assuming a 100% response rate from GP practices and assuming that there are no differences in the size of GP practices returning data compared to those that are not, so this figure should be regarded as an estimate.

Patients aged 6 months to under 65 years in a clinical at-risk group

Vaccine uptake in patients 6 months to under 65 years in a clinical at-risk group was 48.9% in the 2017 to 2018 season increasing from 48.6% in 2016 to 2017 (Table 1)[18, 19, 20].

The extrapolated estimate of the total number of patients aged 6 months to under 65 years in a clinical at-risk group who would have been vaccinated (assuming 100% of GPs had returned data) by end of January 2018, was just over 3.3 million (n= 3,351,605), which has increased compared to 2016 to 2017[15] (Table 1, Figure 2 and Figure 3)**.**

Regional and local vaccine uptake:

- vaccine uptake in 2017 to 2018 by NHS England Local Teams for patients in this group ranged from 45.4% (London) to 52.4% (Greater Manchester). The median uptake was 50.2%
- using the former Area Team boundaries, vaccine uptake in this age group ranged from the 44.6% (Essex) to 52.4% (Greater Manchester). The median uptake was 49.5%
- at CCG level, vaccine uptake in this age group ranged from 37.4% (Hammersmith and Fulham) to the highest at 62.2% (Stockport). The median uptake was 48.9%

Table 1. Observed and extrapolated estimate of number of patients registered and who received influenza vaccine during the 2017 to 2018 vaccine uptake campaign

Target groups for vaccination*	Number of patients registered	Number of patients vaccinated	% vaccine uptake
Aged 65 and over	**10,235,533**	**7,426,917**	**72.6**
Aged 65 and over extrapolated	10,256,991	7,442,487	72.6
Aged 6 months to under 65 years in a clinical risk group (excluding pregnant women without other risk factors and carers)	**6,836,969**	**3,344,593**	**48.9**
Aged 6 months to under 65 years in a clinical risk group (excluding pregnant women without other risk factors and carers) extrapolated	6,851,302	3,351,605	48.9
Total observed (65+ and under 65 at risk)	**17,072,502**	**10,771,510**	**63.1**
Total extrapolated (65+ and under 65 at risk)	17,108,293	10,794,092	63.1

[15] This figure is extrapolated based on the actual number of patients registered in this cohort. It is calculated by assuming a 100% response rate from GP practices and assuming that there are no differences in the size of GP practices returning data compared to those that are not so this figure should be regarded as an estimate.

*This does not include frontline health and social care workers who were also eligible to receive influenza vaccine in the 2017 to 2018 vaccination campaign (unless they were vaccinated at the GP practice and their vaccination details were entered on their GP practice's electronic record). Vaccine uptake data for frontline

Figure 4. Influenza vaccine uptake for those aged 65 and over and 65 at risk from 2000 to 2001 through to 2017 to 2018 for England. WHO 2010 target is 75%.

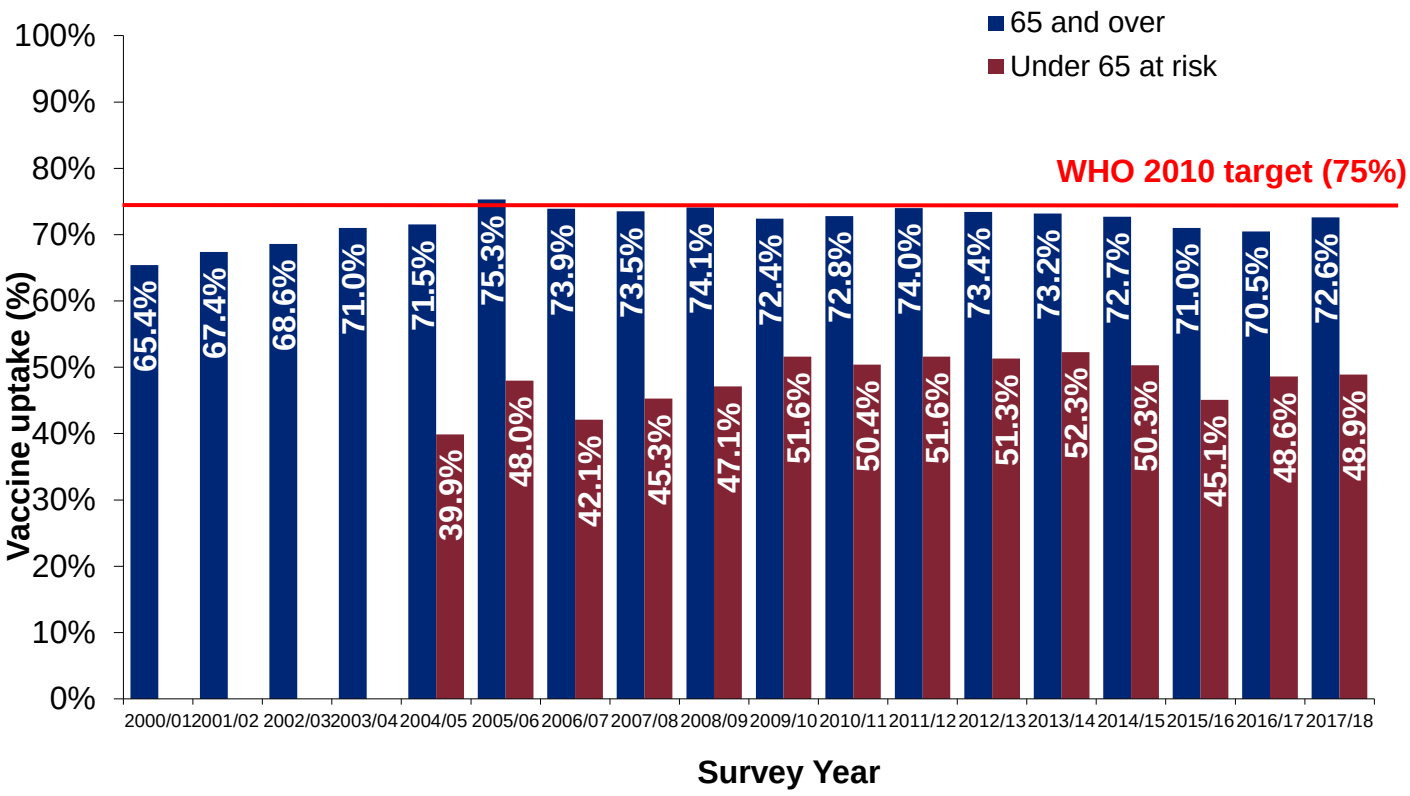
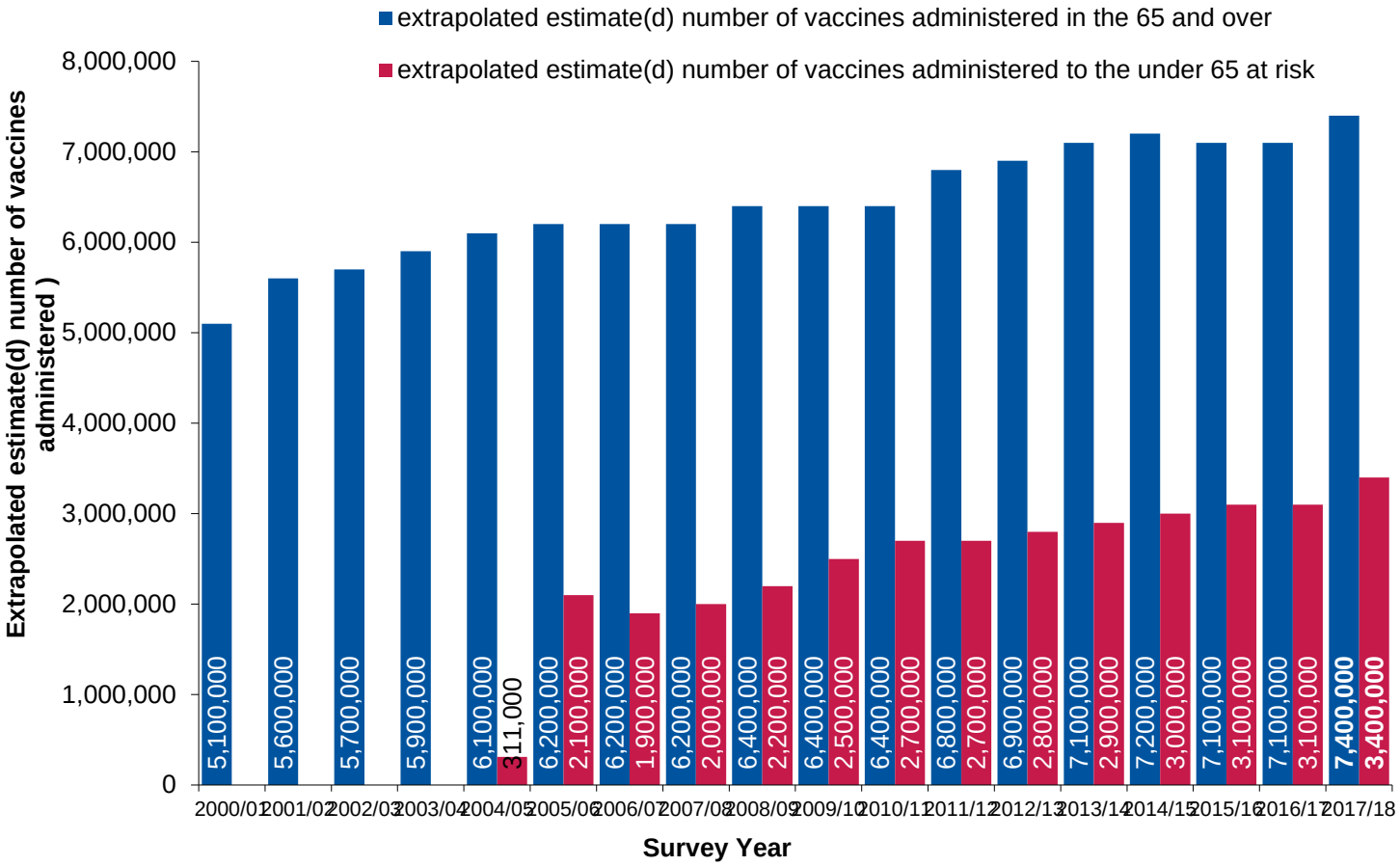


Figure 3. Extrapolated number of vaccines administered in the 65 and over, and under 65 at-risk for each survey year between 2000 to 2018 (cumulative data to end of January 2018) based on 100% GP response.



Pregnant women[17]

Vaccine uptake in all pregnant women (healthy and in at risk groups combined) was 47.2%% in the 2017 to 2018 season, increasing from 44.9% in 2016 to 2017[18]. Although the number of registered pregnant women was less in the 2017 to 2018 season compared to the previous season, the number of vaccinations administered increased.

[17] Data on the uptake of influenza vaccine by pregnant women need to be interpreted with caution as uptake can be underestimated due to denominator inflation See 'Data Limitations' section of this report for further details).

[18] National figures compared to last year can be found in the accompanying data tables.

Table 2. Observed and extrapolated estimate number of pregnant women registered and who received an influenza vaccine during the 2017 to 2018 vaccine uptake campaign

Target groups for vaccination	Number of patients registered	Number of patients vaccinated	% vaccine uptake
All pregnant women (includes both healthy and at-risk women)	**643,941**	**303,875**	**47.2**
All pregnant women extrapolated	645,291	304,512	47.2
Pregnant women and in a clinical risk group	**58,005**	**36,010**	**62.1**
Pregnant women and **in** a clinical risk group extrapolated	58,127	36,085	62.1
Pregnant women not in a clinical risk group (otherwise 'healthy women')	**585,936**	**267,865**	**45.7**
Pregnant women **not in** a clinical risk group (otherwise 'healthy women') extrapolated	587,164	268,427	45.7

Regional and local vaccine uptake:

- vaccine uptake in 2017 to 2018 by NHS England Local Teams for all pregnant women ranged from 41.1% (London) to 52.1% (Greater Manchester). The median uptake was 49.2%
- using the former Area Team boundaries, vaccine uptake in all pregnant women ranged from 41.1% (London) to 54.4% (Durham, Darlington and Tees). The median uptake was 49.2%
- at CCG level, vaccine uptake in all pregnant women ranged from 29.7% (Hounslow CCG) to 71.5% (Stockport CCG). The median uptake was 48.2%
- vaccine uptake in pregnant women in a clinical risk group by NHS England Local Team ranged from 57.8% (London) and 69.2% (Greater Manchester). The median uptake was 62.7%
- vaccine uptake in pregnant women not in a clinical risk group by NHS England Local Team ranged from 39.9% (London) to 50.5% (Cumbria and North East). The median uptake was 47.7%

All 2 year olds

Uptake in all 2 year olds was 42.8% in 2017 to 2018, increasing from 38.9% in 2016 to 2017[19]. This increase was seen in both the at-risk and not at-risk cohorts.

For those aged 2 and not in a clinical risk group, uptake was 42.5% in 2017 to 2018 compared to 38.6% in 2016 to 2017. Vaccine uptake for those aged 2 and in a clinical risk group was 54.1% compared to 51.9% in 2016 to 2017.

[19] National figures compared to last year can be found in the accompanying data tables.

Table 3. Observed and extrapolated estimate number of 2-year-olds registered and who received influenza vaccine during the 2017 to 2018 vaccine uptake campaign

Target groups for vaccination	Number of patients registered	Number of patients vaccinated	% vaccine uptake
All 2 year olds (includes both 'healthy and at risk)	**679,391**	**290,494**	**42.8**
All 2 year olds (includes both 'healthy and at risk) extrapolated	681,863	291,551	42.8
Aged 2 and in a clinical risk group	**17,567**	**9,501**	**54.1**
Aged 2 and **in** a clinical risk group extrapolated	17,631	9,536	54.1
Aged 2 and not in a clinical risk group	**661,824**	**280,993**	**42.5**
Aged 2 and **not in** a clinical risk group extrapolated	664,233	282,016	42.5

Regional and local vaccine uptake

- for all 2 year olds, uptake in 2017 to 2018 by NHS England Local Team[26] ranged 33.2% (London) to 50.5% (Central Midlands). The median uptake was 43.6%.
- using the former Area Team boundaries, vaccine uptake in this all 2 year olds ranged from 33.2% (London) to 54.9% (Leicestershire and Lincolnshire). The median uptake was 43.6%.
- at CCG level, vaccine uptake in all 2 year olds ranged from 17.8% (Bradford City) to 64.4% (South Warwickshire). The median uptake was 43.5%.
- for 2 year old children in a clinical risk group, uptake in 2017 to 2018 by NHS England Local Team ranged 46.3% (London) to 60.1% (Wessex). The median uptake was 55.6%.
- using the former Area Team boundaries, vaccine uptake in 2 year olds in a clinical risk group ranged from 46.3% (London) to 63.5% (Arden, Herefordshire and Worcestershire). The median uptake was 56.1%.
- at CCG level, vaccine uptake in a clinical risk group ranged from 24.0% (Bradford City) to 77.1% (South Warwickshire). The median uptake was 55.0%.
- for 2 year old children not in an at risk group, uptake in 2017 to 2018 by NHS England Local Team ranged 32.9% (London) to 50.2% (Central Midlands). The median uptake was 43.3%.
- using the former Area Team boundaries, vaccine uptake in 2 year olds not in a clinical risk group ranged from 32.9% (London) to 54.8% (Leicestershire and Lincolnshire). The median uptake was 43.6%.
- at CCG level, vaccine uptake in 2 year olds not in a clinical risk group ranged from 17.5% (Bradford City) to 64.1% (South Warwickshire). The median uptake was 43.2%.

All 3 year olds

Uptake in all 3 year olds was 44.2% compared to 41.5% in 2016 to 2017 (Table 4)[20]. For those aged 3 and not in a clinical risk group, the uptake was 43.7% compared to 41.0% in 2016 to 2017. Vaccine uptake for those aged 3 and in a clinical risk group was 56.6% compared to 55.8% in 2016 to 2017.

The extrapolated GP registered population for all 3 year olds has decreased compared to 2016 to 2017 however the extrapolated number of patients vaccinated has increased this year. When compared to the 2 year olds' uptake last year who would have been 3 year olds this year, the number of vaccinations increased.

Table 4. Observed and extrapolated estimate number of 3-year-olds registered and who received influenza vaccine during the 2017 to 2018 vaccine uptake campaign

Target groups for vaccination	Number of patients registered	Number of patients vaccinated	% vaccine uptake
All 3 year olds (includes both 'healthy' and at risk)	**684,953**	**302,656**	**44.2**
All 3 year olds (includes both 'healthy' and at risk) extrapolated	687,446	303,758	44.2
Aged 3 and in a clinical risk group	**24,618**	**13,946**	**56.6**
Aged 3 and **in** a clinical risk group extrapolated	24,708	13,997	56.6
Aged 3 and not in a clinical risk group	**660,335**	**288,710**	**43.7**
Aged 3 and **not in** a clinical risk group extrapolated	662,739	289,761	43.7

Regional and local vaccine uptake:

- for all 3 year olds, the uptake in 2017 to 2018 by NHS England Local Team ranged from 33.3% (London) to 50.4% (South Central). The median uptake was 45.5%
- using the former Area Team boundaries, vaccine uptake in all 3 year olds ranged from 33.3% (London) to 53.5% (Leicestershire and Lincolnshire). The median uptake was 46.2%
- at CCG level, vaccine uptake in all 3 year olds ranged from 20.8% (Bradford city) to 65.9% (Stockport). The median uptake was 45.6%
- for 3 year old children not in a clinical risk group, uptake in 2017 to 2018 by NHS England Local Team ranged from 32.9% (London) to 50.1% (South Central). The median uptake was 45.1%
- using the former Area Team boundaries, vaccine uptake in 3 year old children not in a clinical risk group ranged from 32.9% (London) to 53.1% (Leicestershire and Lincolnshire). The median uptake was 45.5%

[20] National figures compared to last year can be found in the accompanying data tables.

- at CCG level, the vaccine uptake in 3 year olds not in a clinical risk group ranged from 20.2% (Bradford City) to 65.4% (Stockport). The median uptake was 45.1%.
- uptake for 3 year olds in a clinical risk group by NHS England Local team ranged from 45.6% (London) to 63.2% (Wessex). The median uptake was 57.2%.
- uptake for 3 year olds in a clinical risk group by former Area Team boundaries ranged from 45.6% (London) to 65.6% (Leicestershire and Lincolnshire). The median uptake was 57.7%
- at CCG level the uptake for 3 year olds in a clinical risk group ranged from 29.8% (Bradford City) to 76.3% (Stockport). The median uptake was 57.7%

Patients aged 6 months to under 65 years at-risk: overall uptake in clinical risk groups

Table 6 shows the uptake in 2017 to 2018 stratified by 4 age groups. Overall this season, vaccine uptake for all patients aged 6 months to under 65 years at-risk was 48.9% (similar to the uptake observed in 2016 to 2017 (48.6%) for the corresponding group) .

This season vaccine uptake for all patients aged 6 months to under 65 years at-risk was 48.9% which increased slightly compared to 48.6% in 2016 to 2017.

Uptake was highest in those aged 2 to under 5 years at-risk (52.4%). The uptake for this group increased compared to 34.5% in 2016 to 2017.

Uptake remained lowest in children aged 6 months to under 2 years at 21.0% however this has increased slightly compared to 19.5% in 2016 to 2017.

Figure 4 shows trends in uptake stratified by 3 age groups. Although uptake was highest in the oldest age group this appeared to reduce slightly over time (from 53.6% in 2009 to 2010 to 49.4% in 2017 to 2018). However vaccine uptake in the 2 years to under 16 age group appeared to increase over time (from 34.5% in 2009 to 2010 to 44.6% in 2017 to 2018. Uptake in the youngest group was lowest but no discernible trend was observed (Figure 4).

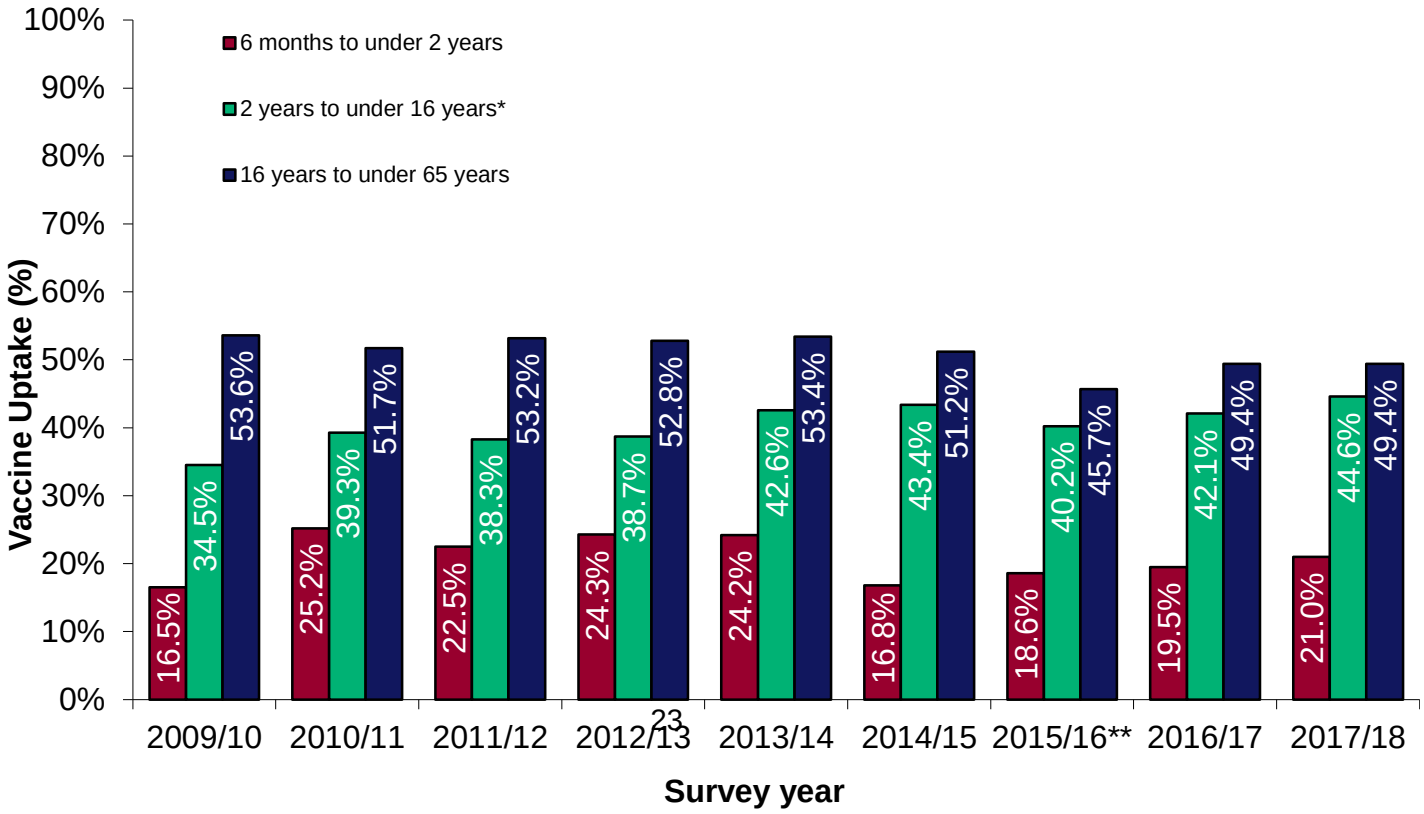
Table 6. Observed and extrapolated estimate number of patients all aged 6 months to under 65 years at-risk registered by age group and who received influenza vaccine during the 2017 to 2018 vaccine uptake campaign

Clinical at risk target groups for vaccination	Number of patients registered	Number of patients vaccinated	% vaccine uptake
Total Observed 6 months under 65 years	**6,836,969**	**3,344,593**	**48.9**
Total 6 months under 65 years extrapolated	6,851,302	3,351,605	48.9
6 months to under 2 years	**14,497**	**3,050**	**21.0**
6 months to under 2 years extrapolated	14,527	3,056	21.0
2 years to under 5 years	**67,534**	**35,381**	**52.4**
2 years to under 5 years extrapolated	67,676	35,455	54.4
5 years to under 16 years	**566,237**	**247,033**	**43.6**
5 years to under 16 years extrapolated	567,424	247,551	43.6
16 to under 65 years	**6,188,701**	**3,059,129**	**49.4**
16 to under 65 years extrapolated	6,201,675	3,065,542	49.4

*In 2014 to 2015 season, this was broken down into those aged 2 years to under 5 years old and 5 years to under 16 years old, see table 6 for break down.

** In 2015 to 2016 only, patients with morbid obesity with no other clinical risk groups was included in the denominator but not for 2016 to 2017.

Figure 4. Vaccine uptake in the under 65 at-risk by age group comparing recent survey years



Patients aged 6 months to under 65 years at-risk: uptake in individual clinical group(s) and age

Data represents 97.0% of all GP practices in England responding (6958/7170), who provided data across all optional at-risk group categories for the 2017 to 2018 vaccine uptake survey (Table 7, Figure 5). The lowest uptake by age band for the different risk groups are those aged six months to under two years for all groups.

Table 7. Vaccine uptake for all patients aged six months to under 65 years at-risk registered by risk group and who received influenza vaccine during the 2017 to 2018 vaccine uptake campaign*.

Age:	6months to under 2 years	2years to under 5 years	5 years to under 16 years	16 years to under 65		Total under 65 years
Risk group:	% Vaccine uptake					
Patients with Chronic Heart Disease	20.8	47.9	36.4	51.2		49.9
Patients with Chronic Respiratory Disease	25.2	57.0	46.7	51.4		50.8
Patients with Chronic Kidney Disease	24.1	47.1	38.1	55.3		55.0
Patients with Chronic Liver Disease	26.4	52.6	43.4	44.5		44.5
Patients with Diabetes	32.8	60.0	57.4	65.5		65.4
Patients with Immunosuppression	26.4	54.7	44.2	54.3		54.0
Patients with Chronic Neurological Disease (including Stroke/TIA, Cerebral Palsy or MS)	20.0	48.1	38.3	51.8		50.9
Patients with Asplenia or dysfunction of the spleen	32.4	54.3	37.4	41.0		40.8
Patients with morbid obesity (BMI>=40) (Combined)	-	-	-	39.4		39.2

* The highlighted figures show the highest (green) and lowest (red) uptake by age band for that clinical risk group.

For all age groups combined, the biggest increase in uptake was for the diabetes risk group with an uptake of 65.4% in 2017 to 2018 season. This increased slightly compared to 64.7% in the 2016 to 2017 season.

Uptake in patients (total under 65 years) with chronic heart disease was 49.9% which was an increase compared to last year (48.5%). There was an increase in the number of patients registered as well as an increase in the number of vaccinations compared to 2016 to 2017 for this cohort.

Uptake in patients (total under 65 years) with chronic respiratory disease was 50.8% which showed an increase compared to 48.5% last year.

Uptake for patients with chronic kidney disease was 55.0% which was an increase compared to 53.2% last year. There was an increase in the number of patients registered as well as the number of vaccinations compared to 2016 to 2017 for this cohort.

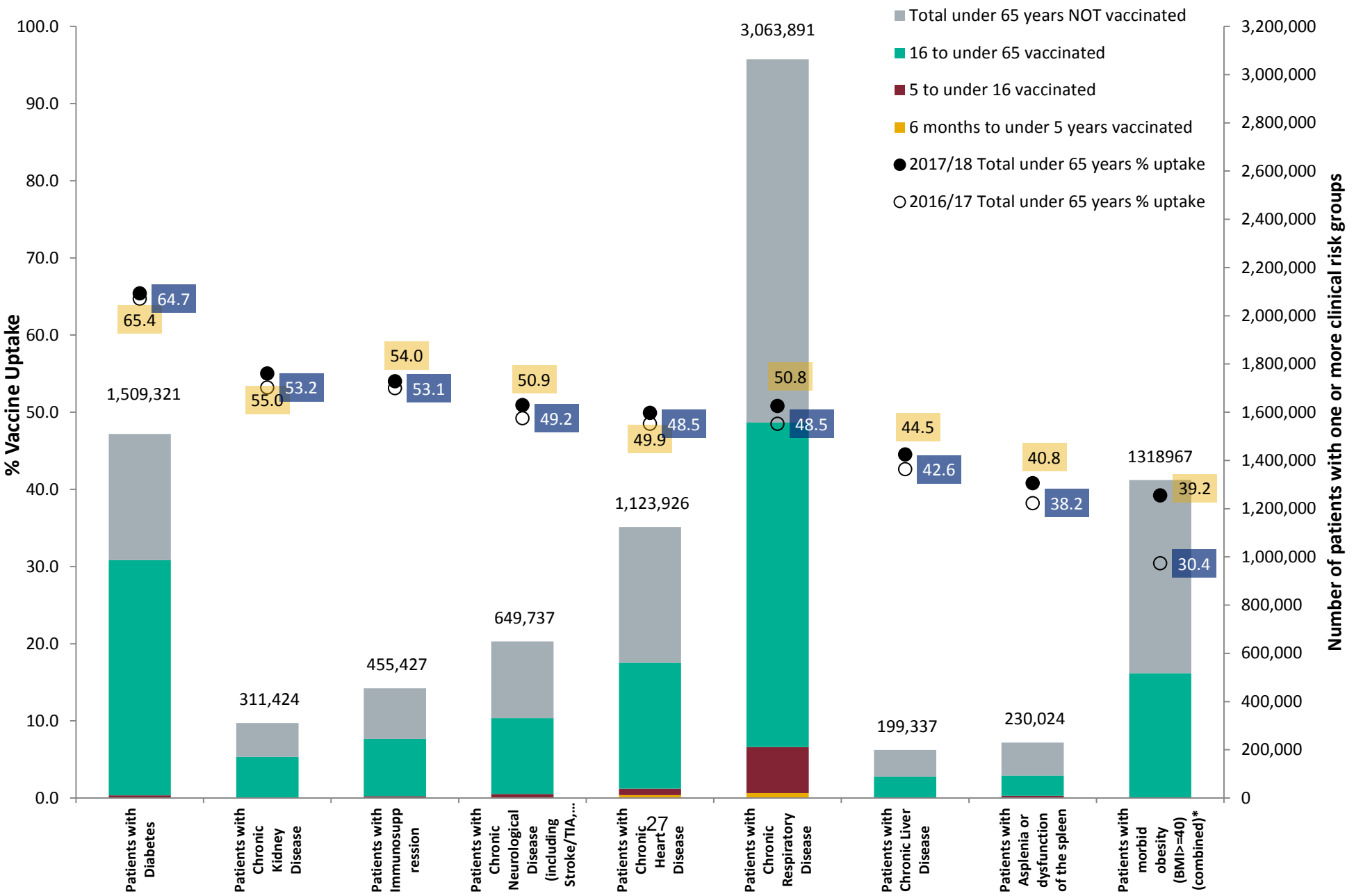
Uptake for patients with chronic liver disease was 44.5% which was an increase compared to the uptake last year which was 42.6%.

Uptake for patients (total under 65 years) with immunosuppression was 54.0% which was a slight increase compared to 53.1% in 2016 to 2017.

Uptake for patients (total under 65 years) with degenerative neurological disease (including stroke/TIA and cerebral palsy or MS) was 50.9% which showed a slight increase compared to 49.2% seen last year.

Uptake for patients (total under 65 years) with asplenia or dysfunction of the spleen was relatively low at 40.8% although increasing from 31.0% in 2016 to 2017. The number of patients registered and the number of vaccinations also increased compared to last year for this cohort.

Figure 5. Extrapolated estimate(d) population and number of vaccines administered in individual risk groups aged six months to under 65 for 2017 to 2018 (cumulative data up to end of January 2018) with percentage vaccine uptake (based on 100% GP response).



Carers

Vaccine uptake for all carers under 65 years old (not in a risk group) was 39.9% which was slightly lower compared to 41.9% in 2016 to 2017. 97.1% of GP practices returned data for this cohort (6,964/7,170).

Table 8. Observed and extrapolated figures for 'Carers' who received influenza vaccine by age band during the 2017 to 2018 campaign.

Target groups for vaccination	Number of patients registered	Number of patients vaccinated	% vaccine uptake
All Carers aged 5 years to under 65 years and not at-risk	**474,073**	**189,228**	**39.9**
All Carers aged 5 years to under 65 years and not at-risk extrapolated	488,096	194,825	39.9

'All patients'

The total extrapolated number of all patients aged 6 months to under 65 years (including those in a clinical at-risk group) who received a vaccine by the end of January 2018, was over 6.4 million representing a 13.2% vaccine uptake. This is an increase compared with last season where 5.7 million (n= 5,777,705) were vaccinated, representing a 12.0% vaccine uptake.

The uptake for all those aged 5 to under 16 years was 18.5%, which was an increase from 15.4% in 2016 to 2017. The increase in this group related to the extension of the universal vaccination to all school children in years reception, 1, 2, 3 and 4 (4 rising to 9 year olds)[21].

The vaccine uptake amongst all groups increased compared to 2016 to 2017 with the exception of the 6 months to under 2 years cohort where the uptake slightly decreased compared to last season. The observed number of patients vaccinated for those aged 6 months to under 2 years decreased compared to last season (6,895). The total number of patients registered increased slightly compared to last season (986,446).

[21] This is likely to be an underestimation as we know that not all vaccinations administered to children of school years reception, 1, 2, 3 and 4 (aged 4 rising to 9) were returned to the GP record. There is a specific report dedicated to the National Childhood Influenza Vaccination Programme can be accessed via https://www.gov.uk/government/collections/vaccine-uptake#seasonal-flu-vaccine-uptake-figures

Table 9. Observed and extrapolated figures for 'All patients' who received influenza vaccine by age band during the 2017 to 2018 campaign.

Target groups for vaccination (includes those in a risk group and those not in a clinical risk group)	Number of patients registered	Number of patients vaccinated	% vaccine uptake
Total observed 6 months under 65 years	**48,377,948**	**6,401,990**	**13.2**
Total extrapolated 6 months under 65 years	48,479,369	6,415,411	13.2
6 months to under 2 years	**986,855**	**6,198**	**0.6**
6 months to under 2 years extrapolated	988,924	6,211	0.6
2 years to under 5 years	**2,049,368**	**763,161**	**37.2**
2 years to under 5 years extrapolated	2,053,664	764,761	37.2
5 years to under 16 years	**7,524,671**	**1,394,520**	**18.5**
5 years to under 16 years extrapolated	7,540,446	1,397,444	18.5
16 to under 65 years	**37,817,054**	**4,238,111**	**11.2**
16 to under 65 years extrapolated	37,896,335	4,246,996	11.2

Refused/declined[22]

The rate of refusals seemed to have slightly increased amongst all target groups compared to 2016 to 2017 (Table 10).

Table 10. Number of registered patients who refused or declined the influenza vaccine during the 2017 to 2018 vaccine uptake campaign compared to % refused or declined in 2016 to 2017.

Target groups for vaccination	Number of vaccinations refused/declined	% of vaccinations refused/declined	% of vaccinations refused/declined (2016 to 2017)
Aged 65 and over	**971,519**	**9.5**	9.4
Total aged 6 months under 65 years at risk	709,004	10.4	9.7
6 months to under 2 years at risk	394	2.7	2.6
2 years to under 5 years at risk	2,724	4.0	3.6
5 years to under 16 years at risk	23,413	4.1	3.9
16 to under 65 years at risk	682,473	11.0	10.3
All pregnant women (includes both healthy and at-risk women)	32,510	5.0	4.4
Pregnant women and in a clinical risk group	4,567	7.9	6.9
Pregnant women not in a clinical risk group (otherwise 'healthy women')	27,943	4.8	4.1

Other healthcare settings

The majority of vaccinations are still delivered within the GP practices though there is a gradual increase in vaccinations outside of GP practices. The highest percentage of vaccinations outside of GP practices were given to patients aged 65 and over in pharmacies (9.8% of all 65 and over vaccinations). Vaccinations in pharmacy have increased slightly for all patients groups this season.

[22] Caution should be exercised when looking at these figures as different GP System suppliers use different ways of recording this and some may be collected via non-coded mechanisms.

Table 11. Vaccine uptake by GP practices, pharmacies and other healthcare settings (OHS) in 2017 to 2018 vaccine uptake campaign.

Patient Group	Vaccine Uptake (%)	Delivered in GP practices (% of vaccine)	Delivered in pharmacies (% of vaccine)	Delivered in OHS (% of vaccine)	Delivered in schools (% of vaccine)
Patients aged 65 years or older	72.6	87.8	9.8	2.4	n/a
Patients aged 6 months to under 65 years in risk groups (excluding pregnant women without other risk factors)	48.9	86.7	8.2	4.1	1.1
Pregnant women (including those in risk groups)	47.2	86.4	5.5	8.1	n/a
Patients aged 2 years old (including those in risk groups)	42.8	98.8	0.1	1.1	n/a
Patients aged 3 years old (including those in risk groups)	44.2	98.7	0.1	1.2	n/a

This season the number of patients vaccinated in pharmacy and other healthcare settings was recorded. However, it is important to note that recording of vaccinations given in another healthcare setting outside of the GP practice does not come under an existing information standard, therefore location recording can be varied amongst GP practices and GP System suppliers (see data limitations section of this report).

Discussion

Influenza vaccine uptake in the 2017 to 2018 winter season increased in all of the eligible cohorts compared to the previous year.

The response rate for GP practices for the 2017 to 2018 survey remained high at 99.8% (7,155/7,170) for the GP main survey and 99.6% (7,143/7,169) for the GP child survey. Increasing the automated extraction process has been a key aspect of maintaining accurate surveillance as we have seen a decrease of 1,108 GP practices in England since 2009 and as a result an increase in size of registered population per GP practice. The weekly sentinel surveillance has also once again proved to be beneficial in providing rapid data at national level to monitor the progress of the programme with no additional burden to the NHS. Practices not using the system should encourage their suppliers to provide them with the capability to provide data automatically. In addition, an uptake summary tool was introduced on ImmForm which allows users to view and evaluate uptake rates by target cohorts, comparing them against the previous season and CCG average/overall national uptake. This has been particularly helpful for areas viewing the weekly data online this season.

The uptake rate in those aged 65 years and over has remained relatively constant in the past few seasons (approximately 70%). Uptake for this year (72.6%) showed an increase compared to 2016 to 2017 (70.5%). The recommended ambition for vaccination for those aged 65 years and over continues to be aligned with the WHO recommended target of 75%. By the end of 2017 to 2018 winter season, 48.9% of people aged 6 months to under 65 years in a clinical risk group were vaccinated against influenza. The vaccine uptake was similar to last season (48.6%) however the total number of patients registered and the total number of patients vaccinated had also increased this season.

Uptake levels of 70% or higher in 65 and over age group was seen in most NHS England Local Teams. Uptake of 50% or higher for patients aged 6 months to under 65 years in clinical at risk groups was seen in 8/14 NHS England Local Teams. These results are encouraging as they are on track to achieving the ambition targets.

Vaccine uptake in pregnant women was 47.2% which was an increase compared to 44.9% in 2016 to 2017. Midwifery services have a key role in maximising uptake amongst pregnant women. If the influenza vaccine is offered through maternity services as part of routine care it is important that these immunisations are recorded in the individual's electronic GP record in a timely manner and that GPs update patient records with their patient's pregnancy status to optimise data quality. The number of patients registered and the number of vaccinations delivered for this cohort showed to have increased compared to last season however monitoring vaccine uptake in pregnant women can be challenging when determining an accurate denominator (see data limitations on page 11).

Vaccine uptake varies between the different disease groups and by age category for those with an underlying clinical risk factor 6 months to 65 years of age. The diabetes risk group continues to have the highest uptake rate at 65.4% which also increased compared to last season (64.7%) Following the recommendation from the JCVI and its inclusion in the Green book, patients with morbid obesity (BMI≥40) were also recorded. Vaccine uptake in all patients aged under 65 years with morbid obesity was 39.2% which was an increase compared to 30.4% in 2016 to 2017.This season vaccinating patients with morbid obesity with NO other clinical risk factor attracted payment under DES.

The childhood LAIV programme, which was first implemented in 2013 to 2014, continued its roll-out in 2017 to 2018, targeting 2 and 3 year olds in primary care and all children of school year reception, 1, 2, 3 and 4 for the first time across the UK. Vaccinations for school years reception, 1, 2, 3 and 4 were delivered through schools and uptake in these cohorts have all increased on last year’s figures; a separate report has been published on the GOV.UK website.

This report has highlighted subsections of the population Team) that continue to have the lowest uptake in the 2017 to 2018 season (London- NHS England Team) for all eligible cohorts (65 and over, under 65 at-risk, all pregnant women, all 2 year old children and all 3 year old children). Further work is needed to identify underpinning reasons so that uptake is improved for these groups in future seasons to be in line with national observed and uptake ambitions.

Overall we see a successful influenza vaccine uptake campaign in 2017 to 2018 and monitoring in the eligible cohorts will continue in future seasons.

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- the ImmForm helpdesk and development team that provided and supported the online survey