Public Health England

Protecting and improving the nation's health

Influenza immunisation programme for England

GP patient groups

Data collection survey
Season 2015 to 2016

This collection has received approval from the Standardisation Committee for Care Information (SCCI), the new national gateway body for care information collection requests

About Public Health England

Public Health England exists to protect and improve the nation's health and wellbeing, and reduce health inequalities. It does this through world-class science, knowledge and intelligence, advocacy, partnerships and the delivery of specialist public health services. PHE is an operationally autonomous executive agency of the Department of Health.

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Executive summary

The purpose of the traditional seasonal influenza immunisation programme for England is to offer protection to those who are most at risk of serious illness or death should they develop influenza. 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 2015 to 2016, targeting two to four year olds in primary care and all children of school year 1 and 2 age for the first time across the UK. Ultimately this programme will target all children two to 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[2]. NHS England area teams (ATs) or clinical commissioning groups (CCGs) act on behalf of ATs to ensure that plans are in place.

The PHE Influenza Surveillance Team has responsibility to co-ordinate and facilitate the national collection and reporting of data on the uptake of the influenza vaccine.

The collection monitors and tracks vaccine uptake during the influenza season to provide a snapshot of the vaccination status of people who are currently registered at the GP practice on the day of data extraction. The data collection survey for influenza immunisation in England is not designed to assist GP payments.

The programme for 2015 to 2016 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 27 March 2015[3]. It was recommended that influenza vaccine be offered to the following eligible GP patient groups[4].

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[1] Joint Committee on Vaccination and Immunisation. Meeting minute.5 Oct 2011. London. Available from: http://webarchive.nationalarchives.gov.uk/20120907090205/http://www.dh.gov.uk/prod_consum_dh/groups/dh_digitalassets/@dh/@ab/documents/digitalasset/dh_133598.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'). www.gov.uk/government/uploads/system/uploads/attachment_data/file/127322/Primary-Medical-Services-Directed-Enhanced-Services-Directions-20153.pdf.pdf

[3] The annual flu letter is accessible from the following link on the GOV.UK website (gateway reference 2014833);https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/418428/Annual_flu_letter_24_03_15__FINALv3_para9.pdf

[4] For further description and detail regarding patient groups eligible for influenza vaccine see Appendix 1.

- all patients aged 65 years and over
- all patients aged six months to under 65 years, in a clinical at-risk group
- all patients aged two, three and four 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 1 and 2 (aged 5 rising to 7 year olds) commissioned primarily via a school-based programme, although in a few areas vaccinations were delivered through alternative schemes such as community pharmacies and general practices[6].

The aspirational target for vaccine coverage in 2015 to 2016 is to reach or exceed 75% uptake for people aged 65 years and over as recommended by the World Health Organization (WHO).

Cumulative data on vaccine uptake in the GP-registered population in England[7] was gathered from GPs online via the web-based reporting system, ImmForm. Data was collected in the ImmForm system through pre-specified, automated uploads or entered manually. The 2015 to 2016 influenza survey comprised a weekly sentinel return and four (retrospective) monthly returns on cumulative vaccinations administered from 1 September 2015[8] up to end October 2015, end November 2015, end December 2015 and end 31 January 2016 (inclusive).

The 2015 to 2016 influenza vaccine uptake (GP patient survey) data collection received approval from the Standardisation Committee for Care Information (SCCI)[9], the new national gateway body for care information collection requests.

This report describes the uptake of influenza vaccine amongst eligible GP patient groups during the 2015 to 2016 vaccination programme in England. The data gathered in February 2016 for the final cumulative [January] survey are presented in this report. Uptake is shown by different eligible and clinical at-risk groups and by age, with comparisons to uptake achieved in previous season's collections.

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[5] The definition of a carer can be found on page 44.

[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).

[8] Although the vaccination programme does not start until 1 October, some practices receive vaccine supplies in September and may start their vaccinations before 1 October. Therefore, for collection purposes, data are sought for vaccinations from 1 September 2015 onwards.

[9] SCCI for this survey can be found here:
http://www.hscic.gov.uk/media/18448/2045332015isn/pdf/2045332015isn.pdf

Key findings

Survey response

A total of 7,613 out of 7,630 GPs in England (99.8%), covering all 13 Local NHS Teams returning data for the final January 2016 survey on cumulative influenza vaccinations administered from 1 September 2015 to end of 31 January 2016.

National vaccine uptake

The percentages for national vaccine uptake are:

- those aged 65 years and over was 71.0%
- those aged six months to under 65 years in one or more clinical at-risk groups[10] was 45.1%
- all pregnant women was 42.3 %
- all two-year-olds was 35.4 %
- all three-year-olds was 37.7 %
- all four-year olds was 30.0 %
- those aged under 65 years in a clinical at-risk group[11] was 45.1 % overall, ranging from 18.6 % in the six months to under two years age category to 48.1 % in the two to under five years age category.
- clinical at-risk group(s) ranged from 30.0 % in patients with morbid obesity (BMI≥40) to 65.5% in patients with diabetes
- clinical at-risk groups by age varied; the lowest level was observed in the younger age group aged six months to under two years at 1.7% in patients with morbid obesity followed by patients with chronic degenerative neurological disease (including stroke/TIA, cerebral palsy or MS)) where uptake was 17.7%. Highest uptake remained in patients with diabetes aged 16 to under 65 years at 65.7%.
- uptake for carers was 37.4%
- Overall uptake has decreased in all cohorts in England but uptake in the other devolved administrations have also seen a decrease in vaccine uptake[12].

[11] Patients aged six months to under 65 years in risk groups (excluding pregnant women without other risk factors)

[12] See vaccine uptake figures in the Flu Annual report: https://www.gov.uk/government/statistics/annual-flu-reports

Methods

The monitoring period for the 2015 to 2016 influenza vaccine uptake collection ran from 1 September 2015 to 31 January 2016 inclusive.

The data collection comprised of:

- all data are cumulative on influenza vaccinations administered during this period and were collected from all GPs in England in four retrospective monthly surveys[13]. 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 6 September 2015 to week ending 31 January 2016
- four monthly surveys from all practices (ie automatic and manual submissions) on vaccinations up to end October, end November, end December and end January (with collection starting from November 2015 through to February 2016), to provide more complete data

Data on influenza vaccine uptake were submitted by GP practices and/or AT immunisation influenza coordinators in England. Data were submitted on the ImmForm reporting website either via an automated extraction (XML bulk upload or a web service) provided by third party GP IT software suppliers (who extract data directly from GP computer systems)[14] or by PRIMIS. Automated data extraction results in an almost zero burden on GPs in providing the data. The automated upload of data is an efficient method for capturing vaccine uptake data reducing the burden on GPs and ATs, and eliminates the typographical and transcription errors that may occur with manual data entry.

The dataset can be found in Appendix 2 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 .

ImmForm

The ImmForm reporting website, hosted by Infomax Ltd provides a secure platform for vaccine uptake data collection for several immunisation surveys, including the influenza vaccine uptake collection.

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[13] The first collection was the 'October' survey which took place at the start of November 2015 for data on vaccinations administered from 01/09/2015 up to end 31/10/2015. The second was the 'November' survey which took place at the start of December 2015 for data on vaccinations administered from 01/09/2015 up to end 30/11/2015. The third was the 'December' survey which took place at the start of January 2016 for data on vaccinations administered from 01/09/2015 up to end 31/12/2015 and the final collection was the 'January' survey which took place in February 2016 for cumulative data on vaccinations administered from 01/09/2015 up to end 31/01/2016.

[14] 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.

Influenza vaccine uptake data are submitted on-line via the ImmForm website (accessed via www.immform.dh.gov.uk) either through an automated data extraction (normally performed by a GP IT software supplier extracting data directly from GP computer systems) or by an on-line manual submission.

Data are submitted at GP practice level and can then be aggregated at CCG, AT or national [England] level as required. During the data collection period the NHS was able to use specific tools and functions 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)
- compare influenza vaccine uptake and performance anonymously with other GP practices/ATs/CCGs at local, regional and national levels allowing data providers to compare their own performance with other organisations
- validate the data at point of entry and correct any errors before data submission
- view uptake data in various formats (for example, as bar charts) including downloading data to EXCEL (in portrait or landscape mode) as well as having access to data from previous influenza seasons to compare with the current programme
- allow ATs to view a 'non-responder' report which highlights those GP practices within the AT who have failed to submit data thus allowing the AT to follow-up with these practices to obtain and submit outstanding data.

Data limitations

Denominator data for some dataset categories should be interpreted with caution due to data validation and data quality issues. A summary of these findings is discussed below.

Overall extrapolated numbers of registered GP patients in England have increase by 0.9% from 2014 to 2015. This is in line with the Office for National Statistics (ONS) mid-year estimates of 0.8% (for 2014). However, we know that there are denominator inflations within the at-risk groups and pregnant women.

Morbid obesity

Morbid obesity was recommended as a risk group by the Joint Committee on Vaccination and Immunisation in October 2014. Many in this patient group will already be eligible due to complications of obesity that place them in another risk category. Practices will need to use clinical judgement to decide whether to vaccinate this group of patients, but vaccinations for patients with morbid obesity with no other recognised risk factor will not attract a payment as part of the GP contract under the Primary Medical Services (Directed Enhanced Service) Directions (the 'DES') 2015 to 2016.

Early speculation suggested that morbid obesity was leading the increase in the denominator inflation for this season, but our investigations suggest that although it contributes to the denominator inflation, it is not the main driver of it. The total at-risk denominator for six months to under 65 year olds has increased overall by ~13.2% (795,825). It is estimated that 15-20% (~186,000) increase is down to morbid obesity with no other risk factors.

Pregnant women data: denominator variance

Ever since the category of pregnant women was included in 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 2015 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.

Given these, it would be advisable for GP practices to proactively check their patient database before September for women who were pregnant but subsequently are no longer pregnant at the start of the programme. These women would therefore need to be excluded from the denominator and the process repeated throughout September to January in order to identify women who are not pregnant at the start of the immunisation programme but become pregnant during the winter.

Taking into account the relatively small number of pregnant women in each practice at any one time, the task of identifying them could be dealt with by conducting a manual search in order to ensure GP systems are updated. One GP IT supplier (EMIS) has now created a test query for their practices as an 'incorrect pregnancy' search to highlight these patients to the practices to audit their list for call and recall of pregnant patients.

This process will also need to include liaising with midwifery services as they may take much of the maternity care previously based in general practice. Thus, should a pregnant woman receive advice regarding seasonal influenza immunisation at their ante-natal class and/or receive the influenza vaccine, it is important that the patient's GP practice is informed in a timely manner so that their electronic records can be updated accordingly, and included in vaccine uptake data collections. A delay will inevitably mean an increased probability for pregnant women that the GP's electronic record for this cohort is not always up to date resulting in the numerator (number of patients vaccinated) being discrepant.

ONS live birth data (only available up to 2014) shows that the general fertility rate had a slight decrease from 2013 to 2014[15]. This seemed to be partly reflected in our denominators for pregnant women in the 2013 to 2014 and 2014 to 2015 season, where there was a 1.6% decrease. Although, there were slight changes in the general fertility rates in the last few years, these changes seem to be fairly gradual and would not support the large increase in the denominator seen in the survey this season (the overall denominator increase for pregnant women was 11.4% from 2014 to 2015, to 2015 to 2016). The reason for this increase is unclear.

Further investigation in collaboration with GP IT suppliers will hopefully resolve any underlying data collection issues. Recording data by pregnant women has remained a challenging task however Wales are trialling other ways of recording such as recording vaccination at point of delivery within midwifery services[16].

Snapshot of influenza vaccine uptake data

It is important to note that influenza vaccine uptake data is only a snapshot of the registered GP patients vaccinated at the time of data extraction/end of the data collection. These data will, therefore, not include patients who have received the vaccine but have subsequently died, who have since moved, those reaching the age of six months, women becoming pregnant, patients changing clinical status (ie 'joining' or 'leaving' a clinical risk group), patients changing carer status and 'temporary'[17] patients who may have received the vaccine but were not registered on the date of data extraction.

Consequently, 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'. This will also exclude the prison

[15] ONS Birth Summary Tables, England and Wales: 2014 accessed on 18/05/2016. https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/livebirths/datasets/birthsummarytables

[16] See the Flu Annual Report: Winter 2015 to 16 that can be found on the GOV.UK website via https://www.gov.uk/government/statistics/annual-flu-reports

[17] If there is an increase in temporary patients that falls by the time of the final data collection then this will not be recorded. This would only affect the total number of patients vaccinated but would not affect overall vaccine uptake rates unless proportionally more temporary residents were vaccinated than permanent residents.

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.

Other Healthcare Settings

This season the number of patients vaccinated in a school, pharmacy and other healthcare setting was also 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 IT suppliers. In 2015 to 2016 community pharmacies were commissioned to administer influenza vaccinations to those aged 65 and over and any patient aged 18 to under 65 in a clinical risk group.

Overall, it is not clear whether all patients without a location code were indeed vaccinated in the GP practice. Whilst the number 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. As pharmacy vaccinations in those aged 65 and over have been commissioned for the past few years, uptake is relatively high when compared to other cohorts, although pharmacy delivery overall remains low. 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 all five and six years olds 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, this cohort for this survey remains experimental until data flows between the Child Health Information Systems and GP records[18] have been improved.

Ethnicity

Ethnicity was newly collected last season in 2014 to 2015 but not published due to data quality issues. This season, PHE received data from more practices and the number of active ethnicity codes[19] was available for 23% of the GP registered population. Ethnicity data, an optional field in the GP survey was collected using the NHS standard, 2001 Census categories.

The 2011 ONS Census is deemed as a gold standard for comparison. Percentages were calculated for each harmonised ethnic group and compared to estimate completeness of

[18] 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

[19] Active codes are codes that we were able to assign to an ethnicity grouping and does not include patients were had codes such as ethnicity not stated/not recorded/not given or patient refused. These non-active codes represented 20.5% of the GP registered population.

the GP data. Data was therefore harmonised into five comparable ONS recommended ethnic groupings for comparison with the latest 2011 Census categories[20], see Figure 1.

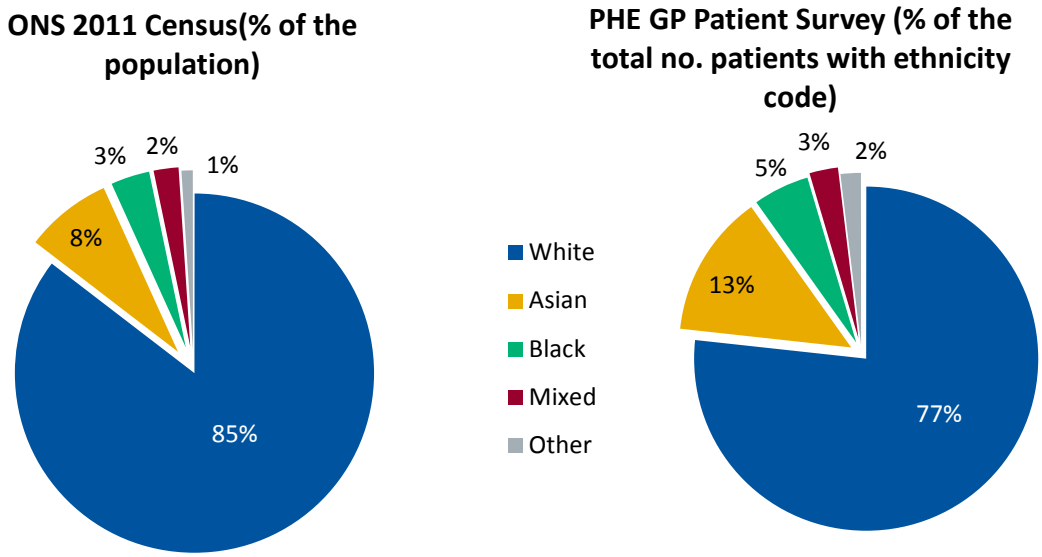
There are marked differences between the GP survey and ONS proportions of ethnic groups. There is a greater chance of an ethnicity code being assigned to a patient record if the patient is in a non-White ethnic group.

Higher recording of ethnicity generally occurs in more ethnically diverse areas.

This cohort remains experimental and caution must be exercised when interpreting these results as we are aware of marked disagreements in the extract at lower hierarchies. Most of these do not affect the overall outcome at a national level but it is a clear limitation for local areas wishing to use this data.

This data is also not stratified by age or gender.

Figure 1 Distribution of harmonised ethnic groupings in ONS 2011 Census data compared with the PHE GP patient survey for 2015 to 2016



[20] Office for National Statistics, Ethnicity and national identity in England and Wales (2011) Available online: http://www.ons.gov.uk/ons/dcp171776_290558.pdf

Results

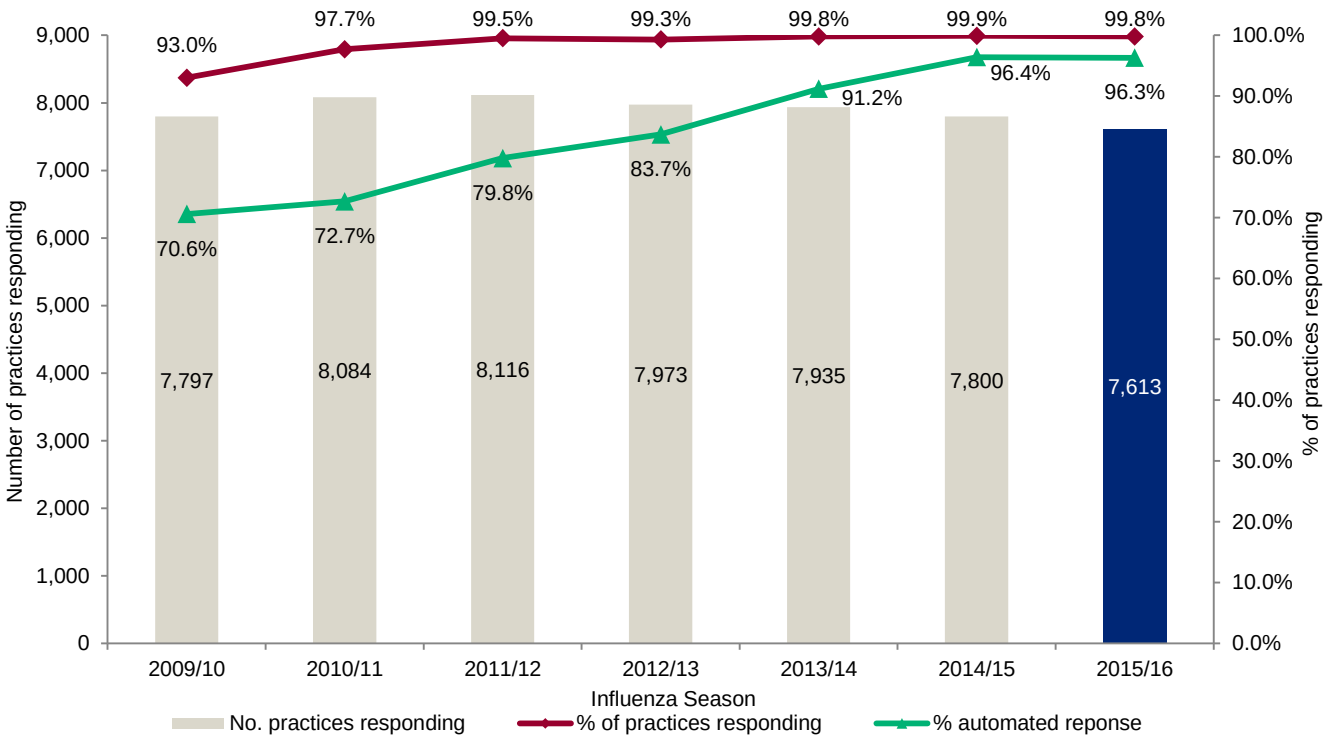
Full data tables showing final influenza vaccine uptake for each of the recommended target groups at AT and CCG level described in the results section of this report are available to access at the following link:
www.gov.uk/government/collections/vaccine-uptake

GP practice response

A total of 7,613 out of 7,630 GPs in England (99.8%), covering all 13 Local NHS Teams returned data for the final January 2016 survey on cumulative influenza vaccinations administered from 1 September 2015 to end of 31 January 2016. With the increase in practices automating their returns to the survey, the response rate for the end of the season has remained above 99% of all practices in England since 2011/12.

- 60% of ATs(15/25) achieved a response rate of 100% for their GP practices
- 92.4% of CCGs (195/211) achieved a response rate of 100%.

Figure 2 Number and percentage of GP practices responding in 2015 to 2016 compared with recent survey years.



Data entry/extraction methods:

- the increased use of automated data extraction and upload mechanisms provided by GP IT software suppliers has to date accounted for just over 96% of GPs in England (7,350 out of 7,630) choosing to submit monthly automated data in the 2015 to 2016 campaign, a slight decrease from last season
- manual submissions amounted to 3.4 % of GP practices (263/ 7630) typing data directly on the ImmForm website – this is a slight decrease from last season where the number of manual practices submitting data was 3.5 % (270 /7,809).

Weekly versus monthly vaccine uptake comparison (provisional data)

The following points were noted:

- weekly and monthly data were overall in good agreement, with the provisional national results from the four 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 80% of GPs submitted data . The response rate ranged from 42.2% in week 43 to 94.4% in week 3. The low response in week 43 was down to a technical issue where one supplier had to resubmit their data due to validation errors.

Patients aged 65 years and over

Vaccine uptake in patients over 65 years was 71.0% in 2015 to 2016, a slight decrease from 72.7% in 2014 to 2015.

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 2016, was just under 7.1 million (n= 7,088,965) [21].This is a decrease of over 74,148 patients vaccinated aged 65 and over compared to 2014 to 2015 (n= 7,163,113) (Table 1, Figure 3 and Figure 4).

The following results were achieved for patients aged 65 years and over:

- uptake by AT from the lowest at 66.4% (London[22]) to the highest at 74.0% (Greater Manchester)
- uptake by CCG ranged from the lowest at 57.3% (Central London (Westminster)) to the highest at 78.2% (Rushcliffe)
- no ATs achieved the WHO target uptake rate of 75% or more, compared to 6 ATs last season

[21] 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 GPs 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.

[22] London is also a region and uptake here is usually much lower than the national average due to its own challenges. The second lowest uptake was seen in Essex with 68.4%.

- 17 CCGs (8.1%) achieved the WHO target uptake rate of 75% or more compared to 50 CCGs last season.

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

Vaccine uptake in patients six months to under 65 years in a clinical at-risk group decreased from 50.3% in 2014 to 2015 to 45.1% in 2015 to 2016 (Table 2).

The extrapolated estimate of the total number of patients aged six 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 2016, was just under 3.1 million (*n*= 3,086,010), with an additional 49,118 patients estimated to have been vaccinated in 2015 to 2016 compared to 2014 to 2015[23]. (See Table 2, Figure 3 and Figure 4)**.**

The following results were achieved for patients aged six months to 65 years:

- uptake by AT ranged from the lowest of 39.4% (Essex) to the highest at 49.6% (Greater Manchester)
- uptake by CCG ranged from the lowest at 26.9% (Central London (Westminster)) to the highest at 56.5% (Stockport).

Table 1 Actual and extrapolated estimate of number of patients registered and who received influenza vaccine during the 2015 to 2016 vaccine uptake campaign

Target groups for vaccination*	Number of patients registered	Number of patients vaccinated	% vaccine uptake
Aged 65 and over	9,964,293	7,073,170	71.0
Aged 65 and over extrapolated	9,986,543	7,088,965	71.0
Aged 6 months to under 65 years in a clinical risk group (excluding pregnant women without other risk factors and carers)	6,821,163	3,079,134	45.1
Aged 6 months to under 65 years in a clinical risk group (excluding pregnant women without other risk factors and carers) extrapolated	6,836,395	3,086,010	45.1
Total actual (65+ and under 65 at risk)	16,785,456	10,152,304	60.5
Total extrapolated (65+ and under 65 at risk)	16,822,938	10,174,974	60.5

*This does not include frontline health and social care workers who were also eligible to receive influenza vaccine in the 2015 to 2016 vaccination campaign (unless they were vaccinated at the GP practice and their vaccination details were entered on their GP

[23] 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 GPs 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.

practice's electronic record). Vaccine uptake data for frontline healthcare workers are collated in a separate survey and reported separately.[24]

Figure 3 Influenza vaccine uptake for those aged 65 and over and 65 at risk from 2000 to 2001 through to 2015 to 2016 for England.

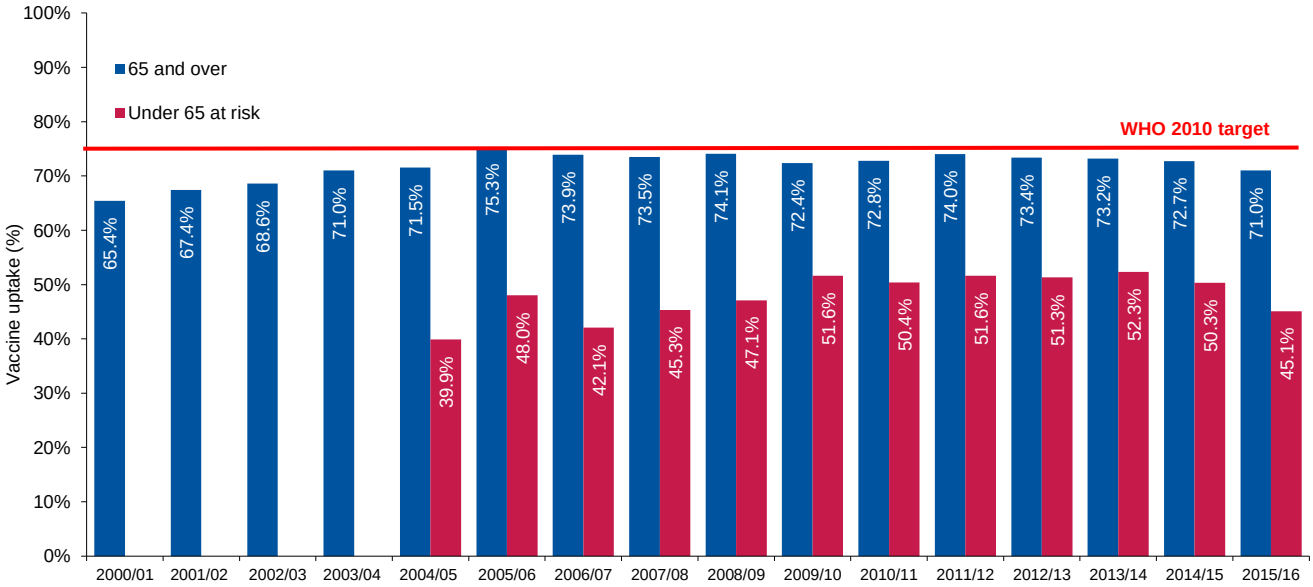
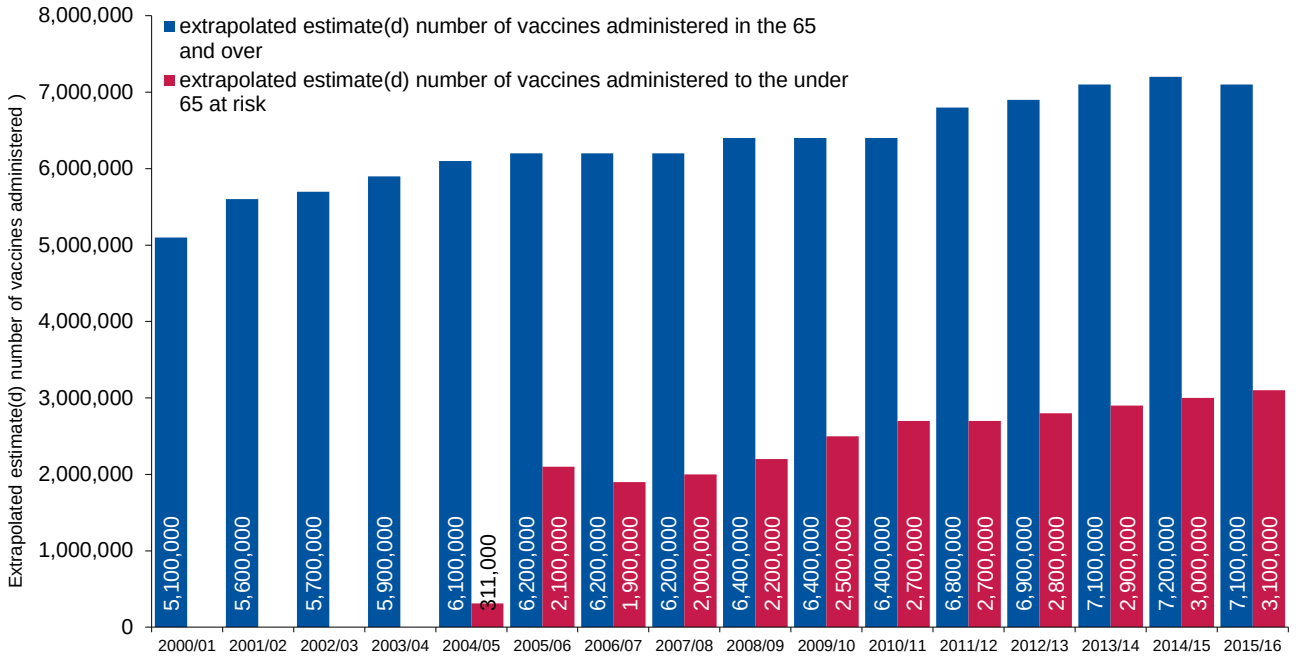


Figure 4 Extrapolated estimate(d) number of vaccines administered in the 65 and over, and under 65 at-risk for each survey year between 2000 to 2016 (cumulative data to end of January 2016) based on 100% GP response.



[24] Available at the following link; www.gov.uk/government/collections/vaccine-uptake

Pregnant women[25]

Vaccine uptake in pregnant women decreased from 44.1% in 2014 to 2015 to 42.3% in 2015 to 2016. This decrease is mostly due to the increase in the denominator for both pregnant women in a clinical risk group and not in a clinical risk group. The number of vaccinations among pregnant women has actually increased by 19,674 vaccinations (extrapolated figure) since last season. The denominator inflation for pregnant women is under further investigation, see data limitations section of this report.

Table 2 Actual and extrapolated estimate number of pregnant women registered and who received an influenza vaccine during the 2015 to 2016 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)	**722,670**	**305,478**	**42.3**
All pregnant women extrapolated	724,284	306,160	42.3
Pregnant women and **in** a clinical risk group	78,676	44,005	55.9
Pregnant women and **in** a clinical risk group extrapolated	78,852	44,103	55.9
Pregnant women **not in** a clinical risk group (otherwise 'healthy women')	643,994	261,473	40.6
Pregnant women **not in** a clinical risk group (otherwise 'healthy women') extrapolated	645,432	262,057	40.6

Regional and local vaccine uptake:

- uptake for all pregnant women by AT ranged from the lowest at 36.7% (East Anglia) to the highest at 49.4 % (South Yorkshire and Bassetlaw)
- uptake by CCG for all pregnant women ranged from the lowest at 28.1% (Corby) to the highest at 63.7% (Stockport)
- uptake in pregnant women **in** a clinical risk group was 55.9% - the lowest uptake by AT was 52.3% (North Yorkshire and Humber) and the highest was 62.6% (South Yorkshire and Bassetlaw)
- uptake in pregnant women **in** a clinical risk group by CCG ranged from starting with the lowest at 25.7% (Windsor, Ascot and Maidenhead) to the highest at 77.7% (Stockport)
- uptake in pregnant women **not** in a clinical risk group was 40.6%, - the lowest uptake by AT was 34.6% (East Anglia) and the highest was 47.9% (South Yorkshire and Bassetlaw).

[25] Data on the uptake of influenza vaccine by pregnant women need to be interpreted with caution. It is likely that influenza vaccine uptake by pregnant women is underestimated due to denominator inflation but it is not possible to determine the scale of the underestimation and it could vary considerably between data providers. Comparisons with estimated uptakes in other eligible groups are likely to be unreliable (for more information See 'Data Limitations' section of this report).

All two-year-olds

Uptake in all two-year-olds was 35.4% in 2015 to 2016 which has decreased slightly from 38.5% in 2014 to 2015. This decrease was seen in both the at-risk and not at-risk cohorts. There was an increase in the two year old population compared to last year and a decrease in the number of vaccinations.

Those aged two and not in a clinical risk group, uptake was 35.0% compared to 38.1% in 2014 to 2015. Vaccine uptake for those aged two and in a clinical risk group was 48.3% uptake compared to 53.7% in 2014 to 2015.

Table 3 Actual and extrapolated estimate number of two-year-olds registered and who received influenza vaccine during the 2015 to 2016 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)	**693,159**	**245,395**	**35.4**
All 2 year olds (includes both 'healthy and at risk) extrapolated	694,707	245,943	35.4
Aged 2 and **in** a clinical risk group	20,531	9,918	48.3
Aged 2 and **in** a clinical risk group extrapolated	20,577	9,940	48.3
Aged 2 and **not in** a clinical risk group	672,628	235,477	35.0
Aged 2 and **not in** a clinical risk group extrapolated	674,130	236,003	35.0

Regional and local vaccine uptake:

- uptake for all two-year-olds by AT ranged from the lowest at 26.6% (London) to the highest at 45.3% (Bath, Gloucestershire, Swindon and Wiltshire)
- uptake by CCG ranged from the lowest at 16.5% (West London (K&C &QPP)) to the highest at 69.0% (Corby)
- uptake in two-year-olds **in** a clinical risk group has decreased to 48.3% compared to 53.7% last season. The lowest uptake by AT was 39.9% (London) and the highest was 58.5% (Bath, Gloucestershire, Swindon and Wiltshire)
- uptake by CCG in two-year-olds **in** a clinical risk group ranged from the lowest at 22.2% (West London (K&C &QPP)) to the highest at 76.1% (Eastern Cheshire)
- uptake in two-year-olds **not** in a clinical risk group has decreased to 35.0% compared to 38.1 % last season. The lowest uptake by AT was 26.3% (London) and the highest was 44.9% (Bath, Gloucestershire, Swindon and Wiltshire)
- uptake by CCG for two-year-olds **not** in a clinical risk group ranged from the lowest at 16.4% (West London (K&C &QPP)) to the highest at 68.7% (Corby).

All three-year-olds

Uptake in all three-year-olds was 37.7% in 2015 to 2016 (Table 4) compared to 41.3 % in 2014 to 2015. Even though the total registered population of three year olds is 26,970 patients less than last year, we have seen a decrease in uptake in both those in a clinical risk group and those not in a clinical risk group. When compared to the two year olds' uptake last season who would have been three year olds this season, more children in a

clinical at risk group have been vaccinated, but the number of children in a clinical risk group has increased.

Table 4 Actual and extrapolated estimate number of three-year-olds registered and who received influenza vaccine during the 2015 to 2016 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)	**711,905**	**268,165**	**37.7**
All 3 year olds (includes both 'healthy' and at risk) extrapolated	713,495	268,764	37.7
Aged 3 and **in** a clinical risk group	29,537	15,442	52.3
Aged 3 and **in** a clinical risk group extrapolated	29,603	15,476	52.3
Aged 3 and **not in** a clinical risk group	682,368	252,723	37.0
Aged 3 and **not in** a clinical risk group extrapolated	683,892	253,287	37.0

Regional and local vaccine uptake:

- uptake for all three-year-olds by AT ranged from the lowest at 28.8% (London) to the highest at 46.9% (Bath, Gloucestershire, Swindon and Wiltshire)
- uptake by CCG for all three-year-olds ranged from the lowest at 15.3% (West London (K&C &QPP)) to the highest at 55.5% (North Derbyshire)
- uptake in three-year-olds **in** a clinical risk group was 52.3% compare to 56.4% last season
- the lowest uptake in three-year-olds **in** a clinical risk group by AT was 44.0% (London) and the highest was 62.3% (Bath, Gloucestershire, Swindon and Wiltshire)
- uptake by CCG for three-year-olds **in** a clinical risk group ranged from the lowest at 25.0% (West London (K&C &QPP)) to the highest at 74.6% (Vale Royal)
- uptake in three-year-olds **not** in a clinical risk group was 37.0% compared to 40.7% last season
- the lowest uptake for three-year-olds **not** in a clinical risk group by AT was 28.3% (London) and the highest was 46.3% (Bath, Gloucestershire, Swindon and Wiltshire)
- uptake by CCG for three-year-olds **not** in a clinical risk group ranged from the lowest at 15.0% (West London (K&C &QPP)) to the highest at 55.1% (North Derbyshire).

All four-year-olds

Uptake in all four-year-olds was 30.0% in 2015 to 2016 (Table 5) compared to 32.9% in 2014 to 2015.

Table 5 Actual and extrapolated estimate number of four-year-olds registered and who received influenza vaccine during the2015 to 2016 vaccine uptake campaign

Target groups for vaccination	Number of patients registered	Number of patients vaccinated	% vaccine uptake
All 4 year olds (includes both 'healthy' and at risk)	**714,059**	**214,506**	**30.0**
All 4 year olds (includes both 'healthy' and at risk) extrapolated	**715,654**	**214,985**	**30.0**
Aged 4 and **in** a clinical risk group	37,426	17,705	47.3
Aged 4 and **in** a clinical risk group extrapolated	37,510	17,745	47.3
Aged 4 and **not in** a clinical risk group	676,633	196,801	29.1
Aged 4 and **not in** a clinical risk group extrapolated	678,144	197,240	29.1

Regional and local vaccine uptake:

- uptake for all four-year-olds by AT ranged from the lowest at 21.7% (London) to the highest at 38.5% (Bath, Gloucestershire, Swindon and Wiltshire)
- uptake for all four-year-olds by CCG ranged from the lowest at 12.6% (West London (K&C &QPP)) to the highest at 51.4% (North Derbyshire)
- uptake for all four-year-olds **in** a clinical risk group by AT ranged from starting with the lowest at 39.5% (London) to the highest at 57.4% (Bath, Gloucestershire, Swindon and Wiltshire)
- the lowest uptake in four-year-olds **in** a clinical risk group by CCG was 26.3% (Wyre Forest) and the highest was 65.3% (Eastern Cheshire)
- the lowest uptake in four-year-olds **not** in a clinical risk group by AT was 21.0% (London) and the highest was 37.3% (Bath, Gloucestershire, Swindon and Wiltshire)
- uptake by CCG for four-year-olds **not** in a clinical risk group ranged from the lowest at 12.1% (West London (K&C &QPP)) to the highest at 50.8% (North Derbyshire)

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

Uptake was 45.1% for all aged six months to under 65 years at-risk compared to 50.3% in 2014 to 2015. Morbid obesity was added to the survey in 2015 to 2016. Although it is recommended as a risk group, it does not currently attract payment under the directed enhanced services for GP practices. Caution must therefore be taken when interpreting the results as the denominator will have been inflated slightly due to the addition of this new risk group. The total at-risk denominator for six months to under 65 years old has increased overall by ~13.2% (795,825). This increase in denominator was seen in other devolved administrations[26]. It is estimated that 15-20% (~186,000) increase is down to

[26] See the Flu Annual report: https://www.gov.uk/government/statistics/annual-flu-reports

morbid obesity with no other risk factors. Further investigations into denominator inflation are underway.

Table 6 Actual and extrapolated estimate number of patients all aged six months to under 65 years at-risk registered by age group and who received influenza vaccine during the 2015 to 2016 vaccine uptake campaign

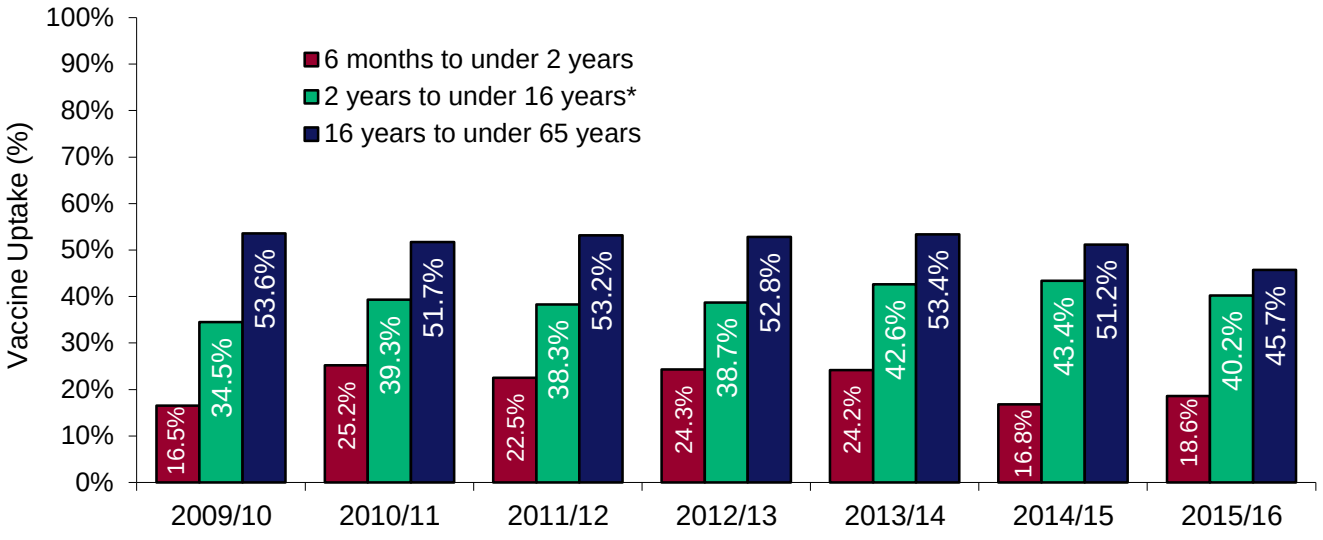
Target groups for vaccination	Number of patients registered	Number of patients vaccinated	% vaccine uptake
Total Actual 6 months under 65 years in a clinical risk group	**6,821,163**	**3,079,134**	**45.1**
Total extrapolated 6 months under 65 years in a clinical risk group	**6,836,395**	**3,086,010**	**45.1**
6 months to under 2 years in a clinical risk group	14,585	2,718	18.6
6 months to under 2 years in a clinical risk group extrapolated	14,618	2,724	18.6
2 years to under 5 years in a clinical risk group	77,023	37,051	48.1
2 years to under 5 years in a clinical risk group extrapolated	77,195	37,134	48.1
5 years to under 16 years in a clinical risk group	559,451	219,044	39.2
5 years to under 16 years in a clinical risk group extrapolated	560,700	219,533	39.2
16 to under 65 years in a clinical risk group	6,170,104	2,820,321	45.7
16 to under 65 years in a clinical risk group extrapolated	6,183,882	2,826,619	45.7

Uptake by age for those aged under 65 years in a clinical risk group remained lowest in children aged six months to under two years at 18.6%, however, this has increased compared to last season (16.8%) (Figure 5).

Uptake was higher in two years to under five years (48.1%) than the five years to under 16 years (39.2%). Overall uptake for aged two to under 16 years in total was 40.2%, lower than last season where uptake was 43.4%.

In those aged 16 to under 65 years, uptake decreased from 51.2% in 2014 to 2015 to 45.7% in 2015 to 2016.

Figure 5 Vaccine uptake in the under 65 at-risk by age group comparing recent survey years



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

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

Table 7 Actual and extrapolated estimate number of all aged six months to under 65 years at-risk registered by risk group and who received influenza vaccine during the 2015 to 2016 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 65years
Risk group:	% Vaccine uptake				
Patients with chronic heart disease	19.0	44.0	30.8	50.2	48.6
Patients with chronic respiratory disease	23.4	52.4	42.3	48.2	47.4
Patients with chronic kidney disease	35.4	46.7	33.8	53.8	53.5
Patients with chronic liver disease	29.5	48.8	37.2	42.6	42.5
Patients with diabetes	28.2	58.0	55.0	65.7	65.5
Patients with immunosuppression	26.4	53.9	43.3	53.2	52.9
Patients with Chronic Neurological Disease (including Stroke/TIA, Cerebral Palsy or MS)	17.7	43.4	32.9	50.1	49.0
Patients with Asplenia or dysfunction of the spleen	27.0	47.3	30.0	37.0	36.4
Patients with morbid obesity (BMI>=40)	1.7	36.2	14.2	30.2	30.0

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

Data represents on average 96.9% of all GP practices in England responding (7,392 / 7,630), who provided data across all optional at-risk group categories for the 2015 to 2016 vaccine uptake survey (Table 7, Figure 6). The lowest uptake by age band for the different risk groups are those aged six months to under two years, the only exception are those with chronic kidney disease where uptake is lowest for those aged five to under 16 years old.

The highest uptake overall was in patients with diabetes at 65.5%, which is lower than last year (68.1%). Across the age groups, patients with diabetes have the highest uptake except for the youngest age group, aged six months to under two years (28.2%) where patients with chronic kidney disease had the highest uptake of 35.4% followed by patients with chronic liver disease (29.9%) and then diabetes. The highest uptake for patients with diabetes was in those aged 16 to under 65 at 65.7% uptake.

Uptake in patients with chronic heart disease was 48.6%, lower than last season (50.1%). There was an increase of 2.2% in the denominator for chronic heart disease (which compares to an increase of 15% in the denominator last season and 3% in 2013 to 2014). The number of vaccinations has also decreased, by just over 4,000 patients (0.8% compared to last season).

Uptake in patients with chronic respiratory disease was 47.4% compared to 49.2% last season. The population for this cohort increased by 1% compared to previous increases of around 13% in 2014 to 2015 and 2% in 2013 to 2014.This population is the largest of the

individual risk groups and the number of vaccinations has also decreased the most. There was a 2.6% decrease in vaccinations, almost 40,000 less patients vaccinated this season than last season with chronic respiratory disease (n=38,828).

Uptake for patients with chronic kidney disease has decreased at 53.5% uptake compared to 55.6% last season. There was also a slight decrease in the number of patients with chronic kidney disease (-1.1%) since last season. This population has the largest percentage decrease (4.4%) in vaccinations amongst the individual risk groups from last season which equates to approximately 8,000 less vaccinations (n=7,992)).

Uptake for patients with chronic liver disease has remained at a similar uptake at 42.5% compared to 43.9% last season however the number of vaccinations has increased by 2.2% (1,603 more patients vaccinated).

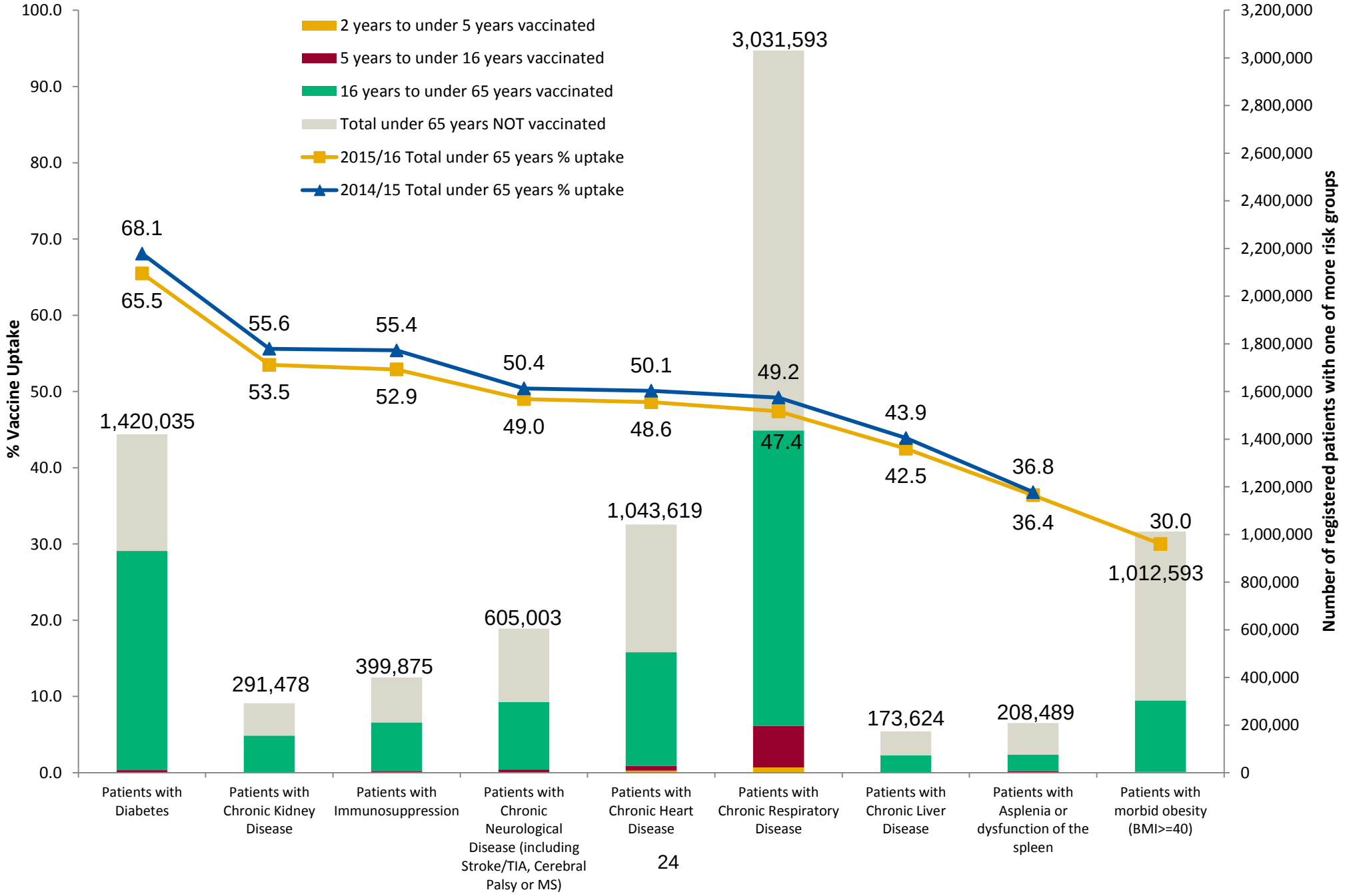
Uptake for patients with immunosuppression has decreased to 52.9% from last season's uptake of 55.4%. The number of patients recorded in this population has increased by 8.7% similar to last year where the population was around 6% higher. However, unlike last year where vaccination increased by 6%, this season the number of vaccinations has actually decreased by 1.6%, with approximately 3,000 less vaccinations (n=3,258).

Uptake for patients with degenerative neurological disease (including stroke/TIA and cerebral palsy or MS) was 49.0%, this is a decrease from 50.4% last season. The population has increased by 1.2% and the number of vaccinations has decreased by just less than 5,000 vaccinations (n=4,764).

Uptake for patients with asplenia or dysfunction of the spleen was collected for the second time this year, with an uptake of 36.4% similar to last season (36.8%). This population has increased by 4.4% and the number of patients vaccinated has also increased, with approximately 2,500 more patients vaccinated than last year (n=2,439).

Morbid obesity was newly introduced this season and as such there are no figures to compare it to. Despite this population being the fourth largest at risk population (see Figure 6) where uptake is the lower than other risk groups at 30.0%.

Figure 6 Extrapolated estimate(d) population and number of vaccines administered in individual risk groups aged six months to under 65 for 2015 to 2016 (cumulative data to end of January 2016) with percentage vaccine uptake (based on 100% GP response).



Carers

Table 8 Actual and extrapolated estimated number of carers aged under 65 years and not in a clinical risk group registered and who received influenza vaccine during the 2015 to 2016 vaccine uptake campaign.

Target groups for vaccination	Number of patients registered	Number of patients vaccinated	% vaccine uptake
Carers	369,401	138,189	37.4
Carers extrapolated	381,243	142,619	37.4
Number of carers refused/declined vaccine	23,033	n/a	6.2
Number of carers refused/declined vaccine extrapolated	23,771	n/a	6.2
Number of carers who have had a vaccination given by other healthcare providers	n/a	8,925	2.4
Number of carers who have had a vaccination given by other healthcare providers extrapolated	n/a	9,211	2.4

Vaccine uptake was lower for carers this year at 37.4% compared to last season (45.1%). 97.1% of GPs returned data for this cohort (7393/ 7630) this is a slight decrease since last year, where 97.7% of practices returned data. Although there has not been much change in the response rate, the extrapolated number of carers being registered in their GP record has decreased since last year by almost 18,000 carers and the extrapolated number of vaccinations has also decreased (37,000 less vaccinations) (Table 8). There was a slight increase in those who had refused/declined vaccination (648 more carers refused/decline since last season), though this does not explain the decrease in vaccination activity.

‘All patients’

Table 9 Actual and extrapolated figures for ‘All patients’ who received influenza vaccine by age band during the 2015 to 2016 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 actual 6 months under 65 years	47,247,188	5,298,817	11.2
Total extrapolated 6 months under 65 years	47,352,692	5,310,649	11.2
6 months to under 2 years	995,910	6,106	0.6
6 months to under 2 years extrapolated	998,134	6,120	0.6
2 years to under 5 years	2,098,909	661,423	31.5
2 years to under 5 years extrapolated	2,103,596	662,900	31.5
5 years to under 16 years	7,197,913	816,391	11.3
5 years to under 16 years extrapolated	7,213,986	818,214	11.3
16 to under 65 years	36,954,456	3,814,897	10.3
16 to under 65 years extrapolated	37,036,976	3,823,416	10.3

The total number of **all** patients aged six months to under 65 years (including those in a clinical at-risk group) who received a vaccine by the end of January 2016, was over 5.3 million (*n*= 5,310,649), representing a 11.2% vaccine uptake. This is an increase compared with last season where just over 5.1 million (n= 5,170,765) were vaccinated, representing a 11.0 % vaccine uptake rate. The majority of this increase in the number of vaccinations is in the 5 to under 16 year group which relates to the extension of the universal vaccination to all children of school years 1 and 2 (5 rising to 7 year olds)[27].

The actual total number of patients aged six months to under 65 years who received a vaccine who were not in a clinical risk group by the end of January 2016, was 5.5% at approximately 2.2 million (n= 2,224,640). This is higher than last season where 5.2% were vaccinated (n=2,131,420).

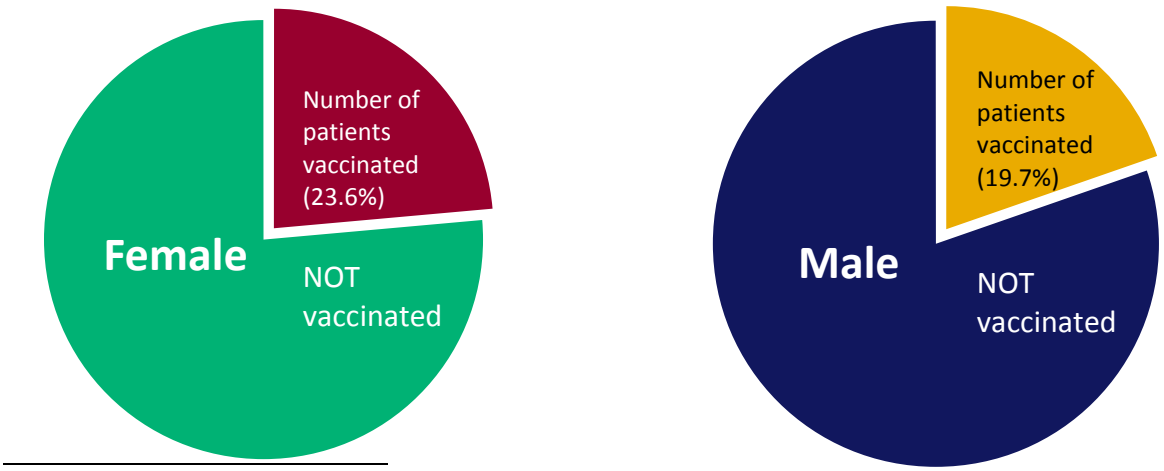
Gender

The uptake rate in females in 2015 to 2016 was very similar to last season at 23.6% compared to 23.8% in 2014 to 15. Uptake in males was 19.7% compared to 19.9% (Table 2, Figure 7).

Table 10 Actual number of registered patients by gender and who received the influenza vaccine during the 2015 to 2016 vaccine uptake campaign

Gender[28]	Number of patients registered	Number of patients vaccinated	% Vaccine uptake
Female	27,791,266	6,555,697	23.6
Female extrapolated	27,853,325	6,570,336	23.6
Male	27,522,388	5,417,985	19.7
Male extrapolated	27,583,846	5,430,083	19.7

Figure 7 Percentage of the female and male population that have been vaccinated.



[27] This is likely to be an underestimation as we know that not all vaccinations administered to children of school years 1 and 2 (5 rising to 7 year olds) 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

[28] Gender not specified has been removed due to small numbers

For females, overall uptake was lowest in London at 16.3%. The highest overall uptake for males was in Cumbria, Northumberland, Tyne and Wear Area Team with 27.6% uptake.

For males, overall uptake was lowest in London at 13.5%. The highest overall uptake for males was in Devon, Cornwall and Isle of Scilly with 23.7% uptake.

At CCG level, for females, the uptake rate ranges from 11.5% in Hammersmith and Fulham to 32.7% in North Norfolk. Similarly, for males, at CCG level, the rate ranges from 9.8% in Hammersmith and Fulham to 29.0% in North Norfolk. The uptake rates for male and female at CCG level reflect the highest and lowest uptake rates for total vaccine uptake in all GP registered patients aged six months and over[29] in England by CCG. Hammersmith and Fulham's vaccine uptake was 10.7% overall and North Norfolk's vaccine uptake was 31.7% overall.

Refused/declined[30]

The rate of refusals/ declines have increased for all target groups apart from those aged five to under 16 years and in a clinical risk group where the percentage of refusals/declines has remained the same since last season.

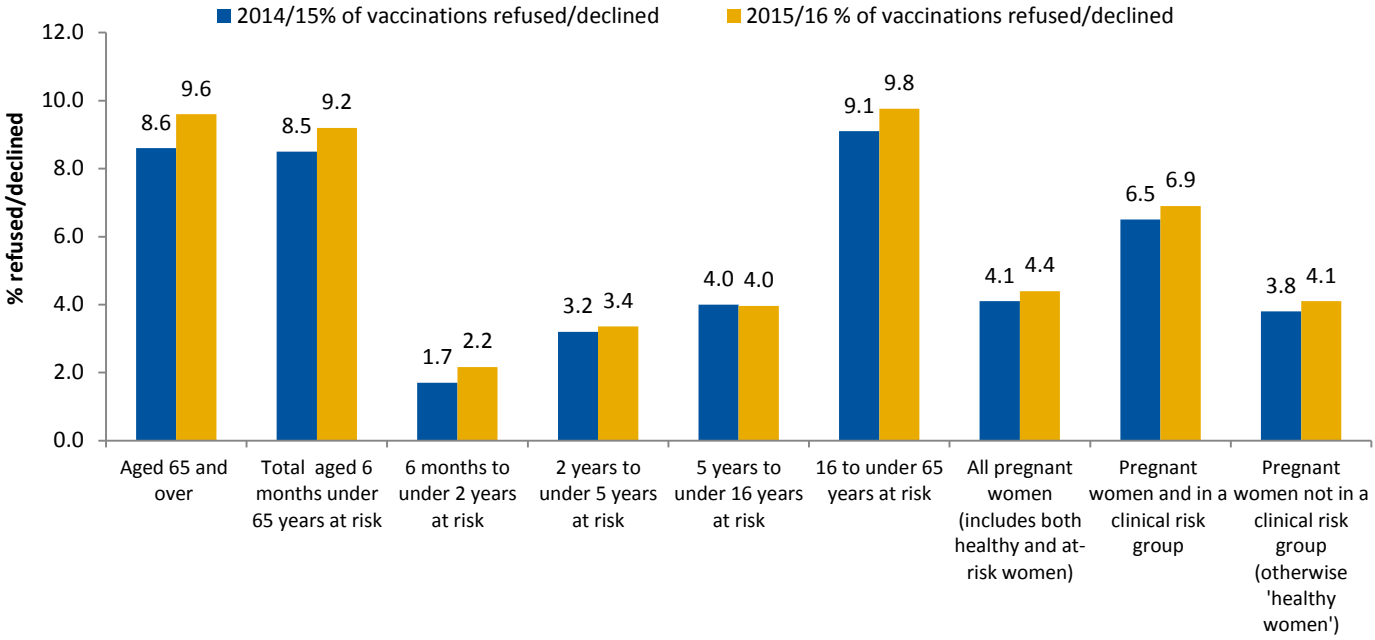
Table 11 Extrapolated number of registered patients who refused or declined the influenza vaccine during the 2015 to 2016 vaccine uptake campaign.

Target groups for vaccination (extrapolated)	Number of vaccinations refused/declined	% of vaccinations refused/declined
Aged 65 and over	962,012	9.6
Total aged 6 months under 65 years at risk	628,619	9.2
6 months to under 2 years at risk	317	2.2
2 years to under 5 years at risk	2,593	3.4
5 years to under 16 years at risk	22,236	4.0
16 to under 65 years at risk	603,474	9.8
All pregnant women (includes both healthy and at-risk women)	31,844	4.4
Pregnant women and **in** a clinical risk group	5,437	6.9
Pregnant women **not in** a clinical risk group (otherwise 'healthy women')	26,407	4.1

[29] Total patient population aged six months and over is calculated from the sum of those 'aged six months to under 65 years' and those 'aged 65 and over'.

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

Figure 8 Extrapolated estimate(d) number of vaccines refused/declined by target vaccination group for 2015 to 2016 (yellow bars) compared with 2014 to 2015 (blue bars) percentage vaccine uptake (based on 100% GP response).



The rate of refused/declined vaccinations is similar between those aged 65 and over (9.6%) and those aged six months to under 65 and in a clinical risk group (9.2%) (Figure 8).

Those aged 16 to under 65 and in a clinical risk group have the highest rate of refused/declined vaccinations at 9.8%.

In the younger age groups, the rate of refused/declined vaccinations is much lower, ranging from 2.2% in those aged six months to under 65 and in a clinical risk group to 4.0% in those aged five to under 65 and in a clinical risk group.

The rate of all pregnant women who refused/declined vaccination was 4.4% compared to 4.1% last season.

Other Healthcare Settings

This season the number of patients vaccinated in pharmacy and other healthcare settings was also 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 IT suppliers (see data limitations section of this report).

Although, the majority of vaccinations are still delivered within the GP practice, there is a gradual increase in vaccinations outside of practice. The highest number of pharmacy vaccinations was given to those aged 65 years and over with just under 280,000 vaccinations. London AT had the highest uptake by pharmacy for those aged 65 and over (Table 12).

Pregnant women had the highest vaccine uptake outside of the primary care setting at 7.5% which is higher than last season (2.2% of vaccinations given outside of the practice). These vaccinations are mainly in other healthcare settings likely to be from midwifery services.

Table 12 Extrapolated numbers of vaccinations and vaccine uptake by GP practices, pharmacies and other healthcare settings (OHS) in 2015 to 2016 vaccine uptake campaign.

Patient Group	Vaccine Uptake (%)	Number of vaccines Delivered in GP practices	Delivered in GP practices (% of vaccine)	Number of vaccines Delivered in pharmacies	Delivered in pharmacies (% of vaccine)	Number of vaccines Delivered in OHS	Delivered in OHS (% of vaccine)
Patients aged 65 years or older	71.0%	6,632,014	93.5%	279,037	3.9%	177,913	2.5%
Patients aged 6 months to under 65 years in risk groups (excluding pregnant women without other risk factors)	45.1%	2,845,252	92.2%	123,831	4.0%	116,927	3.8%
Pregnant women (including those in risk groups)	42.3%	280,518	91.5%	9,853	3.3%	15,789	5.2%
Patients aged 2 years old (including those in risk groups)	35.4%	243,322	98.9%	57	0.0%	2,564	1.1%
Patients aged 3 years old (including those in risk groups)	37.7%	266,003	98.9%	55	0.0%	2,706	1.1%
Patients aged 4 years old (including those in risk groups)	30.0%	212,494	99.0%	62	0.0%	2,428*	1.0%

*This may include some vaccinations given in school.

Ethnicity

Despite the limited amount of data, there are significant differences in uptake between ethnic groups.

Table 13 Actual number of patients with an ethnicity code that corresponds to the 2001 ONS categories for 2015 to 2016.

2001 ethnicity codes	Patients registered	No. vaccinated	% Vaccine Uptake
White - British	16,496,408	4,583,468	27.8%
White - Irish	234,857	65,249	27.8%
White - Any other White background	3,116,361	380,900	12.2%
Asian or Asian British - Indian	1,155,432	223,947	19.4%
Asian or Asian British - Bangladeshi	377,516	66,983	17.7%
Asian or Asian British - Pakistani	977,437	160,801	16.5%
Asian or Asian British - Any other Asian background	645,385	96,380	14.9%
Other ethnic groups - Chinese	313,935	26,310	8.4%
Black or Black British - Caribbean	344,875	68,174	19.8%
Black or Black British - African	771,168	100,527	13.0%
Black or Black British - Any other Black background	246,217	26,983	11.0%
Mixed - White and Black Caribbean	176,407	25,385	14.4%
Mixed - White and Asian	144,958	20,400	14.1%
Mixed - White and Black African	144,555	18,328	12.7%
Mixed - Any other mixed background	224,552	25,640	11.4%
Other ethnic groups - Any other ethnic group	494,393	52,805	10.7%

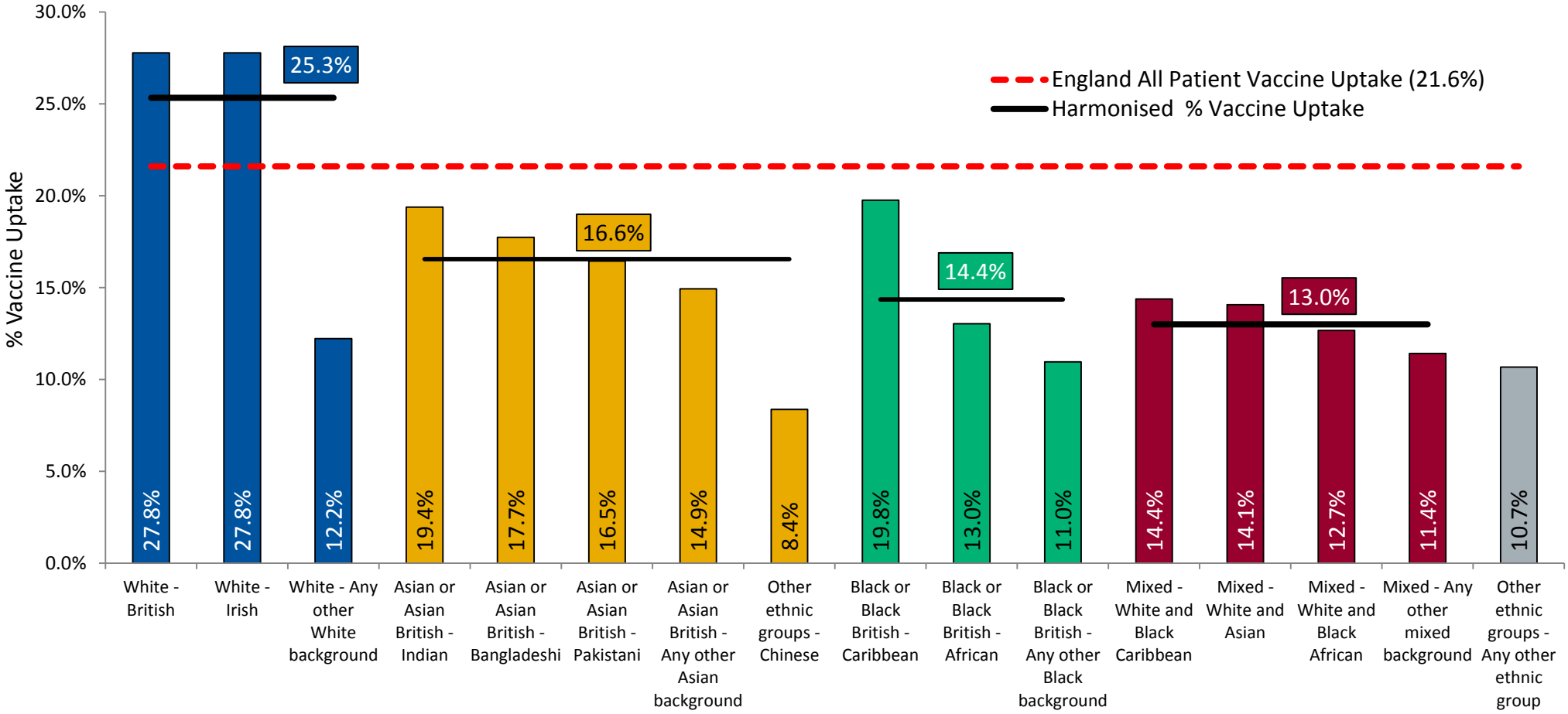
Table 14 Actual number of patients with an ethnicity code that corresponds to the ONS harmonised groups for 2015 to 2016.

5 ONS harmonised categories	Patients registered	No. vaccinated	Harmonised % Vaccine Uptake
Harmonised white	19,847,626	5,029,617	25.3%
Harmonised Asian	3,469,705	574,421	16.6%
Harmonised Black	1,362,260	195,684	14.4%
Harmonised Mixed	690,472	89,753	13.0%
Other	494,393	52,805	10.7%

The highest uptake was in White-British and White-Irish with 27.8% (table 13). The lowest vaccine uptake was in Chinese with 8.4% (all patient average uptake was 21.6%[31]). The lowest uptake in Chinese is lost when harmonised into the more generalised groups when compared to more recent census data that uses more up to date categories (table 14). Granularities such as the low uptake in White-other can also be easily overlooked and the needs of this group will be very different to White-British or Irish. However, it is clear that vaccine uptake was higher in the harmonised White ethnic group than non-white groups.

[31] This all patient average includes all those ‘aged six months to under 65 years’ and all those ‘aged 65 and over’.

Figure 9 Vaccine uptake for each collected ethnic group (bars) in England for 2015/16. The ethnic groups are grouped into ONS harmonised groups. The 'England All Patient Vaccine Uptake' is the average vaccine uptake for all those 'aged six months to under 65 years' and all those 'aged 65 and over' combined.



Conclusions

The response rate for GP practices for the 2015 to 2016 survey remains exceptionally high at 99.8% (7,613/7,630), a similar level to last season. Increasing the automated extraction process has been a key aspect of maintaining accurate surveillance as we have seen a decrease of 750 GP practices in England since 2009 to 2016 and as a result an increase in population per GP. 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 by giving a good indication of vaccine uptake rates with no additional burden to the NHS. There remained a small number of practices currently not engaged or unable to automate their upload, these should encourage their suppliers to provide them with the capability to provide data automatically. In addition, Immform developments are underway to enhance the data visualisation capabilities and feedback of the system.

The childhood LAIV programme, which was first implemented in 2013 to 2014, continued its roll-out in 2015 to 2016, targeting two to four year olds in primary care and all children of school year 1 and 2 age for the first time across the UK. Although vaccine uptake was particularly low in the younger age groups with clinical conditions that put them at most risk of complications from influenza, the national roll out of the universal vaccination in children should help lessen the gap in uptake rates in young children and further protect them through herd immunity. Vaccinations for school years 1 and 2 were delivered through schools and a separate report has been published on the GOV.UK website.

By the end of the 2015 to 2016 winter season, just over 45.1% of people aged six months to under 65 years in a clinical risk group had been vaccinated against influenza. Although this is the lowest vaccine uptake since 2007 to 2008, the total number of vaccinations delivered to this group have increased year-on-year, including from 2014 to15. Investigations into the possible reasons for denominator inflation are ongoing however what is clear is that vaccine uptake in primary care has decreased not just in England but also in the devolved administrations[32]. Despite continued efforts to improve uptake and a sustained drive over the past couple of years, the remaining half of the clinical risk group population eligible to receive the vaccine, remain unimmunised. The performance of some GP practices and ATs has demonstrated that it is possible to achieve uptake significantly higher than the national average. With the decrease in uptake levels this year, it will be important to develop more pro-active ways of improving uptake in all targeted cohorts.

Vaccine uptake varies widely between disease groups and by age category for those with an underlying clinical risk factor six months to 65 years of age. The diabetes disease group continues to have the highest uptake rate at 65.5%. Following the recommendation from the JCVI and its inclusion in the Green book, this season, we began recording patients with morbid obesity (BMI≥40). This group had the lowest uptake among the at-risk groups

[32] See annual flu report for 2015 to 2016: https://www.gov.uk/government/statistics/annual-flu-reports

at 30.0%. In addition to this, data from our other surveillance systems show that 50% of ECMO[33] influenza admissions this season had morbid obesity (BMI>40)[34]. Patients with morbid obesity often have other underlying clinical risk factors and therefore improving uptake in this group alongside the other risk groups will be important in reducing the number of severe outcomes.

Vaccine uptake in pregnant women was 42.3%. The uptake in this cohort decreased the least out of the target groups and this is partly due to the denominator inflation as the number of vaccinations had increased overall. Midwifery services have a key role in maximising uptake amongst pregnant women. If 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.

Although the uptake rate in those aged 65 years and over has remained relatively constant in the past few years, fluctuating between 72 and 75 %, there was a smaller decrease to 71.0% uptake this year, including a small decrease in the numerator. This suggests that even with an ageing population, those that normally get vaccinated each year, did not get vaccinated this season. The reasons for this remain uncertain. The recommended ambition for vaccination for those aged 65 years and over continues to be aligned with the WHO recommended target of 75%.

Our report shows variation in uptake by ethnicity. Strategies to reduce such ethnic disparities in vaccine uptake are required to ensure increased protection to those patients in minority groups with clinical conditions that put them at greater risk of severe outcomes of influenza. The availability of ethnicity data from GP patients' records is much lower than expected and strategies are also required to address these inadequacies including additional guidance for GP practices to improve the recording of ethnicity.

[33] ECMO (extracorporeal membrane oxygenation is a machine that helps patients in lung failure recover faster and more efficiently.

[34] 5 out 6 severe respiratory failure centres in the UK have shown that an average of 50% of ECMO influenza admissions from week 40 2015 (Week ending 04/10/2015) to week 09 2016 (Week ending 06/03/2016) had a BMI of 40 and above.

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- the participation of GP IT software suppliers and third party suppliers in providing the reporting tools and services for their customers in particular; EMIS (LV and Webservice platform), InPS VISION, Microtest and The Phoenix Partnership (TPP), who enabled XML automated extracts of data
- the participation of the PRIMIS team based in Nottingham, who were commissioned to provide the READ Codes specification for this collection, a 2015 to 2016 flu library for their CHART tool and a bulk data extraction process for their CHART tool
- the ImmForm helpdesk and development team that provided and supported the online survey

Appendix 1

Groups recommended influenza vaccine in season 2015 to 2016

Eligible groups	Further detail
All patients aged 65 years and over	'Sixty-five and over' is defined as those aged 65 years and over on 31 March 2016 (ie born on or before 31 March 1950)
Chronic respiratory disease aged six months or older	Asthma that requires continuous or repeated use of inhaled or systemic steroids or with previous exacerbations requiring hospital admission. Chronic obstructive pulmonary disease (COPD) including chronic bronchitis and emphysema; bronchiectasis, cystic fibrosis, interstitial lung fibrosis, pneumoconiosis and bronchopulmonary dysplasia (BPD). Children who have previously been admitted to hospital for lower respiratory tract disease.
Chronic heart disease aged six months or older	Congenital heart disease, hypertension with cardiac complications, chronic heart failure, individuals requiring regular medication and/or follow-up for ischaemic heart disease.
Chronic kidney disease aged six months or older	Chronic kidney disease at stage 3, 4 or 5, chronic kidney failure, nephrotic syndrome, kidney transplantation.
Chronic liver disease aged six months or older	Cirrhosis, biliary artesia, chronic hepatitis
Chronic neurological disease aged six months or older	Stroke, transient ischaemic attack (TIA). Conditions in which respiratory function may be compromised, due to neurological disease (eg polio syndrome sufferers). Clinicians should consider on an individual basis the clinical needs of patients including individuals with cerebral palsy, multiple sclerosis and related or similar conditions; or hereditary and degenerative disease of the nervous system or muscles; or severe neurological disability.
Diabetes aged six months or older	Type 1 diabetes, type 2 diabetes requiring insulin or oral hypoglycaemic drugs, diet controlled diabetes.

Eligible groups	Further detail
Immunosuppression aged six months or older	Immunosuppression due to disease or treatment. Patients undergoing chemotherapy leading to immunosuppression. Asplenia or splenic dysfunction, HIV infection at all stages. Individuals treated with or likely to be treated with systemic steroids for more than a month at a dose equivalent to prednisolone at 20mg or more per day (any age) or for children under 20kg a dose of 1mg or more per kg per day. It is difficult to define at what level of immunosuppression a patient could be considered to be at a greater risk of the serious consequences of influenza and should be offered influenza vaccination. This decision is best made on an individual basis and left to the patient's clinician. Some immunocompromised patients may have a suboptimal immunological response to the vaccine. Consideration should also be given to the vaccination of household contacts of immunocompromised individuals, ie individuals who expect to share living accommodation on most days over the winter and therefore for whom continuing close contact is unavoidable. This may include carers (see below).
Pregnant women	Pregnant women at any stage of pregnancy (first, second or third trimesters).
People living in long-stay residential care homes or other long-stay care facilities	Vaccination is recommended for people living in long-stay residential care homes or other long-stay care facilities where rapid spread is likely to follow introduction of infection and cause high morbidity and mortality. This does not include, for instance, prisons, young offender institutions, or university halls of residence.
Asplenia or dysfunction of the spleen	This also includes conditions such as homozygous sickle cell disease and coeliac syndrome that may lead to splenic dysfunction.
Morbid obesity (class III obesity)*	Adults with a Body Mass Index ≥40 kg/m²

Eligible groups	Further detail
Carers	Those who are in receipt of a carer's allowance, or those who are the main carer, or the carer of an elderly or disabled person whose welfare may be at risk if the carer falls ill. (Please note – this category refers to individual carers entitled to a free influenza vaccine on the NHS and NOT professional health and social care workers, who are in direct contact with patients/clients and should be vaccinated by their employer as part of an occupational health programme.)

* Many of this patient group will already be eligible due to complications of morbid obesity that place them in another risk category.

The list above is not exhaustive, and the healthcare practitioner should apply clinical judgement to take into account the risk of influenza exacerbating any underlying disease that a patient may have, as well as the risk of serious illness from influenza itself. Influenza vaccine should be offered in such cases even if the individual is not in the clinical risk groups specified above.

Appendix 2

Dataset [35] [36]

In 2014 to 2015, the survey and dataset was modified to include all four-year-olds (including in at-risk groups) eligible for the intra-nasal influenza vaccine introduced in 2013 to 2014.[37] In 2015 to 2016, the survey and dataset was extended to include those aged 5 and 6 year olds. However due to concerns around data getting back into the GP record for this cohort, the data remains experimental and will not be published from the GP survey this season[38].

Cumulative data on influenza vaccinations in the GP-registered population in England administered from 1 September 2015 to end 31 January 2016 (inclusive) were collected in the following age and clinical risk groups:

- aged 65 years and older: mandatory data field
  (all patients)
- aged six months to under two years: mandatory data field
  (all patients and summary of patients in one or more clinical at-risk group(s))
- two years to under five years: mandatory data field
- (all patients and summary of patients in one or more clinical at-risk group(s))
- five years to under 16 years: mandatory data field
- (all patients and summary of patients in one or more clinical at-risk group(s))
- aged 16 years to under 65 years: mandatory data field
  (all patients and summary of patients in one or more clinical at-risk group(s))

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[35] The dataset collected reflects the eligible groups set out in the annual flu letter as best as possible but may not necessarily match the criteria exactly. Therefore, vaccine uptake data may not reflect inclusion of certain sets of patients with particular underlying clinical illnesses. See Appendix 1 'Eligible groups recommended influenza vaccination for 2015 to 2016 in the annual flu letter published 27th March 2015'.

[36] The data on 'All patients' and 'Summary of patients in one or more at-risk group(s)' are provided by all GP practices who responded to the survey. These are mandatory fields to be completed. However, the data broken down by individual at-risk group is not a mandatory requirement, therefore data for these fields are optional and are not necessarily given by all who provided data for the 'All patients' and 'Summary of patients in one or more at-risk group(s)' fields.

[37] Only one dose of nasal vaccine was recommended unless the child was in a risk group (see the algorithm in chapter 19 on 'Influenza' of the Green Book which summarises the advice on influenza vaccination for winter 2015 to 2016); www.gov.uk/government/publications/influenza-the-green-book-chapter-19

Note that some children are contraindicated for the nasal vaccine, in which case they were to be offered the inactivated influenza vaccine.

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

- pregnant women: mandatory data field
  (includes ‘healthy’ pregnant women, ie not in a clinical at-risk group, and pregnant women falling in one or more clinical at-risk group(s) combined)
- age two: mandatory data field
  (includes ‘healthy’ two-year-olds, ie not in a clinical at-risk group and two-year-olds falling in one or more clinical at-risk group(s))
- age three: mandatory data field
  (includes ‘healthy’ three-year-olds, ie not in a clinical at-risk group and three-year-olds falling in one or more clinical at-risk group(s))
- age four: mandatory data field
- (includes ‘healthy’ four-year-olds, ie not in a clinical at-risk group and four-year-olds falling in one or more clinical at-risk group(s)]
- age five: mandatory data field
- (includes ‘healthy’ four-year-olds, ie not in a clinical at-risk group and four-year-olds falling in one or more clinical at-risk group(s)]
- age six: mandatory data field
- (includes ‘healthy’ four-year-olds, ie not in a clinical at-risk group and four-year-olds falling in one or more clinical at-risk group(s)]
- clinical at-risk groups: optional data fields
  (by age and disease)
- carers: optional data field fields
  (patients vaccinated solely by virtue of being a carer; not aged 65 years or over, not in a clinical at-risk group and not pregnant)
- gender: optional data field fields

  (gender is recorded for patients who are male, female or have an unspecified gender or unknown gender)
- vaccination by other healthcare settings: new optional fields
- Vaccination in pharmacies: new optional fields
- Vaccination in schools: new optional fields

  (Vaccination in schools was not collected using a Read code and was based on the assumption that all children of school year 1 and 2 (aged 5 rising to 7 year olds) who were vaccinated outside of the practice would have been vaccinated in a school apart from those with a pharmacy Read code. Although the majority of these children will have been vaccinated in a school, there may be some that will have been vaccinated elsewhere.)
- number of patients refused/declined: optional field
- Number of patients refused/declined optional field

(this is looking for any patient who has not had a vaccination in the current influenza vaccine campaign and who has a declined or no consent read code on their medical record)

- ethnicity: optional field

  (there were several issues with this cohort last season, some of which were resolved, we received data from all the automated GP IT suppliers. Data is still limited due to the existence of outdated hierarchy of ethnicity status based on ethnicity data prior to the current preferred model of the 2001 Census classification followed by the poor recording of ethnicity status in general. Ways of incorporating different ethnicity coding hierarchies are being investigated and could potentially be used in future surveys.)

Where data collection is optional, this is due to known data recording issues (and to minimise reporting burden on primary care by avoiding the need for extensive manual data entry). The data that is available does provide GPs with an indication of coverage in this group, with the aim of helping to drive up uptake in this target group.

Clinical at-risk group(s) aged six months to under 65 years [39]

- Clinical at-risk groups were delineated by age and for each individual risk group as follows:
- chronic heart disease
- chronic respiratory disease
- chronic kidney disease
- chronic liver disease
- diabetes
- immunosuppression
- chronic neurological (stroke, transient ischaemic attack) or hereditary/degenerative disease of the central nervous system (including multiple sclerosis and cerebral palsy)
- asplenia or dysfunction of the spleen
- Morbid obesity (BMI ≥40)

[39] For further description and detail regarding patient groups eligible for influenza vaccine, see Appendix 1 page 31 in this report, or Annex A page 9 in the annual flu letter available at the following link: www.gov.uk/government/uploads/system/uploads/attachment_data/file/207008/130613_Flu_Letter_v_29_Gateway_GW_signed.pdf

All patients

Influenza vaccine may also be given to patients who, for instance, were vaccinated on the basis of clinical judgement, who may not necessarily have been captured by the READ codes for the 'clinical at-risk' groups specified by the survey. These vaccinations are included within the 'all patients' data items on the ImmForm surveys which represents all registered patients (delineated by age bands) that received vaccine and, therefore, will also include patients in clinical risk groups, carers, pregnant women and any other patients vaccinated based on clinical need[40].

Denominators

For those under 65 years of age in a clinical risk group, denominators are defined by the patient age on the date of data extraction. GP practices provided data on the number of patients registered on the date of data extraction that fell within each defined eligible group (the denominator) and the number of those vaccinated within each group (the numerator) up to end of 31 January 2016. This system means that denominator fluctuations will occur as patients joined and left a practice, reached the age of six months, became pregnant, changed clinical status (ie 'joined' or 'left' a clinical at-risk group), changed carer status or died during the data collection campaign.

The denominator (number of registered patients) includes within it, patients that have been offered the vaccine but also refused it, as the uptake rate is measured against the overall eligible population. Data on the number of people that refused the vaccine were not collected in the vaccine uptake survey therefore data providers should not adjust their figures if a patient refused the vaccine.[41]

For those aged 65 years and older, the denominator is defined by patient age at 31 March 2016 (this fits with the policy, ie all those aged 65 years or older by the 31 March 2016 are eligible to receive vaccine in the 2015 to 2016 vaccination programme). [42]

The 'summary' count of at-risk patients on ImmForm excludes otherwise healthy pregnant women, healthy two-year-olds, healthy three-year-olds, healthy four-year-olds and carers; it should only include patients who fall into one or more at-risk group(s) and if a patient is in **more than** one at-risk group, they are only counted **once**.

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[40] It is also possible that these data may include a proportion of healthcare workers who were administered influenza vaccine and had their vaccinations recorded on to their GP records. It is hoped that any frontline healthcare workers administered vaccine based on the criterion of direct patient care will have been captured in the separate HCWs influenza vaccine uptake survey for 2015 to 2016 www.gov.uk/government/collections/vaccine-uptake .

[41] The survey is based on actual vaccines administered (the numerator) not vaccines offered with the denominator being all those eligible to receive vaccine, including those that are not vaccinated for whatever reason.

[42] See 'birth date ranges' available at: www.gov.uk/government/publications/seasonal-influenza-vaccine-uptake-gp-patient-survey-data-collection

Pregnant women

Pregnant women were defined as all pregnant women (in the first, second or third trimesters) as diagnosed by a medical professional (eg GP/midwife) that were pregnant before 1 September 2015 and still pregnant at any time during the period 1 September 2015 to 31 January 2016, and all women becoming pregnant during 1 September 2015 to 31 January 2016. This was the same as last season.

Pregnant women in 2015 to 2016 were further delineated either as 'healthy' pregnant women (not in a clinical at-risk group) or with one or more of the clinical at-risk factors (listed earlier in this report). They were not delineated by age. The numerator(s) were defined as patients in these groups (whether combined as all pregnant women or delineated separately as 'healthy' or at-risk) that received influenza vaccine during the period 1 September 2015 to 31 January 2016. The denominator therefore includes women who ceased to be pregnant for whatever reason and those that give birth during 1 September 2015 to 31 January 2016 before they may have been offered vaccination. Thus denominators for pregnant women could be regarded as over-inclusive as they may include women that become eligible and then ineligible for vaccination (ie individuals who were pregnant at some point on or after 1 September 2015, who were then no longer pregnant due to termination, miscarriage, or birth) before they could be vaccinated[43].

All two, three and four-year-olds

All GP practices in England were asked to offer immunisation to all registered patients aged two and three years and during the 2015 to 2016 season; this was extended to all registered patients aged four years in 2014 to 2015. Thus, all children in this age range are included irrespective of whether they are in a clinical risk group or not.

With the introduction of all two, three and four year-olds to the routine programme, GPs were encouraged to ensure that uptake of influenza vaccine in these children was as high as possible. This was important in order to maximise the health benefits that the extended programme was expected to bring.[44]

In addition to all GP registered two, three and four-year-olds being vaccinated through primary care, the universal influenza vaccination programme was extended to those of school years 1 and 2 (children aged 5 rising to 7 years). They were predominantly

[43] Please refer to the section on data limitation within this report for further details of the challenges of recording data pf influenza vaccine uptake by pregnant women.

[44] The extended programme for healthy children is expected to appreciably lower the public health impact of influenza by directly averting a large number of cases of disease in vaccinated children, and, through lowering influenza transmission in the community, indirectly preventing influenza in unvaccinated younger children, people in clinical risk groups, and older adults. Benefits include reduced influenza -related illness, GP consultations, hospital admissions and deaths.

vaccinated in schools and are included in a separate LAIV report[45]. The pilots carried on in six discrete geographical areas across England for children of primary school age (aged 4 to 11 years) but there were no secondary school pilots this season.

Other people who may be included and/or excluded based on eligibility criteria

The 'All patients' category on ImmForm, applies to **all** patients registered at the practice (including those in a clinical at-risk group) on the date of data extraction (denominator) and all those recorded as having been vaccinated with influenza vaccine (numerator)[46]. Although household contacts of the immunocompromised can be considered for vaccination, there is no clear consistent way of classifying and identifying these individuals. Therefore, they cannot be included as a distinct group in the survey although any vaccinations given to this group will be included in the 'all patients' count on ImmForm.

Similarly, patients vaccinated where a GP has exercised their clinical judgement where they did not fall within a designated risk group, will also be counted under 'All patients' data. The 'all patients' data may also include people vaccinated privately or as part of their employer's occupational health programme when a record of these vaccinations has been entered onto the GP's clinical system.

The data will exclude patients who were vaccinated, but are now no longer registered at the GP practice (for example, because they have changed practice or died). The data will 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 electronic record.

The survey collects data on carers who fit the criteria set out in the annual flu letter, who are under 65 years of age, who are not pregnant and who do not fall into a clinical risk group.

The current definition of a carer is:

> 'Those who are in receipt of a carer's allowance, or those who are the main carer or the carer of an elderly or disabled person whose welfare may be at risk if the carer falls ill.'

This should be given on an individual basis at the GP's discretion in the context of other clinical risk groups in their practice. We recognise that there are young people with carer responsibilities that will not fail into this definition. However, these carers may be

[45] 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

[46] Denominators may also include the small group of people with a contraindication for the vaccine.

included in the survey if there is a carer's code assigned to the patient record as there is no lower age limit in the data specification to exclude those too young to be in receipt of carer's allowance. For this reason, we will have a breakdown in next season's survey for carers who are under 16 years of age. In the future, the continued expansion of the universal child vaccination programme will include all children aged 2 to under 17 years[47] and therefore include any young carers not currently in receipt of carer's allowance.

It will be assumed that vaccinations given in other settings by other healthcare providers (eg pharmacies, schools, special clinics such as antenatal care, residential homes and private or occupational health vaccinations) will be recorded onto GP systems in a timely manner. This is essential for maintaining the individual's clinical record but also ensures a clear auditable trail to the original source of any data and will avoid double counting for the vaccine uptake survey. It may be that for some vaccinations where recording onto a GP system is difficult or slow, for example, vaccinations of travelling communities or those who are homeless or where patients are not registered; recording of these vaccinations may be missed by the survey although this is undesirable.

Patients who are vaccinated, but have **not** had their electronic patient record updated by the time of data extraction, will be excluded. Likewise the data will include patients vaccinated by another healthcare provider if a record of the vaccination has been correctly entered onto a GP's system in time.

[47] The children's influenza immunisation programme letter is accessible from the GOV.UK website (gateway reference 00275) at the following link; https://www.gov.uk/government/publications/childhood-flu-immunisation-programme-from-september-2015-to-2016-information-for-parents-and-schools