

# Delivering vaccination clinics in primary care



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# Increasing uptake of vaccinations

Helen Bedford, senior lecturer, UCL Great Ormond Institute of Child Health, London

Immunisation is acknowledged to be the most effective intervention to prevent infections that can result in serious illness, long-term complications and even death. Historically, most routine vaccines were concentrated in childhood, but immunisation programmes are now offered throughout life.

There has been a considerable expansion in vaccines offered at all ages. In the last decade alone, several new vaccines, including rotavirus and MenB vaccine, have been added to the primary schedule for infants; an annual flu vaccine programme for children and young people aged 2–17 years is being rolled out; and the HPV vaccine was introduced for young teenage girls. In addition to the established adolescent booster dose of tetanus, diphtheria and polio vaccine, in view of an increase in meningococcal W disease, since 2016, MenACWY vaccine has been offered to adolescents and new university entrants instead of MenC vaccine. Flu and pertussis vaccines were introduced for pregnant women in 2010 and 2012, respectively. At the other end of the life span, older people are now offered herpes zoster (shingles) vaccine in addition to the established pneumococcal and annual flu vaccine programmes.

In the UK, uptake of most routine childhood vaccines is high; for example, 94% of 1-year-olds complete their three-dose course of DTaP/IPV/Hib (Public Health England (PHE), 2016a). At 95.2%, the uptake of MMR vaccine among 2-year-olds is at its highest rate ever, now exceeding the World

Health Organization target having successfully recovered following the decline in uptake resulting from the now discredited concerns over its safety in the early 2000s (PHE, 2016a). MenB vaccine was introduced in September 2015 and preliminary reported uptake of one dose in April 2016 for 6-month-olds was 95.5% (PHE, 2016a).

Despite these overall high rates for the routine childhood vaccines, pockets of lower uptake remain. For some vaccines, overall uptake is considerably lower; notably, the childhood flu vaccine, flu vaccine in at-risk individuals, vaccines in pregnancy and the MenACWY vaccine.

## Reasons for low uptake

Groups identified as being at risk of lower uptake include children in larger families and in lone-parent families or who are socially disadvantaged (Samad et al, 2006; Pearce et al, 2008a; Hardelid et al, 2016). Hospital admission may result in children missing out on routine child health appointments (Samad et al, 2006); yet these children are often at higher risk of the consequences of infectious diseases. Other groups at risk of low uptake include children in the care of the local authority (Rodrigues, 2004) and in mobile families (Pearce et al, 2008b). The evidence about the impact of ethnicity on vaccine uptake shows that while uptake is higher among some larger ethnic groups than in the white UK population (Samad et al, 2006) it is lower among smaller and less well established ethnic groups



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(Wagner et al, 2014). Despite some improvements in uptake of vaccines in pregnancy, uptake is suboptimal, with one London-based study reporting a significant difference in uptake between ethnic groups (Donaldson et al, 2015), emphasising the importance of not generalising about the impact of specific social characteristics.

Much attention has been paid recently by researchers to the issue of 'vaccine hesitancy'—a term coined to describe neither immediately accepting nor declining vaccines but where individuals' concerns result in them delaying or only accepting selected vaccines (Larson et al, 2014). However, there is little evidence to support the idea that vaccine hesitancy is a significant factor contributing to poorer uptake in UK. As refusal of vaccines is estimated to be only about 1 or 2% overall, generally it is difficulties accessing services among the groups

described above that makes the largest contribution to lower uptake (Samad et al, 2006; Hardelid et al, 2016). Therefore, strategies to increase uptake will make most impact by focusing mainly on improving access to immunisation and raising awareness.

### Increasing uptake

Public Health England has recently published guidance for general practices on increasing uptake of influenza immunisation among children (PHE, 2016b). This is based on two studies that aimed to identify strategies associated with increased flu vaccine in general practice (Dexter et al, 2012; Newby et al, 2016). Many of the recommendations echo those of the 2009 National Institute for Health and Care Excellence (NICE, 2009) guidance and even earlier recommendations (Nicoll et al, 1989). Although described by one of the authors as ‘common sense’, the studies provide solid evidence that they are effective. The strategies are applicable to any age group and any vaccine, and fall into broad areas: practice organisation; identifying eligible patients; sending invitations and reminders; organisation of immunisation clinics; and raising awareness among patients.

### Practice organisation

Identifying an individual in the practice to lead the flu vaccine programme is reported to be associated with significantly higher uptake among both the over-65s and the under-65s at-risk groups (Dexter et al, 2012; Newby et al, 2016). Other members of the practice need to understand and recognise both the lead’s role and their own role and responsibilities. Newby et al observed that, in the high vaccine uptake practices included in their study, the leads were particularly ‘driven and tenacious’

(Newby et al, 2016). Everyone else based in the practice, including receptionists, should be involved in promoting vaccines to patients and parents of young children. Other health professionals attached to the practice; for example, health visitors and midwives, should be included in planning and in relevant meetings (Dexter et al, 2012). This team approach has previously been recognised as being associated with higher vaccine uptake rates (Peckham et al, 1989) and enthusiastic staff who are convinced of the importance of immunisation are key to successful immunisation services (Nicoll et al, 1989). Dexter et al also reported that having a community midwife actively involved in flu vaccine was associated with a significantly higher uptake of flu vaccine in pregnancy (Dexter et al, 2012), adding weight to reports from women themselves that recommendations to have the vaccine by their midwife and GP are important factors in determining whether they would accept a vaccine in pregnancy (Campbell et al, 2015; McQuaid et al, 2016).

### Identifying eligible patients

Fundamentally important to the success of immunisation programmes, whether at country or practice level, is having a good recording system (Crowcroft, 2009), which enables identification of eligible patients and of at-risk patients who may need additional vaccines in order to call and remind them about immunisation; this can be done by flagging records.

Providing invitations and reminders alone has been shown to increase vaccine uptake among all age groups by as much as 20% (Jacobson Vann and Szilagyi, 2005; Harvey et al, 2015) and raises awareness of vaccines. Personalised invitations are effective (Dexter et al, 2012) and there is some evidence

that text messaging reminders may work well, particularly among adolescents (Crocker-Buque et al, 2016).

Monitoring of vaccine uptake is essential, but it is also important to feed this back to practitioners to keep staff enthusiastic and informed about progress. Persistence is an important requirement for those chasing up non-attenders, with many attempts at contact necessary for some patients or parents until immunisation or a definitive refusal is achieved. However, where parents have decided not to accept vaccines or are hesitant about them, such repeated attempts at contact could be interpreted as harassment, so a balance is needed between ensuring patients and parents are aware of the offer of immunisation and of keeping the door open for future discussion.

Although there is little evidence supporting effective strategies to approach vaccine hesitancy (Dubé et al, 2015; Jarrett et al, 2015), evidence from research and practice suggests that discussing immunisation questions and concerns with a trusted and well-informed individual who takes the concerns seriously can be the pivotal factor in encouraging uptake in a parent who has previously delayed or even declined a vaccine (Gust et al, 2008).

### Organisation of immunisation clinics

The timing and location of immunisation clinics is critical to ensure accessibility of services and consideration should be given to offering clinics with later opening hours or even at weekends. It may also be possible to hold a clinic in other locations, such as shopping centres. Offering vaccines when patients attend for other reasons is also an important approach for individuals who have missed out (Newby et al, 2016); with so few

valid contraindications to vaccines, this rarely poses a barrier to opportunistic immunisation.

Domiciliary immunisation may be needed for some patients (Nicoll et al, 1989). Some poor uptake can be attributed to the public not knowing that vaccines are available or indicated, so novel approaches to promoting vaccination may be required. For example, poor parental awareness of the need for pre-school booster and second MMR vaccine has been reported (Tickner et al, 2010) as there are fewer regular contacts with health services as children get older. Before the start of the new school year, posters could be displayed or leaflets distributed reminding parents that their children should be up-to-date with their immunisations in places where they are kitting their children out for school, such as school-wear and shoe shops, stationers and hairdressers.

## Conclusion

Achieving and maintaining high vaccine uptake rates is essential for the control and ultimate elimination of infectious diseases. In the UK, despite high overall uptake rates for some vaccines, pockets of lower uptake remain and uptake of some vaccines is suboptimal. Although there are challenges, and sustained enthusiasm is required by practitioners, much can be achieved by good teamwork and organisation using multicomponent strategies.

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# Vaccine storage and handling

Margaret Umeed, specialist nurse practitioner, general practice, Govan Health Centre, Glasgow

Vaccines are both sensitive biological substances and prescription-only medicines (Public Health England (PHE), 2016a).

During 2015, primary care wasted approximately £3.4 million worth of vaccines (PHE, 2016b). While some of the wastage was due to unavoidable incidents, such as a failure of the external power supply, most was preventable (*Figure 1*) (PHE, 2016b). It is very likely that your practice has had some experience of vaccine wastage, either on a small or large scale. This includes vaccines being inadvertently left out of the fridge over the weekend, or the cleaner switching the fridge off to Hoover.

## Roles and responsibilities

In primary care practice, the immunisation guidance from PHE (also known as the *Green Book*) specifies that two named individuals—one each from the nursing and administrative teams—should be responsible for the ordering, receipt and care of vaccines (PHE, 2016b). They should ensure vaccines are stored in a refrigerator promptly after delivery and that the cold chain is maintained at all times. They should understand the need for, and implement, stock control and careful stock rotation. They will also be responsible for ensuring that there is regular, accurate recording of fridge temperatures and that damaged or out-of-date vaccines and associated health-care waste (for example, needles and syringes) are disposed of appropriately (PHE, 2016a). It is essential that

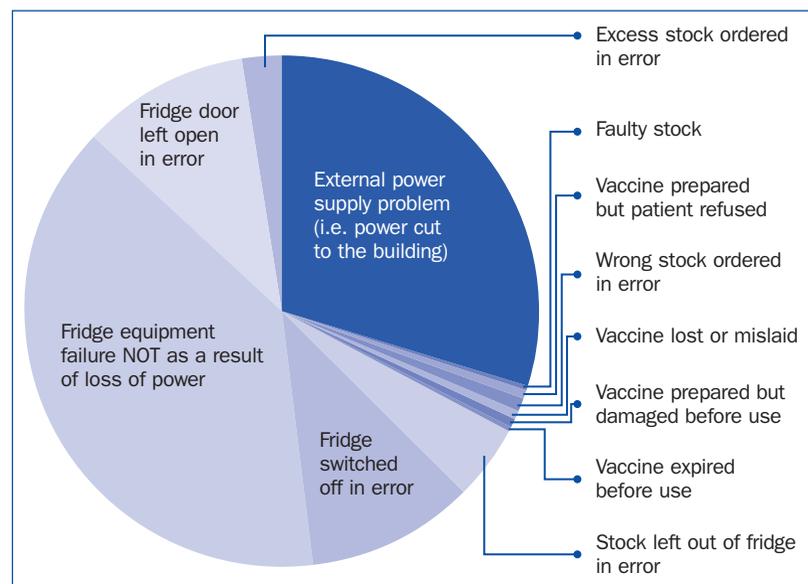
those recording fridge temperatures should be able to recognise and act upon a fridge temperature outside the normal recommended range of +2°C–+8°C (see *Box 1*). Ideally, those responsible for the cold chain and vaccine management in a practice should have undertaken some training. This is not exclusive to nurses; administrative staff and health-care support workers should be encouraged to undertake regular training and updates.

## Storage of vaccines

Specialised refrigerators are available from a variety of medical suppliers and should always be used for storing vaccines and diluents. Domestic refrigerators should not be used, and the vaccine refrigerator should not be used for storing food, drinks or clinical specimens.

The fridge should be placed in a suitable position in a ventilated area, away from direct sunlight and heat sources. It should be either lockable or kept in a locked room, and kept clean and defrosted (if necessary). The Electricity at Work Regulations (1989) require electrical systems to be ‘maintained’ and Portable Appliance Tested (PAT) regularly. Switches should be clearly identifiable and protected from being inadvertently switched off. Most refrigerators now have an integral thermometer that allows 24-hour monitoring of temperatures; however, a fridge storing vaccines should also have at least one maximum/minimum thermometer that operates independently from the mains supply. This is to ensure accurate data are available in the event of a power cut. Both

Figure 1. Causes of vaccine wastage incidents (1 January–31 December 2015) (PHE, 2016b)



## Box 1. Protecting your vaccines

**To protect your patients, you need to protect your vaccines, so remember to:**

### Read

Take a daily reading of the thermometer's maximum, minimum and current temperatures at the same time every day during the working week

### Record

Record temperatures in a standard fashion, on a standard form and sign each entry on the recording sheet

### Reset

Reset the thermometer after each reading. The thermometer should also be reset when temperatures have stabilised after periods of high activity, e.g. restocking

### React

The person making the recording should take action if the temperature falls outside the +2°C–8°C range and document this action

a refrigerator and an external thermometer should be serviced and calibrated annually to ensure correct temperature readings (PHE, 2016a).

The effectiveness of vaccines can only be guaranteed if they have been stored correctly. Vaccines should be stored in their original packaging, as prolonged exposure to ultraviolet light can cause loss of potency. This also allows the original batch numbers, expiry dates and Patient Information Leaflet (PIL) and Summary of Product Characteristics (SPC) to be retained for future reference. To prevent freezing, vaccines should be stored away from the sides and back of the refrigerator, with sufficient space around the boxes to allow air to circulate (PHE, 2016a).

Those responsible for the cold chain should ensure a correct stock

rotation, where vaccines with a short expiry date are used first; for example, it can be helpful to mark expiry dates clearly on the top of the box where it is easily visible. It is worth considering whether those immunisations used for babies should be kept separately, perhaps on a different shelf from those used for travel, for example, or ensuring that live vaccines are kept separately from those being used for pregnant women. Different types of vaccine packaging can look very similar and this may help to ensure the correct patient receives the correct vaccine.

## Recording of temperatures

Refrigerator temperatures should be recorded using a maximum and minimum thermometer at least once every working day (PHE, 2016a).

However, some areas of the country would recommend that fridge temperatures should be taken at the start and finish of every working day. Recordings should be documented on a recognised chart (an example is available in the *Green Book*). The readings should be readily available and retained in the practice for a minimum of a year. Guidance relating to the inspection of fridges during a Care Quality Commission (CQC) inspection is available on the Department of Health website (see Further Reading below).

## Maintaining the cold chain out of practice

Practices should give some consideration to maintaining the cold chain at all times; for example, travel vaccines that are prescribed and brought into the practice from a pharmacy for administration. A nurse administering a vaccine should be satisfied that the vaccine has been correctly stored (i.e. the cold chain has been maintained). The responsibility for administering a vaccine that is possibly ineffective lies with the person administering

the vaccine, not the prescriber. In theory, a vaccine that has been collected from a pharmacy several hours before being administered, stored in a glove compartment or boot and then handed over for administration, may have been rendered inactive. This could have serious consequences if the traveller has a long-term condition that deteriorates due to an illness they were assumed to be immunised against. Practices should consider the most effective way to ensure the cold chain. This may result, in the case of non-NHS travel vaccines, in buying vaccines directly from the manufacturer and passing the cost on to the traveller, instead of supplying the traveller with a private prescription.

## Conclusion

Vaccines are hugely important in preventing illness and disease in a community. Maintaining the practice's refrigeration, ordering and stock rotating vaccines, ensuring that fridges are not overfilled and serviced regularly, checking temperatures and ensuring that the best processes are always in place are not glamorous tasks, but they are hugely important. So come on, shake out those protocols, dust off those guidelines and tighten up the stock rotation. It could save a life and it might save the NHS some millions.

Public Health England (2016a) *Immunisation Against Infectious Disease*. PHE, London

Public Health England (2016b) *Vaccine Update. Issue 242, March 2016*. PHE, London

## Further reading

Cold chain management online <http://nhs.learnprouk.com>

Department of Health [www.gov.uk/government/collections/immunisation](http://www.gov.uk/government/collections/immunisation)

Health Protection Scotland [www.hps.scot.nhs.uk](http://www.hps.scot.nhs.uk)

# Running an effective child vaccination clinic

Bernadette Higgins, practice nurse, Park Medical Group, Newcastle upon Tyne

**T**he baby immunisation clinic is one of the most demanding consultations. The reasons for this are multifactorial, not least the frequent changes to immunisation schedules. The most important type of support a practice manager can offer to clinicians is regular training and easy access to updates.

It is vital for immunisers to be confident in their practice and know where to find information and guidance if in doubt. Immunisers should have an annual update from a recognised educational body—Public Health England (PHE) provides reliable resources on its website ([www.gov.uk/government/organisations/public-health-england](http://www.gov.uk/government/organisations/public-health-england)).

## Optimising immunisation levels

For immunisation to be successful, the correct call and re-call of children is paramount. Uptake should be as near to 100% as possible. While all practice staff should actively promote immunisation, it is the health visitor's role to reach out to non-attenders. Are your staff using the correct codes to record information? Inputting a single digit incorrectly may automatically record a completely different vaccine to the one given.

To optimise immunisation levels in your practice, have literature available for parents to explain how immunisations will protect their child. Include post-immunisation advice, such as how to manage a temperature. A good relationship

with your local child health information service (CHIS)—where active clinical care records of all the children in an area are kept, containing information about an individual child's public health interventions, particularly screening and immunisations—can optimise immunisation coverage within your practice. The service can often clarify the immunisation status of new families in the area and send regular reminders for non-attenders.

Your immunisers should be familiar with the emergency equipment and ensure there is clear guidance for anaphylaxis doses for infants. Have dates of drugs checked and recorded at least monthly.

## The importance of documentation

Documentation is vitally important. There are excellent templates for immunisers to record information, which should include what was given, the manufacturer, the site, the batch numbers and expiry date. The templates should also include consent, which must always be obtained, and the parent or guardian should understand what the child will be given and any side effects. The guardian must be competent to give consent; for example, if the infant is brought by an older sibling, has the parent given consent? Are there language barriers? An interpreter may be needed to gain informed consent. Any other information that may be relevant should be included. For example, 'Child has cold but well enough for immunisation' should be recorded.

If anything adverse happens it can be important. A scenario such as, 'The child moves suddenly and is scratched with the needle' should be documented, including site, the injury sustained and action taken. Transparency is important and parents are usually understanding, as long as nothing is covered up. The baby's personal child health record (*Red Book*) can be shown to parents to supplement the information you have given them.

With the best practice in the world, complaints about baby clinics will still occur. From the onset of the consultation there can be resentment, as it is a procedure about which parents instinctively feel wary and resentful. We are doing something to their child that they do not like and it is instinctive to react. We have to rise above the 'nasty nurse stuck a needle in you' mentality.

## Practical tips for the vaccine clinic

Safety in preparation for a baby clinic is vital and items may need moving in the treatment room so that children are not at risk of injury. Cupboard and fridge locks should be on and clinical waste bins may need moving so that children cannot open them. Scissors, forceps and other clinical instruments should be out of reach. The door may need locking so that older children do not run out or catch their fingers in it. In what can often seem like a chaotic consultation, you must know where your needles and syringes are. Have your sharps box within easy reach and put used syringes in immediately

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# THE 2016/17 CHILDREN'S FLU VACCINATION PROGRAMME:

## AN OVERVIEW

Vaccination is one of the most effective ways to prevent the morbidity and mortality associated with influenza.<sup>1</sup> The Department of Health (DH) will once again be delivering a comprehensive national influenza immunisation programme to children across England, Scotland, Northern Ireland and Wales in 2016/17.<sup>2</sup> For the fourth year children will be offered Fluenz® Tetra▼ live attenuated influenza vaccine (LAIV quadrivalent), as recommended by the Joint Committee of Vaccination and Immunisation (JCVI).<sup>2</sup>

### Who is eligible for the 2016/17 childhood flu vaccine?

In England and Wales more children will be offered flu vaccination this year than in previous years with the programme being extended to include all children of appropriate age for school year three.<sup>2,3</sup>

The programme in England for 2016/17, where LAIV quadrivalent will be provided, will include a routine offer of vaccination to:<sup>2</sup>

- All those aged two, three and four years old (but not five years or older) on 31 August 2016 (i.e. date of birth on or after 1 September 2011 and on or before 31 August 2014) through general practice
- All children of appropriate age for school years 1, 2 and 3 through locally commissioned arrangements
- All primary school-aged children in former primary school pilot areas
- Clinically at risk children

**For further information on the specific programme in Wales, Scotland and Northern Ireland please check your local Public Health / NHS guidance.**

### History of the programme

The United Kingdom started the phased introduction of a universal childhood influenza vaccination programme during the 2013/14 influenza season with all eligible two and three-year-olds being offered vaccination through general practice, as well as via pilot schemes in primary school-aged children in England. The programme followed the recommendation of the JCVI that all healthy children aged two to less than 17 years should be offered LAIV. JCVI made the recommendation for the use of nasal spray flu vaccination for the childhood programme due to the evidence supporting efficacy, protection against drifted strains and safety profile and in the absence of any equivalently effective alternative authorised vaccine.<sup>4</sup>

Since its inception, the programme has been extended to include more and more children each year, with the ultimate aim being to prevent approximately 2,000 deaths from flu in the general population and lead to around 11,000 fewer hospitalisations.<sup>5</sup>

### Results from the 2014/15 childhood influenza vaccination programme

In 2014/15, some areas of England vaccinated not only 2-4 year olds, but also school aged children – they were known as pilot areas. Vaccinating primary school age children resulted in significant reductions in cumulative incidence/laboratory confirmed positivity in the targeted age group (5–10 years) in pilot compared with non-pilot areas for:<sup>6</sup>



GP consultations for influenza like illnesses (94% reduction, OR\* 0.06 (95% CI\*\* 0.01 to 0.62) absolute risk difference -247 per 100,000 population, p = 0.018)



Emergency department respiratory attendances (74% reduction, OR 0.26 (0.08 – 0.91) absolute risk difference -9% p= 0.035)



Confirmed influenza hospital admissions (93% reduction, OR 0.07 (0.01 – 0.55) absolute risk difference -16 per 100,000 population p = 0.012)

Non-significant reductions in:

- GP swabbing positivity (75% reduction, OR 0.25 (95% CI 0.03 to 2.22) absolute risk difference -28% p = 0.213)
- Confirmed influenza intensive care unit admissions (76% reduction, OR 0.24 (0.02 to 3.01) absolute risk difference -2 per 100,000 population p = 0.271)
- DataMart influenza positivity (42% reduction, OR 0.58 (0.25 to 1.31) absolute risk difference -5% p = 0.187)

Indirect decreases were also seen in children under five years of age, where the burden of influenza is recognised to be highest, and lowest indirect reductions in adults, where influenza disease burden is also high (in particular in the elderly and clinical risk groups).

\*Odds Ratio \*\*Confidence Interval

*Perbye RG et al. Uptake and Impact of Vaccinating School Age Children Against Influenza During a Season with Circulation of Drifted Influenza A and B Strains, England, 2014/15, Eurosurveillance Volume 20, issue 39, 01 October 2015*

### Increasing uptake

This year, DH, PHE and NHS England have called for a minimum uptake rate in England of 40-65%, stating that vaccinating children means that not only are they protected but there should also be reduced transmission across all ages, decreasing incidence of flu overall and reducing the burden of flu across the whole population.<sup>2</sup> There are a number of PHE-backed strategies that can be used to improve vaccine uptake and ensure that all eligible children are vaccinated by the end of December before flu starts circulating.<sup>7,8</sup>

#### 1. Plan

It is important to plan ahead to achieve a high vaccination uptake. Agreeing your practice's strategy to immunise all eligible children between October and December at an early stage will allow you to make adjustments, plan team resources and training, review lists of eligible children as well as plan clinics and order adequate vaccine supply. Agree the team responsible for implementing the programme and ensure everyone is clear on their role, ensuring a key member of staff is established who will lead the campaign. Consider creating a crib sheet detailing the age groups that are eligible and frequently asked questions to share.

#### 2. Identify eligible children and agree programme format

Review all records and check the accuracy of searches / coding to ensure eligible children are identified. PHE also recommends creating system reminders to allow for opportunistic immunisation. Agree whether timed appointments, open clinics, or a combination of the two will be offered to parents to maximise uptake. Once all patients have been identified and vaccine ordering via ImmForm is open, the initial batch of vaccines should be ordered to ensure you have the right amount of stock.

#### 3. Promotion

Personalised invitations to the families of eligible children work well as a first point of contact, accompanied by telephone and text message follow-up to remind parents about the importance of vaccination. It is also important to prominently display information on the immunisation programme in the surgery.

#### 4. Implementation

During flu season, continually assess your programme, celebrating what's working well and reviewing where improvements could be made. Follow up regularly with unresponsive parents to optimise all opportunities to invite children for vaccination.

## Fluenz® Tetra vaccine information

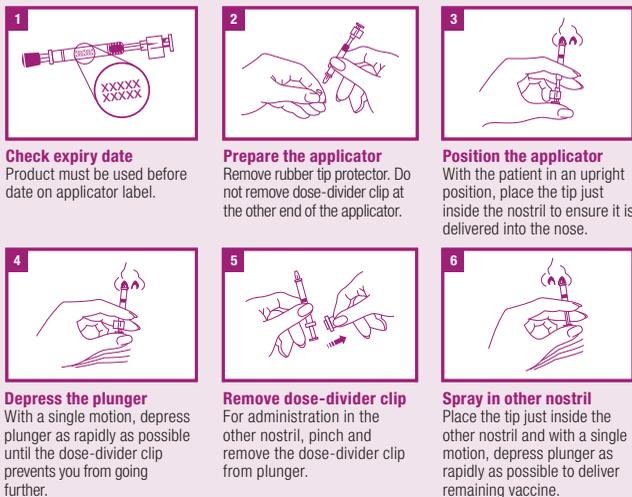
Fluenz Tetra is a live attenuated influenza vaccine (LAIV quadrivalent)<sup>9</sup>

### Efficacy and safety profile

- LAIV has been shown to provide a higher level of protection for children than traditional inactivated influenza vaccine (TIV)<sup>9,10</sup>
- Combined safety data for LAIV quadrivalent and LAIV trivalent are based on clinical studies over multiple years.<sup>8,5</sup> Additional experience has occurred with marketed use of LAIV
- Adverse effects are detailed in the SmPC.<sup>9</sup> Very common adverse effects include decreased appetite, headache, nasal congestion and rhinorrhoea.<sup>9</sup> Suspected adverse reactions in the United Kingdom should be reported via: Yellow Card Scheme, [www.mhra.gov.uk/yellowcard](http://www.mhra.gov.uk/yellowcard) and also to AstraZeneca on 0800 783 0033

### Administration<sup>5</sup>

LAIV quadrivalent is for nasal use only, do not use with a needle or inject



### Practical considerations<sup>8</sup>

- Store in a refrigerator (2°C – 8°C)
- Before use, the vaccine may be taken out of the refrigerator, without being replaced, for a maximum period of 12 hours at a temperature not above 25°C. If the vaccine has not been used after this 12-hour period, it should be discarded
- Please remember Fluenz Tetra has a maximum shelf life of 18 weeks. Always check the expiry date (day, month and year) on individual sprayers before administration. Discard any unused vaccine at the end of the vaccination season to prevent use of expired vaccine

## Useful resources and support

- DH/PHE NHS England Flu letter
- Updated Green Book: Chapter 19
- Find more DH/PHE resources, including best practice guidance on increasing influenza immunisation uptake amongst children here at: <https://www.gov.uk/government/collections/annual-flu-programme>
- To learn more about Fluenz Tetra visit: <http://fluenztetra.co.uk/> (please note that this is an AstraZeneca website and includes both promotional and non-promotional content)
- Additional patient online resources are available at AstraZeneca's Share Good Times not Flu Website: [www.sharegoodtimesnotflu.co.uk](http://www.sharegoodtimesnotflu.co.uk)

## Ordering Fluenz Tetra

Department of Health has centrally procured Fluenz Tetra for children who are part of the extended flu immunisation programme and those in clinical risk groups.<sup>2</sup> Please check your national guidance for ordering. For healthcare professionals in England, stock can be ordered via ImmForm.

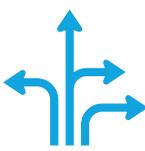
## Top tips for increasing intake



Agree your plan early. Review past performance and targets for this year alongside changes to this year's childhood flu vaccination schedule to determine order volumes



Convene a multidisciplinary team and agree responsibilities up front. Ensure everyone is well-briefed and confident in delivering this year's programme



Be flexible. Consider a mix of booked appointments and drop in clinics throughout the day and during the early morning / evening



Be proactive. Don't rely on parents booking an appointment by responding to a letter; follow up on the phone, pre-book appointments and be opportunistic



Explain why. Help patients understand the importance of flu vaccination, as recommended by the Department of Health, by highlighting that it can cause serious illness and be passed to vulnerable family members

## FLUENZ® TETRA nasal spray suspension Influenza vaccine (live attenuated, nasal)

### PRESCRIBING INFORMATION Consult Summary of Product Characteristics before prescribing.

**Presentation:** Nasal spray, suspension. **Indication:** Prophylaxis of influenza in individuals 24 months to less than 18 years of age. **Dosage and administration:** 0.2ml (administered as 0.1ml per nostril). Children not previously vaccinated against seasonal influenza should be given a second dose after an interval of at least 4 weeks. FLUENZ TETRA should not be used in individuals below 24 months of age because of safety concerns. **Method of administration:** Nasal administration only. **Do not inject FLUENZ TETRA. Contraindications:** Hypersensitivity to the active substances, any of the excipients (e.g. gelatin), gentamicin (a possible trace residue), eggs or to egg proteins (e.g. ovalbumin). Children and adolescents who are clinically immunodeficient due to conditions or immunosuppressive therapy: (acute and chronic leukaemias; lymphoma; symptomatic HIV infection; cellular immune deficiencies; and high-dose corticosteroids). Not contraindicated for use in individuals with asymptomatic HIV infection; or individuals who are receiving topical/inhaled corticosteroids or low-dose systemic corticosteroids or those receiving corticosteroids as replacement therapy, e.g. for adrenal insufficiency. Contraindicated in children and adolescents younger than 18 years of age receiving salicylate therapy because of the association of Reye's syndrome with salicylates and wild-type influenza infection. **Warnings and precautions:** Medical treatment and supervision should always be readily available in case of an anaphylactic event following administration. FLUENZ TETRA should not be administered to children and adolescents with severe asthma or active wheezing because these individuals have not been adequately studied in clinical studies. Do not administer to infants and toddlers younger than 12 months. Not recommended

to administer to infants and toddlers 12-23 months of age. In a clinical study, an increase in hospitalisations was observed in infants and toddlers younger than 12 months after vaccination and an increased rate of wheezing was observed in infants and toddlers 12-23 months of age after vaccination. Vaccine recipients should be informed that FLUENZ TETRA is an attenuated live virus vaccine and has the potential for transmission to immunocompromised contacts. Vaccine recipients should attempt to avoid close association with severely immunocompromised individuals (e.g. bone marrow transplant recipients requiring isolation) for 1-2 weeks following vaccination. Where contact is unavoidable, the potential risk of transmission of the influenza vaccine virus should be weighed against the risk of acquiring and transmitting wild-type influenza virus. No data exists regarding the safety in children with unrepaired craniofacial malformations. **Drug interactions:** Salicylates must not be used for 4 weeks following vaccination unless medically indicated. Co-administration of FLUENZ TETRA with the live attenuated vaccines: No clinically meaningful changes in immune responses to measles, mumps, varicella, orally-administered poliovirus or FLUENZ TETRA have been observed. Immune response to rubella vaccine was significantly altered. This might not be of clinical relevance with the two dose immunisation schedule of the rubella vaccine. Co-administration of FLUENZ TETRA with inactivated vaccines has not been studied. Concurrent use of FLUENZ TETRA with antiviral agents active against influenza A and/or B viruses has not been evaluated. However, based upon the potential for influenza antiviral agents to reduce the effectiveness of FLUENZ TETRA, it is recommended not to administer the vaccine until 48 hours after the cessation of influenza antiviral therapy. Administration of influenza antiviral agents within two weeks of vaccination may affect the response of the vaccine.

If influenza antiviral agents and FLUENZ TETRA are administered concomitantly, revaccination should be considered when appropriate. **Fertility, Pregnancy and Lactation:** Not recommended during pregnancy. Should not be used during breast-feeding. No data on the effects of FLUENZ TETRA on male and female fertility. **Undesirable effects:** Refer to SmPC for complete information on side effects. Very common: decreased appetite, headache, nasal congestion/rhinorrhoea, malaise. Common: myalgia, pyrexia. Uncommon: hypersensitivity reactions (including facial oedema, urticaria and very rare anaphylactic reactions), epistaxis, rash. Very rare reports of Guillain-Barré syndrome and exacerbation of symptoms of Leigh syndrome (mitochondrial encephalomyopathy) have also been observed in the post-marketing setting.

### Legal category POM.

**Marketing authorisation number** EU/1/13/887/004

**Presentation and basic NHS cost:** Fluenz Tetra nasal spray suspension pack of 10: £180.00

**Further information is available from:** AstraZeneca on behalf of the Marketing Authorisation Holder MedImmune, AstraZeneca UK Limited, 600 Capability Green, Luton, LU1 3LU, UK. MedImmune is the Global biologics business for AstraZeneca. [FLUENZ] is a trade mark of the AstraZeneca group of companies. **Date of PI preparation:** 08/2015  
INF 15 0023

**Adverse events should be reported. Reporting forms and information can be found at [www.mhra.gov.uk/yellowcard](http://www.mhra.gov.uk/yellowcard). Adverse events should also be reported to AstraZeneca on 0800 783 0033.**

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afterwards (ensuring that you have the batch number). It is amazing how little hands can reach and grab; do not give anyone the opportunity to have a needlestick injury. Have a high surface to prepare your immunisations away from reaching fingers. Have your seating arranged to suit you.

Is the child well? The only contraindication to immunisation is a very unwell child. Coughs, colds and sniffles are not contraindications. If a child has had a previous anaphylactic reaction to an immunisation, he/she should be referred to secondary care for any further immunisation needed. Egg allergy is not a contraindication.

Before immunisation, always ask parents, 'Is there anything else you would like to ask?' They may have a specific question and will feel more confident in the procedure if you can respond to their concern.

Never give an immunisation if you are unhappy about the circumstances (for example, if you are unsure whether or not the parent understands, if the child seems actively unwell with a fever, or if the computer is malfunctioning and you need to get the immunisation history from elsewhere). Do not be persuaded by parental pressure if you have any doubts.

Only have the parent and relevant child in the clinic room, if possible. Sometimes the baby clinic is treated as a family day out. The treatment room should be as safe as possible, but it is never a suitable playroom. If there is more than one adult, it is perfectly reasonable to ask one of them to take the other children out to the waiting room.

For a parent attending alone with two or more children, it can be a good idea to have paper and crayons at the ready to occupy the children with drawing. Parents can be extremely disorganised and distressed. They may have

postnatal depression, concern for their child's normality, be going through a relationship break-up, or be suffering from sleep deprivation. Always check a child's immunisation history before you call them in. Parents often attend saying a child needs a certain vaccination when the schedule indicates something else. They may attend for vaccinations that are not due or have already been given.

### Vaccine dos and don'ts

Vaccines must be kept in clinically recommended fridges. The type with a glass front is preferred so that stock can be checked without opening the door and disturbing the temperature. The temperature needs recording at least daily. An internal thermometer is useful as an extra failsafe check. All vaccines must be stored as recommended, and ensure the cold chain is maintained when vaccines are delivered or need transporting between sites—cold boxes should be used.

Nurses live in fear of giving the wrong vaccine or over-vaccinating—yet guidance is clear. If there is doubt regarding immunisation status, it is better to over-immunise than not give the vaccine at all. Immunisers can explain to the parent that if a child is given an extra dose inadvertently it will not do them any harm.

There is an excellent algorithm available from PHE (2016a), which gives clear guidance for vaccination of individuals with uncertain or incomplete immunisation status. This is becoming increasingly relevant with shifting populations and globalisation.

It is useful to be on 'borrowing terms' with a nearby GP practice as a busy clinic can quickly lead to very low stock. The vaccines are bulky and take up a lot of space, so ordering little and often is the general advice. The media can

hugely influence parents when it comes to immunisations. If there is an immunisation report or scare in the public domain, your staff need to have an easy protocol to follow for queries.

Is there enough time to explain the procedure, to obtain informed consent, to explain the possible after effects, and to draw up and give the vaccine safely and record all the relevant information? Most baby clinics are a team effort between receptionists, health visitors, GPs, practice or treatment room nurses and nursery nurses.

It may be that sharing of tasks is indicated. In some practices, health visitors will educate and respond to immunisation questions before the immunisation. In this scenario, it is assumed the nurse will run a task-orientated clinic and only be giving the immunisation. Some practices use receptionists to enter the data into the computer notes; however, allocation of tasks can make it difficult to establish accountability.

### Useful guidance

General practices should have a patient group directive for your locality. This is your protocol or guidelines. These are updated regularly and should be signed by all immunisers.

All immunisers should have easy access to the *Green Book*, the immuniser's bible, including all updates (PHE, 2016b). This supersedes other guidelines. Successful immunisation and vaccination of your practice population, is the most effective health benefit you can offer to your patients.

- Public Health England (2016a)  
*Vaccinations of individuals with uncertain or incomplete immunisation status*. PHE, London
- Public Health England (2016b)  
*Immunisation Against Infectious Disease*. PHE, London

# Delivering travel vaccines in general practice

Margaret Umeed, specialist nurse practitioner, general practice, Govan Health Centre, Glasgow

**B**efore a nurse undertakes the provision of a service, he or she is obliged to consider whether or not they are competent to do so (Nursing and Midwifery Council (NMC), 2015). Nurses should also be mindful that they are personally accountable not only for their actions, but also for their omissions, and must always be able to justify their decisions (NMC, 2015). These principles apply not only to prescribing decisions (NMC, 2006; 2008), but also to travel health.

The Royal College of Nursing (RCN) document *Delivering Travel Health Services* (RCN, 2005) recommends that those providing a general travel health service should undertake a minimum of 2 days of training and should thereafter participate in an annual study day or conference to maintain their continuing professional development.

## Risk assessment

The process of assessing a traveller's risk with the traveller before they travel underpins the travel health consultation (Chiodini et al, 2012). The RCN's competencies state: 'No travel health consultation should take place without conducting a travel risk assessment and documenting the information. The assessment forms the basis of all subsequent decisions, advice given, vaccines administered and the malaria prophylaxis advice that is offered' (Chiodini et al, 2012: 18).

## Destination

Specifics on destination include the areas to be visited, both within a country and if travelling between countries, or if there is likely to be one or more stopover(s). Yellow fever may be recommended for a specific area of a country, such as the Amazon basin of Brazil, but not for the coastal city areas. Some countries, such as Sierra Leone in sub-Saharan Africa (SSA), have a mandatory requirement for yellow fever vaccination regardless of where the traveller is intending to stay (World Health Organization, 2012). Rural areas of a country or region may offer less in the way of medical facilities, particularly in resource-poor countries, which suggests that vaccines like rabies and Japanese encephalitis are appropriate for the traveller.

## Accommodation

During the risk assessment, it is important to ascertain the type of accommodation the traveller is planning to use; this will be a deciding factor in considerations of person-to-person transmitted diseases, such as meningitis and diphtheria.

## Length of travel time

Travellers spending a long time in a particular area are at a higher risk of disease—not only because of the length of time they are exposed to the risk (for example, a person visiting friends and relatives (VFR) living with family and friends for 1 month

is at a higher risk of disease than a traveller staying 2 days), but also from a lapse in safe practices, which exposes the traveller to potential risks from disease. Travellers may feel they have built up some immunity to local infections, and may fail to ensure a safe water supply for brushing their teeth, or they may eat at local eateries, exposing themselves to potential risk from oral/faecal disease.

## Vaccinations

When the health professional has decided which vaccine(s) should be given, they must be prescribed. NHS vaccines (*Table 1a*) can be written on a GP10N. Non-NHS vaccines (*Table 1b*) should be either written on a private prescription or ordered directly from the vaccine manufacturer and prescribed using a Patient Specific Direction (PSD). Following a change in UK law, independent nurse prescribers can also prescribe unlicensed or off-license medicines. Nurses should ensure they always deliver care based on the best available evidence or best practice, and they should recognise and work within the limits of their competence (NMC, 2015). If a licensed product is available, this should always be used in preference to an unlicensed product. Guidelines (NMC, 2008) stipulate that it is the prescriber's responsibility to advise the recipient, relative or carer about the nature of the unlicensed or off-license nature of the product and to document this in the person's records.

**Table 1a. Vaccines used for travel purposes: NHS**

Vaccine	Vaccine dose and notes
<b>Tetanus</b>	Children under 10 years: three doses of combined preparation with an interval of 1 month between. Two booster doses are later recommended. Adults and children over 10 years previously unimmunised: three doses of adsorbed diphtheria, tetanus and poliomyelitis (inactivated) vaccine are given at an interval of 1 month
<b>Diphtheria</b>	Primary immunisation of children aged 2 months to 10 years; vaccination is recommended usually in the form of three doses of diphtheria, tetanus, pertussis, poliomyelitis and haemophilus type b conjugate vaccine. Over 10 years, the primary course comprises three doses of adsorbed diphtheria, tetanus and poliomyelitis vaccine. A booster dose should ideally be given 3 years after primary course. A second booster dose should be given 10 years after the previous booster dose. Those intending to travel to areas with a risk of diphtheria should be fully immunised according to the UK schedule
<b>Polio</b>	For primary prevention, three doses of a combined preparation should be given at 2 months of age with intervals of 1 month. A booster should be given 3 years after completion of the primary course. The second booster should be given 10 years after the first dose. A course of three doses should also be given to all unimmunised adults; no adult should remain unimmunised against poliomyelitis. Unimmunised travellers to areas with a high incidence of poliomyelitis should receive a full three-dose course of a preparation containing inactivated poliomyelitis vaccine. Those who have not been vaccinated in the last 10 years should receive a booster dose of adsorbed diphtheria, tetanus and poliomyelitis vaccine
<b>Hepatitis A (for example, Avaxim® / Epaxal®)</b>	The vaccine should be given at least 2 weeks before departure; however, it is likely to be effective even if given shortly before departure. A booster dose is required 6–12 months after the initial dose, but it can be administered even after several years for a minimum of 25 years' protection
<b>Typhoid (for example, Typherix® / Typhim V® / Vivotif®)</b>	Children under 2 years may respond suboptimally to the vaccine, but children aged 1–2 years should be immunised if the risk of typhoid fever is considered high. Oral typhoid vaccine is a live attenuated vaccine contained in an enteric-coated capsule. One capsule taken on alternate days for a total of three doses provides protection 7–10 days after the last dose. Boost with three capsules, 3 years after the primary course. The oral typhoid vaccine can only be used in children older than 6 years of age
<b>Cholera (for example, Dukoral®)</b>	Oral cholera vaccine is licensed for travellers to endemic or epidemic areas. Immunisation should be completed at least 1 week before potential exposure. However, there is no requirement for cholera vaccination for international travel. Immunisation with cholera vaccine does not provide complete protection, and all travellers to a country where cholera exists should be warned that scrupulous attention to food, water, and personal hygiene is essential. Injectable cholera vaccine provides unreliable protection and is no longer available in the UK

Joint Formulary Committee, 2016

## Consent

Consent must be obtained before any treatment, including the administration of vaccines, is undertaken. However, there is no legal requirement for written consent before immunisation, and a signature on a consent form is not conclusive proof that consent has been given but serves to record the decision

and the discussions that have taken place with the traveller, relative or carer. Consent is not a one-off event but a continuous process and should be sought from the traveller on each occasion they present for immunisation. Consent must be given voluntarily and can be either implied (where the traveller rolls up their sleeve) or given verbally. In England

and Wales, the age of legal consent is 16 years of age; however, if a young adult under the age of 16 years is observed to be Gillick competent (they can understand the implications of refusing immunisation), he or she cannot be forced to have travel vaccines even if his or her parents suggest otherwise. In Scotland, there is no minimum age of consent;

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**Table 1b. Vaccines used for travel purposes: Non-NHS**

Vaccine	Vaccine dose and notes
<b>Yellow fever</b>	Live yellow fever vaccine is indicated for those travelling or living in areas where infection is endemic. Infants under 6 months of age should not be vaccinated because there is a small risk of encephalitis; infants aged 6–9 months should be vaccinated only if the risk of yellow fever is high and unavoidable
<b>Rabies</b>	Immunisation against rabies requires three doses of rabies vaccine, with further booster doses for those, including travellers, who remain at continued risk. To ensure continued protection in persons at high risk, the concentration of antirabies antibodies in plasma is used to determine the intervals between doses
<b>Hepatitis B</b>	There are different regimens for hepatitis B vaccination, depending on the product used. Generally, three or four doses are required for primary immunisation; an 'accelerated schedule' is recommended for pre-exposure prophylaxis in high-risk groups where rapid protection is required, and for post-exposure prophylaxis. Immunisation may take up to 6 months to confer adequate protection; the duration of immunity is not known precisely, but a single booster 5 years after the primary course may be sufficient to maintain immunity for those who continue to be at risk
<b>Meningococcal ACWY (for example, ACWY Vax®)</b>	If an individual has recently received meningococcal group C conjugate vaccine, an interval of at least 2 weeks should be allowed before administration of the quadrivalent (A, C, W135, and Y) vaccine. The antibody response to serotype C in unconjugated meningococcal polysaccharide vaccines in children under 18 months may be suboptimal. The latest recommendation is that conjugate ACWY vaccine given for Hajj will be considered effective for 8 years
<b>Japanese encephalitis (for example, Ixiaro®)</b>	The primary immunisation course of two doses should be completed at least 1 week before potential exposure to Japanese encephalitis virus. A third dose should be administered 12–24 months following a two-dose primary immunisation series. For travellers residing in endemic areas, and therefore at continued risk, a third dose should be administered after 12 months
<b>Tick-borne encephalitis (for example, TicoVac®)</b>	For full protection, three doses of the vaccine are required; booster doses are required every 3 years for those still at risk. Ideally, immunisation should be completed at least 1 month before travel

Joint Formulary Committee, 2016

however, children under the age of 16 years must have Gillick competency applied (Public Health England, 2016).

## Administration

The majority of travel vaccines are administered by the intramuscular route. The gluteal muscle should not be used for travel vaccines: hepatitis B and rabies are both poorly absorbed from this region. It was, however, the site of immunoglobulin administration in the years before hepatitis A vaccine and is still used for the administration of specific immunoglobulins.

## Conclusion

Travel health is a complex and evolving area of medicine. Practitioners should be aware of their limitations in relation to recommending, prescribing and administering vaccines, and should know where to seek further advice for more complicated travel itineraries.

Chiodini J, Boyne L, Stillwell A, Grieve S (2012) *Travel Health Nursing: Career and competence development*. RCN, London

Joint Formulary Committee (2016) *British National Formulary*. British Medical Association and Royal Pharmaceutical Society, London

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Royal College of Nursing (2005) *Delivering Travel Health Services*. RCN, London

World Health Organization (2012) *International Travel and Health*. Geneva, WHO

# Maximising uptake of vaccinations in older people

Savita Bakhshi, research associate; Alison E While, emeritus professor, Florence Nightingale Faculty of Nursing and Midwifery, King's College London

**A**dults aged 65 years and over are particularly vulnerable to influenza, pneumococcal infection and shingles as their immune systems are weaker than those of younger adults (Public Health England (PHE), 2016a). The routine vaccination schedule offers protection to people aged 65 years and over against vaccine-preventable infections (influenza, pneumococcal infection and shingles (herpes zoster)) (PHE, 2016a).

While this article will focus mainly on influenza vaccination, many of the points are also relevant to the pneumococcal polysaccharide (PPV) and shingles vaccinations in terms of maximising their uptake for the single (once only) injection. Indeed, it is the need for an annual injection for influenza protection that requires general practices to have robust plans for the additional annual vaccination workload.

The influenza vaccination helps to reduce influenza severity and the incidence of complications, but a range of factors can affect uptake among older people. These factors can be categorised as follows: the system of vaccination; influenza vaccination mistrust and fear of side-effects; health beliefs and behaviours; and other factors. Various interventions to maximise influenza vaccination uptake among older people in the community have been identified, including: interventions to increase community demand, enhance access and improve influenza

vaccination among primary care nurses, as well as provider or system-based interventions and societal interventions. Primary care nurses have been found to have a positive influence on influenza vaccination uptake and should continue to promote the benefits of influenza vaccination to their patients who are 'persistent decliners'.

## Influenza

Influenza is an acute viral infection that spreads from person to person and is characterised by symptoms such as a high fever, headaches, muscle and joint pain, a cough, sore throat and runny nose. Most people recover from this infection within a week. However, some individuals display no or very minor symptoms but can still spread the virus among their contacts. The prevalence of influenza is estimated at 5–10% in adults and 20–30% in children worldwide, causing between 3 million and 5 million cases of severe illness, and approximately 250 000 to 500 000 deaths annually (World Health Organization (WHO), 2014). Seasonal influenza can lead to severe illness and increased mortality in high-risk populations, such as children under 2 years of age, pregnant women, older people (i.e. those 65 years or older) and people with chronic medical conditions (WHO, 2014).

An annual influenza vaccination can provide safe and effective protection against the onset of influenza, particularly for high-risk

groups and those who are regularly exposed to these groups, such as health professionals (WHO, 2014). While the influenza vaccination may be less effective in preventing illness among older adults compared with younger adults, it helps to reduce disease severity and the incidence of complications (Monto et al, 2009; Thomas et al, 2010a; WHO, 2014). Staff vaccination programmes can also help to reduce the transmission of the virus to other staff and patients, leading to lower levels of staff illness and absenteeism (Anikeeva et al, 2009) as well as being beneficial in terms of virus transmission to vulnerable patients.

## Pneumococcal infections

Pneumococcal infections, like influenza, spread from person to person through droplets or contact with respiratory secretions. While most healthy adults have good immunity, invasive pneumococcal infections are a major cause of morbidity and mortality among older people and other vulnerable patients who invariably have compromised immunological responses. Since 2003 a single dose of pneumococcal polysaccharide vaccination (PPV) has been recommended for all people aged 65 years and over (PHE, 2015a) to achieve a good antibody response. The latest published data indicate that there has been a 1.0% increase in the coverage of PPV in adults aged 65 years and over with 69.8% vaccinated up to and including 31 March 2015, with 16.1% of

adults aged 65 years being vaccinated in the previous 12 months compared to 13.7% in 2014 (PHE, 2015a). PPV can be administered alongside the influenza vaccination using different injection sites, so combining its administration alongside the annual influenza vaccination for the target population makes sense.

### Shingles

Shingles is caused by the reactivation of an earlier varicella zoster virus infection, which commonly occurs in childhood as chickenpox. Following a primary infection the virus travels along the neural pathway to the sensory dorsal root ganglia where it establishes a permanent latent infection. The reactivation of the latent virus results in the clinical manifestations of shingles that are more prevalent in those over 70 years of age and include a blistered rash and pain, sometimes very severe at the points of eruption, which may last for months. Additionally, shingles may progress to unpleasant complications, such as facial palsy and herpes zoster ophthalmicus. In some cases, it may progress to life-threatening complications when the virus spreads to the lungs, liver, gut and brain.

The single dose Zostavax<sup>®</sup> is the only shingles vaccine available in the UK and should be offered to those over 70 years of age routinely alongside the catch-up programme for those aged 70–79 years who have not had the vaccination (PHE, 2016a). The shingles vaccination has yet to achieve a good coverage, with only 59.0% of the routine target cohort being vaccinated in 2014/15 with 57.8% for 78-year-olds and 58.5% for 79-year-olds in the catch-up cohorts (PHE, 2015b). As with PPV, Zostavax<sup>®</sup> can be administered alongside the influenza vaccination, so it is a good idea to combine its administration alongside the annual influenza vaccination for the target

population, minimising primary care workload and maximising vaccination coverage within existing resources.

### Influenza vaccination uptake in older people

Adults aged 65 years and over are particularly vulnerable to influenza as their immune system is less effective (Monto et al, 2009). The presence of comorbidities in this age group also increases the risks of severe illnesses, a decline in physical functioning and influenza-related deaths. Provisional data from PHE show that seasonal influenza vaccination uptake among GP patients from 1 September 2015 to 31 January 2016 for patients aged 65 years and older was 71.0%, down slightly from 72.7% during the same period the previous year (PHE, 2016b).

### Individual factors

Research has shown that recommendations by health professionals can be one of the strongest predictors of influenza vaccination uptake (Mangtani et al, 2006; Evans et al, 2007). These recommendations may be enhanced by exposure to official and commercial information campaigns through the media, and other reliable sources (Rubin et al, 2010). Older people's knowledge and beliefs about the influenza vaccination can have a significant effect on uptake (Evans et al, 2007). An individual's perceived immunity and resistance to influenza (i.e. the likelihood of coming into contact with someone with influenza, becoming infected and then passing it onto others) also have significant associations with influenza vaccination uptake (Mangtani et al, 2006; Evans et al, 2007; Blank et al, 2008; Prior et al, 2011).

### Getting vaccinated

The decision to get vaccinated may be largely dependent on an

individual's perception of the effectiveness and safety of the vaccination. This may include the level of vaccination testing, the perceived benefits of the vaccination (i.e. prevention of influenza, fewer and less severe symptoms and fewer medical consultations), and potential and actual side-effects from past vaccinations (Mangtani et al, 2006; Evans et al, 2007; Kwong et al, 2009). Other factors relating to demographics, previous or current work, personality, finance and lifestyle have also been found to be associated with influenza vaccination uptake among older people, although the findings have been inconclusive (Crawford et al, 2011).

A range of personal and professional factors may influence influenza vaccination uptake among primary care nurses (Chalmers, 2006). Research has found a strong relationship between nurses' knowledge of influenza/vaccination and their vaccination status (O'Reilly et al, 2005; Zhang et al, 2012). Similarly, vaccinated nurses hold significantly different attitudes toward influenza and influenza vaccination than those who are not vaccinated (Chalmers, 2006). Concerns about the influenza vaccination's side-effects and safety, misconceptions, a lack of knowledge and perception of influenza as a minor illness are potential barriers to vaccination uptake among nurses (Hollmeyer et al, 2009; Thomas et al, 2010a; Zhang et al, 2012). In addition, health professionals who do not get vaccinated hold a low perceived risk for themselves and their patients, and have concerns about the efficacy of the influenza vaccination and its side-effects (Thomas et al, 2010a).

### Approaches to maximising vaccination uptake

Various interventions for maximising influenza vaccination uptake among

older people in the community have been identified (While et al, 2005; Thomas et al, 2010b). These interventions can be categorised as (Thomas et al, 2010b; European Centre for Disease Prevention and Control, 2013):

- Interventions to increase community demand
- Interventions to enhance access
- Provider or system-based interventions
- Societal interventions
- Interventions to improve influenza vaccination among community nurses.

## Implications for clinical practice

Maximising influenza vaccination uptake among older people and other vulnerable patients is a public health priority because it both reduces the demands on limited health-care resources and prevents an avoidable illness and the negative consequences arising from an episode of influenza. It appears that individuals may hold various misconceptions about influenza and the influenza vaccination, which can, in turn, affect their vaccination behaviour (Evans et al, 2007). Such misconceptions may be rectified through improved patient education and health promotion programmes for health professionals (Hollmeyer et al, 2009). Older people and other vulnerable patients should also be provided with ample opportunity to discuss their concerns with their health professionals to enable them to make informed choices. Effective vaccination programmes also need to target the needs of older people, and those who are less mobile (While et al, 2005).

## Conclusion

It is clear from the research that a range of factors can influence influenza vaccination uptake among older people and they need careful

consideration when interventions are being developed to promote increased uptake. Achieving a high uptake of the influenza vaccination will have the added benefit of increasing the coverage of the PPV and shingles vaccination programmes among the target population when they are receiving the influenza vaccination.

Primary care nurses have been found to have a positive influence on influenza vaccination uptake and they should continue to promote vaccination uptake to their patients who are 'persistent decliners' through approaches discussed in this article.

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