Policy position statement

Flu vaccination – December 2018

Introduction

The British Lung Foundation recommends:

- **Increase vaccination uptake amongst patients in the clinical risk group to 75%**
- **Health care professionals use every opportunity to raise awareness and offer flu vaccination** to people with chronic respiratory conditions to encourage uptake
- **Improvements to flu programme planning at all levels of the health service** to ensure a range of approaches are used to increase uptake and that vaccination is accessible to all who need it.
- **Continued funding for NHS and public health campaigns which encourage vaccination** with tailored messaging for different lung conditions
- **Near universal uptake in frontline health and social care workers** with a government commitment to routinely fund the vaccination programme for all social care staff as well as NHS workers.
- **Improvements to data collection and exception reporting** to ensure more accurate assessment of uptake rates
- **Patients with chronic respiratory conditions to be regularly offered a pneumococcal vaccination**

The policy objectives summarised above apply across the UK and were informed by recent National Institute for Health and Care Excellence (NICE) guidance and a range of research.

What is flu?

Influenza, or flu, is an infectious virus which affects the respiratory tract.[1] Common symptoms include fever, cough, headache and joint and muscle ache. Most patients recover within a week but for some flu can lead to life-threatening complications.[2]

What is the impact of flu?

The impact of flu varies each year and is often dependent on which strains of the virus are circulating, the age groups most affected and how well matched the vaccine is to these strains.[3] [4]

Flu is highly transmissible and places a serious burden on the NHS during the winter period.[5] [6] In winter 2017-18 a moderate to high level of influenza activity was reported, resulting in nearly 16,000 deaths associated with flu in England.[7] Flu cases take up around 75,000 hospital bed days each year.[8]

Flu also results in lost working days for health services through staff sickness. Within NHS hospital and community health services, over 1.2 million working days are lost due to cold, cough and flu.[9]

What is the flu vaccine?

The vaccine is the best protection against infection by the influenza virus.[10] It is typically an injection, or a nasal spray for children, and best given early in the flu season, between September and early November.[11]

The World Health Organisation (WHO) monitors the epidemiology of viruses circulating and makes recommendations on which strains should be included in the vaccine each year. Manufacturers then formulate the vaccine according to these recommendations. There is a limited window for vaccine change once the vaccines are being made, so a mismatch between the vaccine and circulating viruses

or the emergence of a new strain can have a significant impact on the vaccine's effectiveness.[12] But, on average the vaccine has had a 50% effectiveness rate in recent years.[13] It is important for people to have the vaccination every year because the flu strains circulating can, and do, change.[14]

The vaccine cannot cause flu. All but one of the vaccines offered in the UK are inactivated. Only the nasal spray vaccine offered to children contains live viruses which have been weakened, but this does not cause flu - the weaker virus cannot multiply in the nasal passages because the temperature is not warm enough. The effects of the vaccine can include cold-like symptoms.[15]

Who should get the vaccine?

The NHS provides free flu vaccination to people considered to be at a higher risk of flu-associated morbidity and mortality. This includes those aged over 65, pregnant women, children aged two to nine, carers and those people in the clinical risk group who have certain medical conditions such as chronic respiratory disease. Vaccination is also recommended for health and social care workers with direct patient contact, which would give them protection but importantly can help stop them giving flu to the vulnerable people they care for and reduce staff sickness absence, an important factor in reducing the impact of winter pressures on the health and social care system.[16] [17]

People with lung conditions should be offered vaccination because they can suffer from exacerbations of their existing condition and are at an increased risk of developing more serious illnesses, such as pneumonia and acute bronchitis, as a result of flu.[18] [19] They are also seven times more likely to die if they catch flu.[20] Around 16% of flu deaths in 2010-11 were in patients with existing chronic respiratory conditions – the second highest mortality rate in the clinical risk group.[21]

Various clinical guidelines support flu vaccination as self-management for conditions such as COPD and bronchiectasis.[22] [23] A Cochrane review concluded that the vaccine reduces exacerbations in patients with COPD, and therefore reduces hospital admission rates.[24] [25] The flu vaccine is one of the most cost-effective interventions for COPD.[26]

Vaccination uptake varies between different patient groups.[27] 72.6% of over 65s were vaccinated in 2017-18 and the UK leads the way amongst EU countries in uptake rates for this group. [28] [29] However, uptake rates for the clinical risk group lag behind.[30] The long-term ambition is for a minimum 75% uptake amongst eligible adults, as recommended by WHO.[31]

Figure 1: Target and uptake rates amongst patients with a chronic respiratory condition aged between 6 months and under 65 years

All data on target and uptake rates is sourced from national public health bodies.[32] [33] [34] [35]

	England	Scotland	Wales	N Ireland
Target rate	75% (55% interim target)	75%	55%	75%
Uptake rate 2017-18	50.8%	44.8% for clinical risk group*	48.6%	56% for clinical risk group*

*Data unavailable for respiratory conditions

Figure 2: Target and uptake rates amongst frontline health care workers

	England	Scotland	Wales	N Ireland
Target rate	70% in 2017-18, 75% in 2018-19	60%	60%	40%*
Uptake rate 2017-18	68.7%	45.7%**	57.9%	33.4%

*Northern Ireland collects and includes data on social care workers in frontline health and social care worker uptake rates. National data on social care staff is not collected in England, Wales or Scotland.

**Scotland collects and includes non-patient facing staff data in health worker uptake[36]

Key policy developments and devolved responsibilities

Flu vaccination has been recommended for clinical risk groups since the late 1960s. There have been several policy extensions over the years, for example in 2000 to include those aged over 65.[37]

It is now also recommended that frontline health and social care workers receive vaccination. This is to help prevent the transmission of flu to patients, visitors and fellow staff, and as part of the duty of care staff have to patients.[38] In September 2018, NHS England announced a new ambition for universal vaccination coverage for frontline staff.[39] However, health and social care staff are not routinely eligible for vaccination through the national free vaccination programme. It is instead considered an occupational health responsibility for the NHS and social care employers to fund staff vaccination.[40]

In recent years and as part of intensified winter preparations, several additional measures have been announced to improve vaccine uptake. This includes steps to improve uptake amongst patients:

- In 2015 NHS England introduced the Community Pharmacy Seasonal Influenza Vaccination Advanced Service which allows pharmacies to offer a vaccination service to eligible adult patients[41]
- In 2018 the adjuvanted trivalent vaccine was made available to over 65s in England and Wales and over 75s in Scotland. Access to the vaccine has been restricted to those over 75 in Scotland, with the Scottish government blaming a lack of stock and a mismatch with the vaccine ordering process.[42] The adjuvant is expected to boost vaccine effectiveness by 20% through improving the body's immune response to the vaccine, which is typically weaker in older adults.[43]
- In 2018 the quadrivalent vaccine was made available to at-risk adults under 65.[44] The quadrivalent vaccine is already used for children under 18 and protects against four strains of virus, one more than the trivalent vaccine[45]
- In 2018 the phased roll out of the children's programme in Wales will be accelerated to include school years five and six (ages nine to 11). This means that all primary school children in Wales will be offered the vaccine in schools, in line with Scotland and Northern Ireland. [46] [47] [48] Pupils aged two to nine are currently eligible in England. [49] The eventual aim is for all two to 16 year olds to be covered in the UK national vaccination programme.[50]

There have also been steps to improve uptake amongst health care staff:

- A two-year Commissioning for Quality and Innovation (CQUIN) system was published for 2017-19 which includes an indicator for trusts to improve uptake rates amongst frontline health care workers
- In 2017 the vaccination programme was extended to social care staff in England who are employed by a registered residential care/nursing home or domiciliary care provider for the first time, with £10 million provided to support this.[51] This funding will continue for the 2018-19

season and has been expanded to include health and care staff employed by a voluntary managed hospice provider.[52] This policy was also extended in Wales in 2018.[53]

Responsibility for flu vaccination programmes is devolved to the Welsh, Scottish and Northern Ireland governments. The programmes across the UK are very similar with some variation in uptake rates and in ambitions for uptake amongst health care staff, as shown in figures 1 and 2.

Policy objectives

Health care professionals should use every opportunity to raise awareness and offer flu vaccination

We want health care professionals to be confident in delivering advice and promoting vaccination to eligible patients, and to do so at every suitable opportunity. All health care professionals should be able to provide face-to-face information about the benefits and side effects of vaccination, address any misconceptions about the vaccine and signpost patients to local vaccination services. Brief interventions should be tailored to each patient's situation. These interventions should take place at every suitable opportunity, for example when eligible patients register with a GP, when they book and attend clinical appointments or when they visit community pharmacies.[54]

Studies have shown that patients who receive information from a trusted health professional are more likely to get vaccinated.[55] [56] Patients with chronic respiratory conditions may already be in regular contact with primary and/or secondary care, which presents existing opportunities to intervene.[57] Most vaccination of eligible groups currently takes places in general practice. [58] [59] GPs and nurses can play a significant role in using opportunistic approaches to increase vaccination uptake.[60] Community pharmacists should also use every opportunity to raise awareness and offer vaccination when patients collect repeat prescriptions or visit for health advice, a Medicines Use Review or a New Medicine Service.[61]

Opportunistic approaches are already applied through Making Every Contact Count activity and fit the aims of boosting public health and prevention in the Five Year Forward View (England), the Respiratory Improvement Strategy (Scotland) and the Respiratory Health Delivery Plan (Wales).[62] Brief interventions have low resource implications for health services and could result in increased efficiency through reducing the need for further appointments.[63] Incorporating prompts in eligible patients' electronic medical records could help remind staff to offer vaccination to eligible groups during appointments. It is possible to use existing computer systems to set prompts and support opportunistic approaches. [64] For example, the service specification for general practice already recommends that at-risk patients be 'called' and 'recalled' for immunisation.[65]

The risk of flu should also be included in discussions with smokers about smoking cessation. People who smoke are five times more likely to get confirmed flu than people who do not smoke.[66]

Improvements to flu programme planning on a GP, trust/board, STP or ICS level

There is notable and unwarranted regional variation in uptake rates. Some clinical commissioning groups in England achieved over 60% uptake whilst others struggled to reach 40%.[67] Improvements to flu programme planning on a local or regional level would help address this variation and improve uptake rates amongst clinical at-risk patients.

A multicomponent approach which takes different measures to increase uptake should be used as this is likely to have a greater impact than single interventions.[68] Strategies in general practice which have been shown to increase uptake include:

- Establishing a lead staff member to plan the flu campaign
- Communicating with staff about performance
- Sending repeated reminders or invitations to at-risk patients, particularly if this is personalised to the patient

- Undertaking a review of existing vaccination strategy and vaccination rates[69] [70]

As well as making staff aware of areas for improvement, these organisational changes also have the added benefit of making staff more motivated and well-informed about vaccination.

We would also encourage partnership working between providers of vaccination, other health and social care services and local stakeholders to develop plans to boost uptake. It may be beneficial for STPs and areas with ICS pilots to consider how they can use these partnerships to boost uptake. For example, the Sheffield Seasonal Flu Operational Group is a multi-organisational group, comprised of the clinical commissioning group, trusts, local authority and other local stakeholders, which works collaboratively to increase uptake amongst children with existing medical conditions. Through a coordinated effort to present the dangers of flu, the group were able to increase vaccination by 14% in one year.[71]

Accessibility can be a barrier to vaccination and improvements to programme planning should take this into account. Every effort should be made by health care staff to liaise with pharmacies and other providers if patients are unable to attend general practice.[72] [73] With the introduction of the pharmacy advanced service in England, there is a real opportunity for pharmacies to expand their role in vaccination. Only 8% of clinical risk patients currently get vaccinated at a pharmacy.[74] Pharmacies can increase accessibility to vaccination because of their multiple locations, extended opening hours and the option of walking in without an appointment.[75] Delivering the vaccine in a pharmacy is also more cost-effective, saving £2 per vaccine compared to general practice.[76] Whilst there is scope for increased vaccination in pharmacies, co-ordination with the wider health service is essential. [77]

Continued funding for campaigns which encourage vaccination

Mass campaigns to encourage vaccination are crucial to inform the public about the risks of flu and the benefits of vaccination. We would recommend that such campaigns continue and that they are appropriately funded and launched early in the flu season.[78] Public Health England's Stay Well this Winter campaign has been running since 2017 and includes a flu campaign throughout October to promote uptake amongst risk groups.[79] The Beat Flu campaign is an important part of the national flu programme in Wales.[80]

We would like to see tailored information for patients according to different conditions, for example for COPD and asthma. Condition-specific messaging is likely to be more effective.[81]

National campaigns help address misconceptions and myths which deter people from getting vaccinated. Last year, 10.4% of patients in the clinical risk group refused or declined the flu vaccine.[82] Some people may have experienced adverse vaccine side effects, perceive themselves to be 'healthy' and not at risk or have been influenced by media reporting of vaccine effectiveness.[83] [84] The anti-vaccination movement is a particular danger to vaccine coverage. In recent years, it has been linked to a rise in preventable diseases, such as the measles outbreak in 2012-13 in Wales.[85]

Near universal vaccination uptake in frontline health and social care workers

We would like to see increased and near universal uptake rates amongst health and social care workers with direct patient contact, in line with new NHS ambitions. This should be accompanied by a government commitment to routinely fund the vaccination programme for social care staff. The independent care sector has previously been overlooked and left as a responsibility for care provider employers. For the second year, the NHS will also offer vaccines free of charge to social care staff employed by a registered care or nursing home or domiciliary care provider, which is certainly encouraging.[86] These staff can receive vaccination from their GP or a community pharmacy.[87]

Frontline health and social care staff should be vaccinated to:

- Avoid passing flu to patients who may be more vulnerable to its effects. Staff can be a vector for transmission to patients even if they are mildly infected and can facilitate flu outbreaks in hospitals[88]
- Protect themselves, their family and their colleagues. Health care staff are more likely to be exposed to flu than the general public, with an estimated one in four workers becoming infected in a mild flu season[89] [90]
- Reduce staff sickness absence rates during the busy winter period. A 10% increase in vaccination rate can be associated with a 10% fall in sickness absence rate, and the average number of days lost to flu is four days[91] [92]
- Improve confidence and knowledge when advising patients about vaccination – the NHS considers patients more likely to get vaccinated when they know staff are vaccinated[93] [94] [95]
- Meet professional expectations such as the General Medical Council's guidance on good medical practice and the Royal College of Nursing's duty of care statement[96] [97]

Vaccination of health and social care staff is likely to be cost-effective and has been estimated to save around four working days per 100 staff vaccinated.[98] Across all frontline health and social care staff this would bring significant savings.

Survey data on staff attitudes suggests that the key differences between NHS staff who have and have not been vaccinated are a belief that the vaccine is not necessary, a concern that it might be harmful and a perceived difficulty in getting vaccinated.[99] These factors must be addressed to increase staff uptake and it is important that NHS organisations create straightforward and accessible pathways to do so.

There is significant regional uptake variation between NHS organisations with coverage varying from 20% to 90%. Improvements to local staff vaccination campaigns would tackle this variation. The Flu Fighter campaign, run by NHS Improvement, provides advice, materials and best practice to support such campaigns. Flu Fighter recommends seven elements of a good staff flu programme, which may help reduce regional variations: [100]

- A team with members from all parts of the organisation
- Peer vaccination
- Effective communication with staff
- Accessibility
- Staff incentives
- Support - all hands on deck
- Mythbusting

In England the CQUIN announced in 2015 also provides a financial incentive to trusts, with uptake above 70% in 2017-18 rewarded with 100% CQUIN payment.[101] Staff vaccination has increased from 50.6% before its introduction to 68.7% in 2017-18. [102] [103] This is likely a result of coordinated measures to increase uptake and final reporting on the CQUIN in March 2019 may provide a more detailed analysis of impact.[104]

Improving accessibility to vaccination can also lessen practical difficulties which may be cited as reasons for not getting vaccinated. This could include setting up a mobile vaccination trolley, offering vaccination in staff canteens or vouchers for community pharmacies.[105] [106] Vaccination should be offered at different times and out-of-hours where necessary to fit with staff working patterns.[107] [108] Local staff campaigns and the availability of vaccinations should be well publicised and promoted onsite and on social media. It may also be helpful if board members and senior managers publicise their vaccination to staff.[109]

Improvements to data collection

We recommend that several improvements be made to the current data collection on flu vaccination and exception reporting to ensure more accurate assessment of uptake. We are calling for:

- Data on social care staff uptake rates to be nationally collected
- Data on vaccination uptake rates amongst the clinical risk groups to be collected for each condition, in order to assess how uptake varies between conditions
- Commissioners and providers to agree approaches for data sharing. Where vaccination takes place outside of a GP setting, for example in a pharmacy, this information should be shared with a patient's GP[110]
- A review of current exception reporting for the Quality and Outcomes Framework for flu vaccination

Data collection on social care staff uptake rates should coincide with the routine funding of frontline social care staff vaccination and a coverage tracker should form part of the programme. Data is only currently collected and included in frontline staff uptake rates in Northern Ireland. [111] We do not know how many social care staff are eligible for or receive vaccination across the rest of the UK, and it is vital to establish a baseline for this.

Data is not currently collected by condition within the chronic respiratory clinical risk group. Evaluating uptake amongst disease-specific groups would contribute to developing more effective tailored messaging for public-awareness campaigns.

We believe there is sufficient cause to review exception reporting for flu vaccination. 15.8% of patients with COPD are exception reported for vaccination. This means that these patients may not be offered the vaccine in future. There is considerable variation between general practices in the percentage of patients who are exception reported. Reasons for current exception reporting may include an allergy to the vaccine, failure to respond to invitations or declining the vaccination.[112] Apart from medical reasons such as an allergy, COPD patients should not be exception reported for vaccination. The criteria for exception reporting should be limited and consistent.

Patients with chronic respiratory conditions are offered a pneumococcal vaccination

People with respiratory conditions are also advised to get a pneumococcal vaccine. This protects against pneumococcal infections which are the most common cause of community-acquired pneumonia.[113] Approximately 29,000 people a year die from pneumonia.[114]

There are two types of pneumococcal vaccine. The pneumococcal polysaccharide vaccine (PPV) is offered to people aged over 65 and people aged over 2 with existing health conditions. The pneumococcal conjugate vaccine (PCV) is given to infants as part of the free childhood vaccinations. [115] [116] Like the flu vaccine, the pneumococcal vaccine is provided free to adults with certain existing health conditions at higher risk of pneumococcal infections. Most people will only need one vaccine for lifetime protection.

We would encourage all eligible people with chronic respiratory conditions to receive a pneumococcal vaccine to help protect them from pneumonia, other pneumococcal diseases and to reduce exacerbations.[117] People with COPD who receive the vaccine are less likely to experience community-acquired pneumonia. For every eight people with COPD who are vaccinated, one person is also prevented from having an acute exacerbation.[118]

Coverage amongst over 65s in England who had been vaccinated up to March 2018 is 69.5%.[119] Data on clinical risk groups was last collected in a 2009 survey in England. This survey showed that the highest uptake in the clinical risk group was amongst people with chronic respiratory conditions, with uptake at 50.9% in people aged 16 – 64 years old.[120] In Wales, the latest data is from 2006 and shows that the lowest uptake in the clinical risk group was amongst those with chronic respiratory disease,

at 10.4%.[121] More frequent data collection on uptake amongst people with long-term health conditions would allow for a better assessment of current coverage.

References

[1] Public Health England. *Influenza: the green book, chapter 19*. 2018. 1.
[2] Public Health England and NHS England. *The flu vaccination: who should have it and why, winter 2018/19*. 2018. 2.
[3] Public Health England, Department of Health, NHS England. *Flu Plan Winter 2017/18*. London: PHE publications, 2017. 10.
[4] Public Health England. *Health Profile for England: 2018, Chapter 7: current and emerging health protection issue*. 2018.
[5] Flu Fighter and Public Health England. *Healthcare worker vaccination: clinical evidence*. Updated 2018.
[6] PHE. *Flu Plan Winter 2017/18*. 23.
[7] Public Health England. *Surveillance of influenza and other respiratory viruses in the UK: Winter 2017 to 2018*. London: PHE publications, 2018. 47.
[8] British Lung Foundation. *The Battle for Breath – the impact of lung disease in the UK*. 2016. 18.
[9] NHS Digital. *Full time equivalent days lost due to sickness absence for cough, cold and Influenza and absence rates in England – November 2016 to February 2017*.
[10] NHS. *Vaccinations: the flu vaccine*. 2016. Available at: https://www.nhs.uk/conditions/vaccinations/flu-influenza-vaccine/
[11] PHE. *Green Book*. 8.
[12] PHE. *Green Book*. 7-8.
[13] PHE. *Flu Plan Winter Winter 2017/18*. 16.
[14] PHE and NHS England. *Flu vaccination: who should have it and why*. 11.
[15] PHE. *Green Book*. 6-7.
[16] Department of Health, Public Health England, NHS England. *The national flu immunisation programme 2017/18*. Letter, 20 March 2017. 1, 10.
[17] Pereira M et al. "Healthcare worker influenza vaccination and sickness absence – an ecological study." *Clinical Medicine* 17, 6 (2017).
[18] PHE. *Green Book*. 1.
[19] Mallia P and Johnston S L. "Influenza infection and COPD." *International Journal of Chronic Obstructive Pulmonary Disease* 2, 1 (2007).
[20] PHE. *Green Book*. 4.
[21] Health Protection Agency. *Surveillance of influenza and other respiratory viruses in the UK, 2010-2011 report*. London: HPA publications, 2011. 50.
[22] British Thoracic Society. "Guideline for non-CF Bronchiectasis." *Thorax* 65 Supplement 1 (2010): 27.
[23] National Institute for Health and Care Excellence (NICE). *Chronic obstructive pulmonary disease in over 16s: diagnosis and management guideline*. 2010.
[24] Kopsaftis Z, Wood-Baker R, Poole P. "Influenza vaccine for chronic obstructive pulmonary disease (COPD)." *Cochrane Database of Systematic Reviews* 2018, Issue 6.
[25] Calderón-Larrañaga A, Carney L, Soljak M, et al. "Association of population and primary healthcare factors with hospital admission rates for chronic obstructive pulmonary disease in England: national cross-sectional study." *Thorax* 68, 781 (2011).
[26] NHS London Respiratory Team. *COPD 'Value' Pyramid - What we know so far…. Cost/QALY*. 2012.
[27] Public Health England. *Seasonal influenza vaccine uptake in GP patients: winter season 2017 to 2018 - final data for 1 September 2017 to 31 January 2018*. London: PHE publications, 2018. 4.
[28] Ibid.
[29] Organisation for Economic Co-operation and Development Data. *Influenza vaccination rates*. 2018. Available at: https://data.oecd.org/healthcare/influenza-vaccination-rates.htm
[30] PHE. *Influenza vaccinate uptake in GP patients: 2017 to 2018*. 4.
[31] Department of Health, Public Health England, NHS England. *The national flu immunisation programme 2018/19*. Letter, March 2018. 2.
[32] Public Health England. *Seasonal influenza vaccine uptake in GP patients: winter season 2017 to 2018 - final data for 1 September 2017 to 31 January 2018*. London: PHE publications, 2018. 7, 24. And *Seasonal influenza vaccine uptake in healthcare workers (HCWs) in England: winter season 2017 to 2018 - final data for 1 September 2017 to 28 February 2018*. London: PHE publications, 2018. 18.

[33] Scottish Government. *Seasonal Influenza (Flu) Vaccination Programme 2018-19.* Letter, 9 August 2018. 1, 9-10.
[34] Public Health Wales. *Seasonal Influenza in Wales 2017/18 - Annual Report*. 10, 33, 39.
[35] Public Health Agency. *Surveillance of influenza in Northern Ireland: 2017 – 2018 season*. 2, 6-7.
[36] Royal College of Nursing. *Congress 2018 – debate: flu vaccine*. Available at: https://www.rcn.org.uk/congress/agenda/flu-vaccine
[37] Public Health England. *The National Flu Immunisation Programme 2018/19 Slideset – training for healthcare practitioners*.
[38] PHE. *Flu Plan Winter 2017/18*. 13.
[39] NHS national clinical and staff side professional leaders. *Health care worker flu vaccination*. Letter to Chief Executives of NHS Trusts and Foundation Trusts, 7 September 2018.
[40] PHE. *Flu Plan Winter 2017/18*. 13.
[41] PHE. *Flu Plan Winter 2017/18*. 15.
[42] David Cheskin. "Failure to order enhanced flu vaccine in time 'will be lethal'." *The Times*, 24 September, 2018.
[43] Public Health England. *New flu vaccine available this winter for those aged 65 and over*. 2018. Available at: https://www.gov.uk/government/news/new-flu-vaccine-available-this-winter-for-those-aged-65-and-over
[44] Ibid.
[45] Public Health England. *Flu vaccine effectiveness in 2017 to 2018 season.* 2018. Available at: https://www.gov.uk/government/news/flu-vaccine-effectiveness-in-2017-to-2018-season
[46] Welsh Government. *Written Statement - Seasonal Influenza Report 2016-17 and plans for 2017-18.* 2017.
[47] NHS Inform Scotland. *Child flu vaccine*. 2018. Available at: https://www.nhsinform.scot/healthy-living/immunisation/vaccines/child-flu-vaccine#primary-school-children
[48] Northern Ireland Direct Government Services. *Flu vaccine for children.* Available at: https://www.nidirect.gov.uk/articles/flu-vaccine-children
[49] Department of Health, PHE, NHS England. *National flu immunisation programme 2018/19.* 1.
[50] Public Health England. *Childhood Influenza Vaccination Programme 2018 to 2019 ImmForm Data Collection Guidance - User guide for local NHS England teams and data providers.* 2018. 4.
[51] NHS England. *Extension of NHS seasonal influenza vaccination.* 2017. Available at: https://www.england.nhs.uk/flu/
[52] NHS England. *Extension of NHS seasonal influenza vaccination.* Letter to Association of Directors for Adult Social Services, Association of Directors for Public Health, Regional Directors of Public Health PHE, 10 September 2018.
[53] Welsh Government. *Free flu vaccinations for Wales' care home workers.* 2018. Available at: https://gov.wales/newsroom/health-and-social-services/2018/flustaff/?lang=en
[54] NICE. *Flu Vaccination – Increasing Uptake, Final Guideline*. 2018.
[55] Dexter LJ, Teare MD, Dexter M, et al. "Strategies to increase influenza vaccination rates: outcomes of a nationwide cross-sectional survey of UK general practice." *BMJ* 2, 3 (2012).
[56] NICE. *Flu vaccination: increasing uptake - Evidence reviews for increasing uptake in clinical risk groups*. 2018. 25.
[57] NICE. *Flu Vaccination – Increasing uptake, the committee's discussion*. 2018.
[58] Ibid.
[59] PHE. *Seasonal influenza vaccine uptake in GP patients: 2017 to 2018.* 33.
[60] NICE. *Flu Vaccination – Increasing uptake, final guideline*.
[61] Ibid.
[62] NHS and Health Education England. Making Every Contact Count Factsheet. Available at: ttp://www.makingeverycontactcount.co.uk/media/1129/mecc-factsheet.pdf
[63] NICE. *Flu Vaccination – Increasing uptake, final guideline*.
[64] NICE. *Flu Vaccination – Increasing uptake, the committee's discussion*.
[65] NHS England. *Directed Enhanced Service Specification*
Seasonal influenza and pneumococcal polysaccharide vaccination programme 2018/19. London: NHS England publications, 2018. 8.
[66] Royal College of Physicians. *Hiding in plain sight: tobacco dependency in the NHS.* 2018. 32.
[67] PHE. *Seasonal influenza vaccine uptake in GP patients: 2017 to 2018.* 16.
[68] NICE. *Flu Vaccination – Increasing uptake, final guideline*.
[69] Dexter et al. "Strategies to increase influenza vaccination rates."
[70] NICE. *Flu Vaccination – Increasing uptake, final guideline*.
[71] Flu Fighter – NHS Employers. Case study, Flu Fighter Award Winner - Sheffield Seasonal Flu Operational Group. 2017.
[72] NICE. *Flu Vaccination – Increasing uptake, final guideline*.

[73] PHE. *Flu Plan Winter 2017/18*. 50.
[74] PHE. *Seasonal influenza vaccine uptake in GP patients: 2017 to 2018.* 33.
[75] Pharmaceutical Services Negotiating Committee. *PSNC Briefing 042/18: Guidance on the Seasonal Influenza Vaccination Advanced Service 2018/19.* 2018. 1.
[76] Franklin B and Hochlaf D. An Economic Analysis of Flu Vaccination. ILC-UK, 2018. 5.
[77] PHE. *Flu Immunisation Programme Slideset*.
[78] NICE. *Flu Vaccination – Increasing uptake, final guideline*.
[79] Public Health England. *Stay Well This Winter*. Available at: https://campaignresources.phe.gov.uk/resources/campaigns/34-stay-well-this-winter-/overview
[80] Public Health Wales. *Beat Flu*. 2018. Available at: http://www.wales.nhs.uk/sitesplus/888/page/96860
[81] NICE. *Flu Vaccination – Increasing uptake, final guideline*.
[82] PHE. *Seasonal influenza vaccine uptake in GP patients: 2017 to 2018.* 32.
[83] Santos AJ et al. "Beliefs and attitudes towards the influenza vaccine in high-risk individuals." *Epidemiology and Infection* 145, 9 (2017).
[84] Science and Technology Select Committee. Flu vaccination programme inquiry - Oral evidence 7 March 2018.
[85] Public Health Wales. *Outbreak of Measles in wales November 2012 – July 2013. 2013.* 10.
[86] NHS leaders. *Health care worker flu vaccination.* Letter.
[87] NHS England. *Extension of NHS seasonal influenza vaccination.* Letter.
[88] Public Health England and Flu Fighter. *Healthcare worker vaccination: clinical evidence*. 2017.
[89] PHE and Flu Fighter. *Healthcare worker vaccination: clinical evidence.*
[90] Pereira et al. " Healthcare worker influenza vaccination."
[91] Ibid.
[92] Praeud et al. "Annual public health and eco- nomic benefits of seasonal influenza vaccination: a European estimate." *BMC Public Health* 14 (2014).
[93] Shrikrishna D et al. "Influenza vaccination for NHS staff: attitudes and uptake." *BMJ Open Respiratory Research* 2 (2015).
[94] Dexter et al. "Strategies to increase influenza vaccination rates."
[95] NHS leaders. *Health care worker flu vaccination.* Letter.
[96] General Medical Council. *Good medical practice*. GMC, 2013. https://www.gmc-uk.org/ethical-guidance/ethical-guidance-for-doctors/good-medical-practice
[97] Royal College of Nursing. Advice Guide – Flu Vaccinations 2017-2018.
[98] Demicheli V et al. "Vaccines for preventing influenza in healthy adults." Cochrane Database of Systematic Reviews 2018.
[99] Shrikrishna et al. "Influenza vaccination for NHS staff."
[100] Flu Fighter – NHS Employers. *Flu Fighter good practice infographic.* 2015.
[101] NHS England. *NHS staff health & wellbeing: CQUIN 2017-19 Indicator 1 Implementation Support*. 2018. 37.
[102] PHE. *Seasonal influenza vaccine uptake in HCWs: 2017 to 2018.* 4.
[103] PHE. *Seasonal influenza vaccine uptake in healthcare workers (HCWs) in England: winter season 2015 to 2016.* London: PHE publications, 2016. 4.
[104] NHS England. Commissioning for Quality and Innovation (CQUIN) 2017/19 Indicators. Available at: https://www.england.nhs.uk/publication/commissioning-for-quality-and-innovation-cquin-201719-indicators/
[105] Flu Fighters – NHS Employers. *Flu Fighter guidance – good practice for acute trusts.* 2016.
[106] NICE. *Flu Vaccination – Increasing uptake, final guideline.*
[107] Skills for Care. *Flu immunisation for social care staff.*
[108] NICE. *Flu Vaccination – Increasing uptake, final guideline.*
[109] NHS leaders. *Health care worker flu vaccination.* Letter.
[110] NICE. *Flu Vaccination – Increasing uptake, final guideline.*
[111] Public Health Agency. *Surveillance of influenza in Northern Ireland*. 21.
[112] British Lung Foundation. *Out in the cold: lung disease, the hidden driver of NHS winter pressure*. 2017. 14.
[113] NHS Digital. *Pneumococcal polysaccharide vaccination programme*.
[114] British Lung Foundation. *Battle for Breath.* 16.
[115] British Lung Foundation. *Support for You – Pneumonia.* Available at: https://www.blf.org.uk/support-for-you/pneumonia/prevention
[116] NHS. *Which vaccinations are free?* 2016. *Available at:* https://www.nhs.uk/common-health-questions/nhs-services-and-treatments/which-vaccinations-are-free/#pneumococcal-vaccine

[117] Walters JAE et al. “Pneumococcal vaccines for preventing pneumonia in chronic obstructive pulmonary disease.” *Cochrane Database of Systematic Reviews* 1, 2017, Issue 1.
[118] Ibid.
[119] Public Health England. Pneumococcal Polysaccharide Vaccine (PPV) coverage report, England, April 2017 to March 2018. 2018. Health Protection Report, 2018. 3.
[120] Department of Health and Health Protection Agency. *PPV Tables 2009.*
[121] Public Health Wales. *Pneumococcal Immunisation - Uptake of PPV in people aged over 65 years or in clinical risk groups.* 2010.