REPORT TO
THE SECRETARY OF STATE FOR HEALTH
UNDERSTANDING SEASONAL INFLUENZA VACCINATION PRACTICE IN PRIMARY CARE AND IDENTIFYING THE CORRELATES OF HIGHER INFLUENZA VACCINATION RATES

FUNDED BY THE
DEPARTMENT OF HEALTH

POLICY RESEARCH PROGRAMME
EXECUTIVE SUMMARY

STUDY AIM The aim of the study was to produce a rapidly actionable strategy to improve flu vaccine uptake in primary care, thereby reducing the incidence of flu and its adverse sequelae and offering benefits to at-risk patients, care providers and the wider economy.

BACKGROUND Influenza (flu) is a common, potentially serious infection. Safe and effective immunogenic vaccines are available for preventing flu but currently need to be administered on an annual basis in order to maintain sufficient levels of immunity, as immunity inevitably declines with time and as virus strains mutate. The recommendation of England’s Chief Medical Officer, reflecting an international consensus, is for at least 75% of those in the elderly and other at-risk groups to receive seasonal flu vaccine. However, rates in England were only 72.8 and 50.4% respectively in 2010-11.

METHODS The study initially took detailed input from a six separate primary care providers, who were already achieving high rates of flu vaccination in communities ranging from rural to inner city settings, in order to formulate a set of three online questionnaires, which aimed to interrogate the efficacy of providers' strategies for delivering flu vaccination. These questionnaires were piloted to ensure relevance and accuracy of the questions posed and ease of use of the forms, prior to dissemination to GPs and other primary care staff within a total of 50 primary care trusts across four Strategic Health Authorities in England (London, Yorkshire, East Midlands and West Midlands). Data from the surveys were then analysed for statistical significance in the context of the flu vaccination rates achieved by each practice, and in addition to a range of standard demographic and performance indicators, in order to identify the approaches associated with higher rates of vaccination uptake.

PATIENT AND PUBLIC INVOLVEMENT IN THE RESEARCH Patients were consulted during the design of the study and collaborated with us to design and complete separate questionnaires for providing feedback on the proposed recommendations that would be of most relevance to patients and the public. Members of the public were invited to provide this feedback during an open meeting.
**KEY FINDINGS**  Seven key strategies were identified as having a significant impact upon influenza vaccination rates within general practice. Our most significant findings indicated that the strategies of: having a lead staff member for organising the flu vaccination campaign; producing a written report of the practice’s vaccine uptake; sending personal invitations to all at-risk patients; and only stopping vaccination once the highest QOF targets for vaccination had been attained were associated with a total increase in vaccine uptake of 7-8%. Having a lead staff member who is able to modify standard searches of the practice IT system to identify the practice’s at-risk patients is also recommended. Lastly, the active involvement of community midwives in providing vaccine to pregnant patients shows the potential to increase uptake in this vulnerable group by a further 4%.

**RESULTS (INCORPORATING RELEVANCE TO POLICY)**  The survey was distributed to a total of 2896 practices. It was fully or partially completed by 569 practice managers, 335 nursing staff and 107 GPs, representing a total of 795 practices (27.5% of those invited to contribute). A number of factors concerning staff involvement, communication and practice organisation were found to be significantly associated with the flu vaccine uptake rates achieved. These were largely independent of demographic measures within practice populations.

Our findings show the importance of clearly defined staff roles and of adequate staffing rates in vaccination campaigns. Increased staff awareness of a practice’s performance and strategy in providing flu vaccinations, in comparison to other local providers as well as national data, is likely to boost motivation and was associated with higher rates of vaccine uptake. The additional involvement of other community care teams, in particular the involvement of community midwives in both recommending and providing flu vaccination, was found to be associated with significant benefit and should be encouraged.

With respect to practices’ strategies when promoting vaccination, several statistically significant associations with higher vaccine uptake rates were seen. The use of professionally-produced publicity materials; sending a personal invitation to all eligible patients; and offering timed appointments were each shown to have a positive association with uptake rates and we recommend that these approaches should therefore be considered good practice.

In addition, practices’ selection and use of IT software systems and searches was significantly associated with the rates of vaccine uptake achieved, suggesting that the software suppliers may be able to play a key role in increasing the effective identification and targeting of at-risk patients.
Some criteria for eligibility appear to be poorly defined and we recommend that these should be clarified, at national level, to enable this process.

We have found strong evidence that practices that focus on Quality and Outcomes Framework payment targets when providing vaccinations achieve higher rates of vaccination overall; but that patients whose vaccination will not contribute to QOF earnings are significantly disadvantaged with respect to the number of reminders they receive to prompt them to attend. In view of the recent DH consultation on centralisation of flu vaccine purchasing, which will reduce financial risk but might also result in a financial disincentive for many practices, alternative incentives should be considered in order to maintain practices’ motivation to perform well in this complex task.

These and our other most significant findings are reflected in our Key and Supplementary Recommendations to primary care teams, which have been the subject of further consultation with clinical and administrative staff, as well as with patients and the public.

**CONCLUSIONS** Based upon statistical analyses of optimal vaccination strategies, and following consultation with Public Health teams, practice focus groups and patient representatives, we have produced a simple and evidence-based list of seven strategies which will support practices in their efforts to increase their rates of uptake of seasonal flu vaccination.

**FURTHER RESEARCH** Further investigation of the data gained during this study will focus on associations between flu vaccination strategies and the rate and/or direction of change in practices’ vaccination uptake rates. Additional studies to verify and investigate some surprising findings, such as the apparent impact of the choice of practice IT system, are also suggested.

**DISSEMINATION PLANS** We have designed our recommendations for good practice to be considered for circulation to primary care teams by the Chief Medical Officer. We propose that a summary report be made available in support of these recommendations. We also plan to circulate the summary report and accompanying recommendations to the PCT and practice staff who contributed to the study; to the relevant Royal Colleges; and to relevant national patient charities & groups. A poster showing the study outcomes will be displayed in the Retford Primary Care Centre to acknowledge the input of their staff and patients and inform others about our key findings. Lastly, we aim to submit a manuscript describing the study and detailing the key findings to the British Medical Journal.
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ACKNOWLEDGEMENTS

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INTRODUCTION

Influenza

Influenza (flu) is a common, potentially severe, but preventable infection caused by a number of different strains of the influenza virus. There are around 25,000 excess winter deaths per year in England and Wales, most of which are recorded as having a respiratory or circulatory cause [1]. The patterns of excess seasonal mortality have been shown to be closely associated with those of influenza incidence and the main burden (more than 75%) of this mortality falls on people over the age of 75 years [2-4]. The emergence of H1N1(2009) influenza has recently altered the previous proclivity of severe seasonal flu to occur in the elderly, as the younger, immunologically naive generation can be disproportionately affected when encountering novel strains of influenza [5].

It is widely recognised that bacterial pneumonias are frequently preceded, and predisposed to, by influenza and similar infections and approximately three-quarters of patients with a bacterial pneumonia have a viral co-infection [6, 7]. The link between influenza and subsequent, invasive pneumococcal and staphylococcal infections is particularly well described, and these bacteria have been major contributors to the high mortality seen during many previous influenza pandemics [8-12]. Analysis of routine infection surveillance data (England 2010-2011) identified increases, above seasonally expected levels, in the incidence of a number of invasive bacterial pathogens, in particular S. pyogenes and invasive pneumococcal disease [13].

The burden of flu in the UK

Surveillance in the UK shows, consistently, that respiratory tract symptoms are the single most common cause for general practice consultations, filling more than 15 million appointments per annum in the UK (approximately 46 consultations per 10,000 patients each week) [14]. In fact, some 24% of people visit their GP at least once every year due to respiratory tract illness and the majority of these episodes - at least 90% - are a consequence of viral respiratory tract infections [3]. During a non-epidemic winter season, influenza-like illnesses will account for around up to 40% of the latter but, during epidemic years, these rates are substantially higher.
Perhaps surprisingly, patients who consult their GP with acute respiratory tract symptoms attend for an average of 1.94 consultations per episode\textsuperscript{[14]}, and approximately two-thirds of them will be prescribed antibiotics\textsuperscript{[15]}. These statistics probably reflect the difficult nature of differentiating, clinically, between viral and bacterial causes of these infections, as well as patients’ expectations of receiving antibiotics\textsuperscript{[16]}. The consultation time involved in dealing with viral respiratory tract infections in primary care is equivalent to the full-time, annual workload of around 5% of GPs in England and Wales. Based on cost data from 2003\textsuperscript{[17]}, this equates to an estimated cost to primary care trusts of at least £310 million per year. During the year 2007-2008 in England, there were 347,813 hospital admissions for influenza and lower respiratory tract infection (only in 12,165 cases was a bacterial infection reported to be identified).

During the 2010-2011 flu season, the number of influenza-related critical care bed-days occupied in hospitals in England and Wales increased compared to 2009-2010, and critical care admissions were highest in those aged 16-64 years old (median age 33 years; see also figure 1)\textsuperscript{[18]}. Mortality due to influenza and/or its sequelae in England and Wales also increased in comparison to that seen during the initial H1N1 pandemic in 2009, with a total of 602 deaths proven to be due to influenza (see figure 2). Of these, approximately 67% were in a clinical risk group and 75% had not received vaccination for that season. Nine pregnant women died\textsuperscript{[18]}. In the UK as a whole seventy children died during the initial H1N1(2009) pandemic, giving an overall direct mortality rate of 6 per million population. The rate was highest for children aged less than 1 year and 64% of all children had severe pre-existing disorders. 27% of deaths occurred before inpatient admission, indicating the importance of a preventative strategy rather than reliance on treatment\textsuperscript{[19]}.

During non-pandemic years, the average cost of influenza-like illnesses to healthy adults in the UK has been reported as approximately £9 per person per year (for prescriptions, over-the-counter medicines and time/cost of visiting the surgery). Thus the personal monetary costs of influenza infections, to the UK population as a whole, may be conservatively estimated to be at least £580 million per year\textsuperscript{[20]}.

It is therefore clear that these illnesses, although insignificant and transient for some sufferers, create a high burden of morbidity and significant mortality for others, together with immense demands for both primary and secondary healthcare.
Figure 1: Cumulative number of critical care beds occupied with suspected or confirmed influenza cases in England by age per 100,000 population during 2009/10 and 2010/11 seasons [18].

Figure 2: Number of fatal confirmed influenza cases by week of death and sub-type reported in England June 2009 – May 2011 [18]
Benefits of flu vaccination

A safe and effective inactivated (killed) vaccine is produced ahead of each flu season, based on strain recommendations provided by the WHO, and is offered to at-risk groups in the UK free of charge. The effectiveness of vaccination depends mainly on the timing with which it is administered prior to flu exposure, and on the immune response of the recipient. A satisfactory immune response takes 7-14 days to develop fully and may be weaker in the elderly or those with compromised immune systems. However, even partial protection can reduce the duration and severity of symptoms if flu is caught.

A mid-season study in 2010-2011 found an overall vaccine efficacy for the trivalent seasonal vaccine of 46-63%, depending on whether or not the patient had also been immunised in the previous season [21]. A decade-long retrospective study of the effectiveness of seasonal flu vaccine in over 65s in the UK demonstrated a 21% reduction in hospitalisation for all acute respiratory disease and a 12% reduction in deaths due to respiratory disease. The latter reduction was more pronounced in individuals with medical disorders, compared with those without such disorders [22]. Influenza vaccination is associated with a 50% reduction in all-cause mortality risk in chronic obstructive pulmonary disease (COPD) [23]. Patient mortality is also significantly reduced by vaccinating healthcare workers, although uptake in this group remains poor despite its beneficial effects [24].

Influenza vaccination has been recommended for pregnant women since the initial H1N1(2009) pandemic, which resulted in increased numbers of severe illnesses and deaths in this group. However, it is not just mothers who may benefit when they receive vaccination. A recent UK study which examined the proportion of babies who acquired passive immunity to A/H1N1v following maternal vaccination during pregnancy, compared with unvaccinated mothers, showed that humoral immunity was demonstrable in 25%-30% of babies of unvaccinated mothers, compared to 80% of babies of vaccinated mothers. The difference was statistically highly significant (p<0.001) and supports others' findings that vaccination during pregnancy offers protection to both the mother and the baby [25-27].

The overall effect of influenza vaccination on winter admissions and health-care pressures is difficult to assess and has not always been shown to be clear-cut [28]. Using mathematical modelling in 2006, the proportion of the UK population who were eligible for flu vaccination was estimated to be up to 56.4% [29]. The same study demonstrated that achieving a 100% vaccination
rate for all risk groups would lead to approximately 7.2 million fewer influenza cases, 2 million fewer GP visits, 800,000 fewer less hospital admissions and 69,000 fewer influenza-related deaths across the EU. Achieving this rate would require an additional €1.52 billion, but would result in approximate savings of €40 million and €1.6 billion in primary and secondary care costs respectively [29].

**Flu vaccination is extremely safe**

The first influenza vaccine was developed in 1945. Following widespread use of a particular vaccine type in the US in 1976, an association with Guillain-Barre syndrome (GBS) was reported [30]. However, more recent studies have not demonstrated a clear risk, although the very low incidence of GBS precludes study of optimal numbers: a study of 228 cases of GBS in the UK demonstrated 3 cases occurring within 42 days of influenza immunization, and there was no significant increase in adjusted relative risk (RR 1.03; 95% CI, 0.48-2.18; P = 0.94) [31, 32].

A small study to examine whether inactivated influenza vaccine caused exacerbations in asthmatic adults revealed that the immunisation was not associated with reduction in peak flow (P = 0.76), increase in asthma symptoms (P = 0.17) or increased usage of asthma medication (P = 0.58) [33]. A Cochrane review also found no evidence for an increase in asthma exacerbations immediately after inactivated flu vaccination, although the degree of population protection that vaccination affords against asthma exacerbations due to influenza infection was described as uncertain [34]. Similar studies of the effect of the vaccination on exacerbation rates of COPD in primary care have demonstrated no significant increase in risk of an exacerbation within the subsequent 2 weeks [35, 36].

**Target groups for vaccination in the UK**

The Chief Medical Officer (CMO) currently advises that all patients in the following categories should receive seasonal influenza vaccine [37, 38].

- Aged 65 years and over.
• Chronic respiratory disease: asthma that requires continuous or repeated use of inhaled or systemic steroids or with previous exacerbations requiring hospital admission; chronic obstructive pulmonary disease (COPD) including chronic bronchitis and emphysema; bronchiectasis; cystic fibrosis; interstitial lung fibrosis; pneumoconiosis and bronchopulmonary dysplasia (BPD); children who have previously been admitted to hospital for lower respiratory tract disease.

• Chronic heart disease: congenital heart disease; hypertension with cardiac complications; chronic heart failure; individuals requiring regular medication and/or follow-up for ischaemic heart disease.

• Chronic renal disease: chronic kidney disease at stage 3, 4 or 5; chronic kidney failure; nephrotic syndrome; kidney transplantation.

• Chronic liver disease: cirrhosis; biliary atresia; chronic hepatitis.

• Chronic neurological disease: stroke; transient ischaemic attack (TIA); conditions in which respiratory function may be compromised (e.g. polio syndrome sufferers). Clinicians should consider on an individual basis the clinical needs of patients, including individuals with cerebral palsy, multiple sclerosis and related or similar conditions; or hereditary and degenerative disease of the nervous system or muscles; or severe neurological disability.

• Diabetes: type 1 diabetes; type 2 diabetes requiring insulin or oral hypoglycaemic drugs; diet controlled diabetes.

• Immunosuppression: immunosuppression due to disease or treatment; patients undergoing chemotherapy leading to immunosuppression; asplenia or splenic dysfunction; HIV infection at all stages; individuals treated with or likely to be treated with systemic steroids for more than a month at a dose equivalent to prednisolone at 20 mg or more per day (any age) or, for children under 20 kg, a dose of 1 mg or more per kg per day. It is difficult to define at what level of immunosuppression a patient could be considered to be at a greater risk of the serious consequences of influenza and should be offered seasonal influenza vaccination. This decision is best made on an individual basis and left to the patient’s clinician. Note that some immunocompromised patients may have a suboptimal immunological response to the vaccine.

• Pregnant women: women at any stage of pregnancy - first, second or third trimesters.

• Those living in long-stay residential care homes or other long-stay care facilities.
Those who are in receipt of a carer’s allowance, or those who are the main carer of an older or disabled person whose welfare may be at risk if the carer falls ill.

These groups have been chosen based on evidence from previous research studies and epidemiological data showing increased risk of severe flu infection or sequelae in these groups, such as that shown in Figure 3, below.

![Figure 3: Numbers, rates and relative risks with 95% lower and upper confidence intervals for seasonal flu clinical risk factors amongst confirmed influenza-related fatalities aged 6 months to 64 years, England, 2010/2011. Provisional and preliminary data from the HPA up to 4 May 2011.](image)

<table>
<thead>
<tr>
<th>Number of fatal flu cases (%)</th>
<th>Mortality rate per 100,000 population</th>
<th>Age-adjusted relative risk*</th>
<th>Lower RR 95% CI</th>
<th>Upper RR 95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>In a risk group</td>
<td>213 (59.8)</td>
<td>4.0</td>
<td>11.3</td>
<td>9.1</td>
</tr>
<tr>
<td>Not in any risk group</td>
<td>143 (40.2)</td>
<td>0.4</td>
<td>Baseline</td>
<td>Baseline</td>
</tr>
<tr>
<td>Chronic renal disease</td>
<td>19 (5.3)</td>
<td>4.8</td>
<td>18.5</td>
<td>11.5</td>
</tr>
<tr>
<td>Chronic heart disease</td>
<td>32 (9.0)</td>
<td>3.7</td>
<td>10.7</td>
<td>7.3</td>
</tr>
<tr>
<td>Chronic respiratory disease</td>
<td>59 (16.6)</td>
<td>2.4</td>
<td>7.4</td>
<td>5.5</td>
</tr>
<tr>
<td>Chronic liver disease</td>
<td>32 (9.0)</td>
<td>15.8</td>
<td>48.2</td>
<td>32.8</td>
</tr>
<tr>
<td>Diabetes</td>
<td>26 (7.3)</td>
<td>2.2</td>
<td>5.8</td>
<td>3.8</td>
</tr>
<tr>
<td>Immunosuppression</td>
<td>71 (19.9)</td>
<td>20.0</td>
<td>47.3</td>
<td>35.5</td>
</tr>
<tr>
<td>Chronic neurological disease**</td>
<td>42 (11.8)</td>
<td>14.7</td>
<td>40.4</td>
<td>28.7</td>
</tr>
<tr>
<td>Total***</td>
<td>378</td>
<td>0.8</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Mantel-Haenszel age-adjusted rate ratio (RR), with corresponding exact 95% CI were calculated for each risk group using two age groups (from six months up to 15 years and from 16 to 64 years); ** Excl. Stroke/TIA; *** Including 22 cases with no information on risk factors.
Rates of flu vaccination

In 2003, the World Health Organisation (WHO) issued a resolution for prevention and control of influenza pandemics and annual epidemics, urging the European Union Member States to establish and implement strategies to increase vaccination coverage of all people at high risk, with the goal of attaining vaccination coverage of the elderly population of at least 50% by 2006 and 75% by 2010 [39].

Joint WHO and EU Council guidance is now that developed countries should achieve vaccination uptake rates of at least 75% in high risk people [39, 40]. Though still falling short of the guideline, the UK currently achieves some of the highest rates of seasonal influenza vaccination in Europe, both in the over 65s and in younger at-risk groups [41]. The UK has also seen the highest recent increases in seasonal flu vaccination rate [42].

The CMO has instructed that, in 2011-12, each practice should aim to reach or exceed:

- 75% uptake for people aged 65 years or over;
- 60% uptake for at-risk people under age 65 (including pregnant women). This is followed by a target rate of 70% in 2012/13, so that uptake of 75% can be reached in 2013/14 [38].

The proportion of people aged over 65 years in England who received the 2010/11 influenza vaccine was 72.8% [43]. The target of 75% coverage in the over 65s will take some effort to attain but is clearly achievable, given historic uptake rates (see figure 4) [44]. However, both past and current rates of vaccination in the under-65 at-risk groups fall far short of the EU or CMO targets: during 2010/11 the rate achieved was 50.4%; in pregnant women (not in another risk group) it was only 36.6% [43].

Data on flu vaccination uptake are collected from practices in England using the Department of Health Immform website [45]. This online system collects data on an almost real-time basis during and after the vaccination and influenza season. Some practices upload their data manually, although since the system’s introduction in 2004 there has been a drive to reduce this workload and most practices now submit data using automated or semi-automated methods via their IT systems [46].
Public beliefs and the media

Public support for the government’s handling of the recent 2009 pandemic was good but opinion and beliefs were also clearly modified by media reporting during the inevitable period of uncertainty that occurred at the time [47, 48]. Higher levels of media attention appear to be associated with increased vaccination rates [49]. Given the public perception of the low level of virulence of H1N1(2009), which evidently led to the low vaccination rates achieved through the pandemic H1N1 immunisation campaign, it remains essential to provide appropriate, timely, and factual influenza campaigns at local and national levels, in order to ensure that a similar perception does not adversely affect seasonal vaccine uptake in the coming years [50]. There are a number of current NHS information leaflets on influenza vaccination across the UK (shown in figure 5).
Figure 5: The 2011-12 NHS UK information leaflet on flu vaccination for patients in England (A); comparable publications for Wales (B), Scotland (C) and Northern Ireland (D) are also shown.
Particular groups for consideration regarding vaccine uptake

In under 65s, some patients receiving immunosuppressive therapies or with neurodegenerative and liver diseases have particularly poor vaccine uptake [51]. Vaccination rates also appear to be low, and not increasing, in patients with asthma [52]. A UK study of asthmatic patients demonstrated that younger patients were less likely to have undergone vaccination than older patients but that, surprisingly, severity of asthma symptoms did not appear to be a determining factor in their decisions [52]. Children represent only a low proportion of the overall at-risk population but show universally low rates of vaccination across all at-risk categories (figure 6).

Furthermore, there is a clear need to promote seasonal influenza vaccination of pregnant women, who were found to be at specific risk of severe infection from the 2009 H1N1 influenza strain[53, 54]. Early uptake of H1N1-specific vaccine by pregnant women was extremely poor due to healthcare providers either not offering, or actually advising against, vaccination, and also to many women's concerns over vaccine safety [55]. Rates in 2010-2011 were 36.6%, still far below recommended levels. Although there have since been efforts to increase the awareness of healthcare providers, an optimal mechanism for identifying and offering vaccination to pregnant women has not yet been defined.

Figure 6: Vaccine uptake in under 65s, by indication for vaccination and age, in 2010-2011 [43]
Seasonal influenza vaccine coverage in long-stay care homes has been measured at between 84% and 87% [56]. In contrast, vaccine uptake among those working in care homes is low despite the protective benefits to patients and care workers alike. Vaccine uptake was higher in homes with a policy recommending vaccination of staff. Although GPs due not have a statutory duty to vaccinate health care workers, nor receive remuneration for this, studies have shown that healthcare workers who also have a pre-existing medical condition that makes them eligible to receive vaccination from their GP are more likely to receive vaccine for this reason than due to their occupational status. Primary care therefore has a key role in educating and vaccinating these individuals who, in common with other patients, are significantly more likely to accept vaccination if they understand their own risks of influenza infection and/or its sequelae [52, 57].

**Factors affecting vaccine uptake**

Numerous factors affect vaccine uptake. Many studies report that the perception that influenza poses a significant threat to health and the perception of vaccination as an effective preventative strategy are associated with higher uptake of flu vaccination[58]. People who receive information about these factors from official health sources (particularly GPs or nurses in the primary care setting) and who think that others want them to be vaccinated are more likely to act upon this information [58]. Studies consistently demonstrate that the most powerful motivations for getting influenza vaccination are advice from a family doctor or nurse and the knowledge that influenza is a potentially serious illness [41, 49, 59]. In line with this, flu vaccination uptake is greater among older people, and others who make routine use of hospital and community care services [60]. Vaccination uptake rates in older patients are also higher in practices where GPs perceive a greater health benefit of immunisation [61]. Lastly, there is also a strong influence of past behaviour: those who have been vaccinated in the past are more likely to take up future offers of vaccination [58]. This may contribute to the wide variation in vaccination rates seen in different practices, with a self-reinforcing effect, particularly amongst the older population, once a person has been successfully called for vaccination by a practice.

Crucially, a lack of recommendation from the GP was the main reason in one large study for not getting vaccinated [49]. Patients who have never been vaccinated are more likely to regard being infected with flu as unlikely and have less belief in the efficacy of vaccination [41] [52, 59]. Unsurprisingly, a fear of side-effects is often associated with declining the invitation for flu
vaccination. Lack of general motivation and ignorance about the recommendations are other commonly reported barriers to both seasonal and pandemic vaccination [52, 62]. Contributing to a lack of positive motivation may be: fear that vaccination is painful or will have side effects; expectation that it will be inconvenient and/or time-consuming to get vaccinated; and the generally misguided expectation that “I will never get flu anyway”. There are conflicting reports of the effects of deprivation and ethnic minority status on uptake of flu vaccine [62-64]. Parents of at-risk children who decline vaccination report particular concerns with respect to uncertainty about the indication for vaccination, challenges with access and issues relating to health beliefs among a number of factors which contribute to their decisions [52, 65]. Parents of young children have been shown to exhibit significant bias in that they view hypothetical vaccine-associated symptoms more seriously than identical symptoms arising from natural illness. Despite overwhelming evidence to the contrary, any vaccine is therefore likely to be at a disadvantage in many parents’ consciousness in comparison with the infection itself, and minor safety concerns are very likely to have disproportionately detrimental effects on vaccine uptake [66].

**Increasing influenza immunisation rates**

Providing seasonal influenza vaccination is a large and complex task which is performed well in the UK, in comparison to many other European countries[41]. Over 10 million patients were vaccinated in England in the 2010-11 season; a minority having received more than one dose depending on their medical history. On average, therefore, each practice provides approximately 1000 patients with vaccination, mostly within a period of 4-6 weeks each autumn. Primary care teams are generally found to be well motivated and informed about influenza vaccination and educational outreach visits to practices have not been shown to increase vaccination rates significantly [67].

A previous survey-based study which gathered information on best practice in a regional setting was reported by Furey et al. [68]. This study, which considered only vaccination of over 75 year-olds (based on the national strategy at the time), indicated that practices that achieved high uptake rates combined good patient identification with personalised patient invitation and well-organised clinics. Subsequent dissemination of the survey’s findings to local practices was associated with a 12% increase in vaccination rate during the following season.
A randomised controlled trial of older people in London showed that telephoning patients to offer an appointment boosted flu vaccine uptake by approximately 6%. The 'number needed to telephone' was 17 and the intervention was cost effective, assuming current payment strategies [69]. A Cochrane review, of forty-four randomised controlled trials aimed at increasing flu vaccination rates in the over 60s, also concluded that personalized mailings or phone calls to patients are most effective at increasing uptake. It was found that offering home visits may be clinically (although not necessarily cost-) effective but there was insufficient good evidence for other interventions the time that the review was conducted [70].

In nursing homes, the most frequently stated reasons for improved vaccine uptake are clear immunisation policies (76%), awareness and education for staff and residents (68%), and having a process for obtaining consent on behalf of the incompetent residents (66%) [71]. Advice from the community healthcare team was important [71].

As outlined above, many previous studies have investigated some of the patient-related factors that may contribute to the likelihood of flu vaccine uptake, or the utility of specific interventions (such as telephone calls or letters) in generating an increase in uptake, but an optimal strategy for primary care providers remains undefined. In this study, we aimed to document and analyse the entire process of flu vaccine provision in UK general practices, in order to determine the correlates of higher vaccine uptake and make comprehensive, evidence-based recommendations for best practice.
AIMS AND OBJECTIVES

Aim:

The aim of this study was to construct a simple, broadly applicable and rapidly deliverable good-practice guide which will support and drive increased influenza immunisation rates in UK primary care settings.

Research question:

What are the key factors which will drive GPs and their staff to achieve higher influenza vaccination rates in England?

Objectives:

The overall objective of the study was to formulate a Good Practice Guide, by reviewing vaccination strategies and uptake in General Practices across England and using an experienced multidisciplinary team to analyse the evidence obtained and produce recommendations. Information on practices’ strategies and staff beliefs was obtained by carrying out online surveys of relevant general practice staff across four different Strategic Health Authorities.

The surveys aimed to identify:

i. factors that practices take into account when choosing and ordering influenza vaccines;

*We hypothesised that there may be varying efficiencies of timing, cost and scale based upon practices’ choices of manufacturer, wholesaler, timing of orders and delivery, and purchase mechanisms*

ii. how practice staff identify eligible patients, with particular reference to patients in newer at-risk categories whose rates of vaccination are generally low (e.g. pregnant women)
We hypothesised that patients with conditions that are poorly or inconsistently defined via Read code on the practice database are likely to be difficult to identify. For each practice, the quality of input Read code data, as well as the approach taken to extract them, will underpin their vaccination campaign and subsequent measurements of uptake rates. Practices must also be alert to changing vaccine recommendations and be prepared to alter their mechanisms for identifying at-risk patients.

iii. how GPs and practices run seasonal influenza vaccination campaigns: including contact and follow-up of eligible patients; practical / logistical issues of an appropriately timed campaign; and use of the remaining vaccine once the campaign has ended

We hypothesised that many practical factors may influence effective vaccination provision and uptake. Special logistical solutions are needed for the rapid vaccination of large numbers of patients. GPs may use a variety of methods to organise sufficient space, storage and staffing capacities.

Evidence from the survey was then statistically analysed with respect to flu vaccine uptake rates achieved by each practice that had participated. The data were stratified using publicly available quantifiers of each practice's population demographics, diversity and quality of health-care provision, where appropriate.

We used these analyses to assess the mechanisms by which some practices achieve above-average vaccine uptake rates. We then compared these to practices achieving low rates of uptake, in order to recommend how to make optimal use of practice resources and facilitate increased vaccine uptake across a variety of settings. These findings formed the basis of the good practice guideline, which has also been the subject of a consultation and feedback exercise from primary care staff, primary care patients' focus groups and members of the public. By inviting open public review of our proposals, we aimed to determine to what extent our recommended strategies are acceptable to patients, and whether there are additional factors that might persuade or enable them to accept vaccination in the future. This feedback has been used, where appropriate, to modify and validate our final good practice guide.
METHODS

Survey development

Individual or small-group interviews with GPs, nurses and practice managers across a total of 6 practices in urban (city), semi-rural (market town) and rural (village) areas were carried out, during which staff were questioned in detail about the numerous different factors considered by practices in designing and carrying out their flu vaccination campaigns. This information was then collated to produce three draft questionnaires (one each for the participating groups of GPs, practice managers and practice nurses), encompassing the areas of potential variation which had been raised. Consideration was given to the formulation of the questions to be included and the layout of the questionnaire in order to optimise the statistical utility of the data to be collected for analysis. The draft questionnaires were sent to the interviewees, as well as to other staff in their practices, for feedback and modification. The revised surveys were built in an online format using the Survey Monkey web-based software[45]. An online version of the revised survey was then piloted for a second time, to further ascertain relevance and usability before final distribution. See Annex 1 for copies of the final surveys.

Participants

We aimed to distribute the surveys to all registered GPs, practice nursing staff and practice managers within 4 Strategic Health Authorities (East Midlands, London, West Midlands and Yorkshire and Humber), encompassing 3926 practices providing care for approximately 40% of the UK population. These areas were chosen for the range and overall representativeness of their practice demographics and flu vaccine uptake rates. Due to the timing and brevity of the study, which took place over the summer holiday season, we hypothesised a conservative response rate of 20%, which was nonetheless considered to offer genuinely representative feedback, given the overall size of the sample. Responders did not submit any personally identifiable data, and remained anonymous, but were asked to identify their practice during completion of the survey. Entry into a cash prize draw and the option to receive a summary of the study’s findings were offered to participants who completed the relevant questionnaire, to encourage participation.
Survey distribution

Distribution occurred via the Public Health teams in the participating SHAs and the vaccination and immunisation leads in the target PCTs, who were then requested to cascade the e-mail to all GPs, nurses and practice managers in their area via normal electronic information circulation mechanisms. This strategy for circulation was also used for all other communications with practice staff during the study. An introductory and explanatory letter was sent, on 15th July 2011, to PCT leads via these mechanisms, to request their participation and allow distribution plans to be made. A preliminary e-mail for circulation to practices, containing a letter informing primary care teams about the forthcoming study, was then distributed on 19th July 2011.

The first invitation to complete the surveys, in the form of an electronic letter with embedded links to the surveys’ websites, was sent to PCTs for distribution on 1st August 2011. The invitation letter was distributed both in the body of the email and in an attached PDF (see Annex 1). A second invitation was distributed in the same manner on 8th August 2011 (see Annex 1). The invitation requested staff to forward the details to colleagues, where necessary, and offered entry into a prize draw for those who completed one of the surveys. A deadline of 15th August 2011 was given for completion of survey forms, in order to allow appropriate time for subsequent analysis.

Vaccine uptake data and other comparators

The Immform web service was used to obtain practice-level flu vaccination uptake rates for the period 1st September 2010 – 28th February 2011. Summary data for 65+ year olds and at-risk <65 year olds were obtained, in addition to data stratified by risk group. The Immform database also indicates which IT system a practice uses and to what extent their data are automatically uploaded to the system.

Other practice-level data obtained were summary Quality and Outcomes Framework (QOF) scores (most recent data available, for April 2009-March 2010) and practice population demographic and deprivation data [45, 72]. This information was obtained in order to identify and/or adjust for other factors which may differentially impact upon vaccine uptake rates (such as overall practice quality performance, practice size, population ethnicity, and population deprivation).

The above information was linked to the survey responses by DH practice code (a unique six-figure identifier).
Statistical analyses

The main outcomes of interest were the influenza vaccination rates achieved by each practice. For each eligible practice two statistics per risk group were recorded: the number vaccinated and the number eligible / registered at risk. The descriptive statistics use the summary ratio of these two numbers or the percentage vaccinated. A full descriptive analysis of the variables measured in the study was conducted, including the completed survey responses from practice staff and the practice level vaccine uptake data from Immform.

In analysing the responses to the surveys, we sought to identify: trends in routine strategies and procedures in flu vaccination campaigns within the different areas surveyed; whether and how these are reflected in vaccine uptake rates; common and divergent areas between practices with high and low influenza vaccination uptake rates; other co-factors associated with low vaccine uptake in practices achieving relatively low uptake rates. The formal statistical hypothesis tests used logistic regression to compare the odds of vaccination across different categorical responses in the survey questionnaire. As the logistic regression used the vaccination counts and the number of patients at risk, variations due to variable practice size were taken into account. In some practices there were multiple respondents. We would expect correlation between respondents in the same practice and, more importantly, as there is no variation in outcome for each practice these factors were accounted for by computing robust standard errors allowing for the practice clusters. For one outcome linear regression was used as the outcome variable was the difference between the proportion vaccinated and the practice reported vaccination rate. This approach was taken in order to see if the accuracy of practice reported rates were associated with different methods for searching for eligible patients. A type 1 error threshold of 5% was used throughout the analysis.

Any questions which were answered by more than one type of health care professional were analysed in a logistic regression where type of respondent was also included as a categorical variable. Within each sub category of results (i.e. specific risk group and questions asked of same categories of health care professional) a step forward, cluster-corrected, multiple logistic regression analysis was performed to identify factors which were independently associated with vaccination rate. To be considered in the multiple logistic regression, a variable needed to have been associated with a p-value of less than 0.05 in the univariable logistic regression adjusted for
respondent types. Variables were retained in the final model provided they made a statistically significant contribution (type 1 error of ≤5%) to the joint multivariable model.

We then used the results of these statistical analyses to identify and evaluate the best practises for carrying out successful and effective flu vaccination campaigns and how (or indeed whether) these may be broadly or specifically adopted.

Public consultation

After formulating our evidence-based recommendations for the Guideline, we invited public feedback in order to review, appraise and suggest modifications to the draft consensus recommendations, based on patients’ perspectives. We held two consultation meetings: one (on 21st September 2011) to which we invited 40 members of the existing Patient Participation Groups associated with Retford Health; and a second, open public meeting for any other interested patients or members of the public in the Retford area (held on 28th September 2011). The latter meeting was advertised using leaflets and a large roller banner display within Retford Primary Care Centre and the four individual practices in the town; through full page articles in two local newspapers (Retford Times and Retford Guardian) in the preceding week; and through a short interview on a regional radio station (Trax FM) which was aired several times during the day on both 23rd and 38th September. Attendees to both meetings were invited to contribute verbal or written comments, discussion and feedback on the acceptability and perceived efficacy of the proposals. A survey website was also used to provide further information and collect more directed feedback from those who wished to comment but were unable to attend the meeting. For this, information was posted on the Retford Health website (www.retfordhealth.co.uk), directing those who wished to comment on specific proposals to a SurveyMonkey questionnaire. For a copy of the feedback questionnaire used both online and at the public meetings, see Annex 2.
RESULTS

The univariable logistic regression results that are referred to throughout this section are given in Annex 3. A total of 122 hypotheses were tested in the adjusted univariable analyses. Under the null hypotheses we would expect to see 6 tests significant at the 5% level, whereas we have found 25 results meeting this criterion. Similarly, the null hypothesis predicts that 1 significant result would occur by chance at the 1% level, whereas we have identified 12 significant results at this level.

Numbers of responses received

For the purposes of this survey-based study, questionnaires were distributed to a total of 2878 practices. Responses were submitted by 569 practice managers, 335 nursing staff and 107 GPs, representing a total of 795 practices (27.6% of those invited to contribute). Fully completed survey forms were submitted by 348, 241 and 93 individuals, respectively, representing a total of 682 practices (85.8% of contributors). As each of the surveyed groups (GPs, nursing staff and managers) completed a differing set of questions to ensure relevance, and not all contributors completed all of the questions, the results reported below are based on varying numbers of data points, as stated. The proportions of practices and contributor types within the four participating SHAs are shown in figure 7.

Distribution of vaccination rates achieved by the participating practices and correlation to common practice demographic and performance parameters

The distributions of flu vaccination rates in the participating practices are well matched to the overall rates seen across all practices in the surveyed SHAs, as shown in Table 1. The vaccination rates achieved by the contributors’ practices are depicted in more detail in figures 8a and 8b.
Figure 7: Stacked bar chart showing the distribution of total GP practices surveyed and actual participant numbers from each staff group within the four participating SHAs.

Table 1: Showing the statistical characteristics and distributions of the flu vaccination rates in all practices surveyed vs. practices whose staff completed the questionnaire. The rates in participating practices are representative of the surveyed population as a whole.

| Flu vaccinations in patients aged ≥ 65 years old | Flu vaccinations in patients aged < 65 years old |
|----------------|------------------|------------------|
| Number of practices | All practices | Participating practices | All practices | Participating practices |
| Mean | 72.3 | 73.6 | 51.0 | 52.3 |
| Minimum | 0.0 | 31.3 | 0.0 | 0.0 |
| 25th centile | 68.6 | 70.2 | 45.2 | 46.5 |
| Median | 72.7 | 74.0 | 51.1 | 51.7 |
| 75th centile | 76.5 | 77.2 | 57.6 | 57.7 |
| Maximum | 100.0 | 99.4 | 100.0 | 100.0 |
Figure 8: (a) Distribution of vaccination rates in participating practices for patients aged 65+

(b) Distribution of vaccination rates in participating practices for at-risk <65 year olds
Graphs showing vaccination rates in the participating practices by indices of deprivation (IMD), ethnicity, and practice performance (QOF) are given in Annex 3. Analysis of the plots indicates a very minor negative association between deprivation score and vaccination rate in older patients only (p <0.001). Interestingly, although there is no association seen between ethnicity and vaccination uptake in the older age group, a strong association is seen in under 65s, with vaccination uptake decreasing significantly as the percentage white population increases (p <0.001). This latter finding is unexpected and appears to refute suggestions that populations with higher diversity of language might be more difficult to target for flu vaccination. Given the relatively unspecific nature of this measure of ethnicity, this could be an area of further investigation (perhaps examining individual risk groups with specific ethnicity and nationality data).

For under 65s, it is therefore clear that at least one population parameter, which is not within a practice’s influence, might have a significant effect on flu vaccine uptake. However, for the majority of eligible patients (those aged 65 and above), our findings using these basic demographic indicators suggest that variation between practices’ uptake rates is unlikely to be unduly influenced by inherent difference in ethnicity or wealth of their practice population.

Perhaps unsurprisingly, analysis of practices’ QOF summary scores shows a strong and significant positive correlation with vaccination uptake rates achieved in both age groups (figure 9). The score measurement chosen reflects the percentage of available QOF points achieved, in order to normalise performance between GMS and PMS contract holders. These analyses therefore suggest that the better planning, documentation and organisation that might be a correlate of higher QOF scoring are also likely to enable practices to achieve higher rates of seasonal flu vaccination.

**How do practices plan for their influenza vaccination campaigns?**

Of 792 practices, 746 (94.2%) reported that their practice had identified a lead member of staff for arranging the practice flu vaccination campaign. Having a lead member of staff in this fashion is associated with increased flu vaccine uptake rates in both 65+ and <65 age groups (p = 0.001 and 0.004 respectively).

**Staffing**

Among 793 practices, 702 (88.5%) reported that at least one formal meeting was held annually to plan the practice flu vaccination campaign. Attendees at this meeting were most usually the practice’s nursing and managerial staff, as shown in figure 10. Holding a formal meeting was not
shown to be associated with uptake rates. However, including GPs and District nursing staff at that meeting was weakly associated with higher vaccination rates in under 65s (p = 0.109 and 0.112 respectively), perhaps indicating the value of some form of additional clinical input when targeting a clinically-defined group. Of 569 practices, 395 (69.4%) provided some form of written information to other staff members to keep them informed about the practice’s campaign plans.

Flu vaccinations are most commonly performed by practice nursing staff, and occasionally by appropriately trained and supervised healthcare support workers (HCSW). Respondents were therefore asked to report the numbers of these staff employed by their practice. Staff numbers were reported as whole time equivalents (WTE) and were converted to a staffing rate per thousand

![Figure 9: Scatter plots showing the relationship between QOF summary score and flu vaccination uptake rates for 2010 - 2011](image)

Regression coefficient: 1.430  
95% CI: 1.299 to 1.561  
P < 0.001
Figure 10: Involvement of practice and other staff in planning flu vaccinations

- Practice nursing staff
- Practice managerial staff
- Practice administration staff
- GP
- Healthcare support worker
- District nursing staff
- Local care home staff
- PCT representative

Regression coefficient: 0.918
95% CI: 0.781 to 1.054
p < 0.001

Seasonal flu vaccination rate in patients aged <65 years

% of respondents reporting involvement of this staff member or group
registered patients for subsequent analysis. Perhaps unsurprisingly, it was found that increased rates of practice nursing and HCSW staff were significantly associated with increased vaccine uptake in under 65s (p = 0.026 and <0.001 respectively), although the association was much less clear when nursing and HCSW staffing rates were assessed alongside uptake rates for the 65+ year old age group (p = 0.102 and 0.882 respectively).

As practice receptionists may potentially have a great deal of input into the administration of a vaccination campaign (through sending invitations, booking appointments and maintaining records), the relationship between receptionist staffing rate (WTE per 1000 registered patients) was similarly assessed. Again, there was a strong association between increasing receptionist staffing rate and vaccination uptake for under 65s, but not for those aged 65 or more (p = 0.002 and 0.886 respectively). This discrepancy may be due to the fact that the under 65’s might need more flexibility with appointments and can be more difficult to identify. A campaign that successfully targets these younger patients may therefore be more resource intensive and hence staffing levels would have more of an impact on its performance.

Staffing rates are often associated with overall practice size, with lower rates per 1000 patients generally being seen with increasing practice size, which reflects the fact that efficiencies of scale are available to larger practices. When vaccination uptake rates were analysed according to practice size (both the total number of registered patients and the number of patients eligible for flu vaccination), it was found that there was a small but statistically significant trend for the vaccination rate to decrease with increasing practice size (particularly for under 65 year olds; p <0.001). We therefore repeated the analyses of staffing rate, adding practice size as a covariate, in order to assess whether the above findings had been subject to confounding. Only an increasing practice nursing staffing rate remained (weakly) associated with vaccination uptake in under 65s (p = 0.063), suggesting that staffing levels of this group have the strongest bearing on practices’ performance.

Non-staff resource allocation

Of 412 practice managers, only 56; 94; and 170 allocated separate funding; practical administration capacity; or staffing for identifying and contacting patients, as shown in figure 11. No significant associations were found between the allocation of separate resources and vaccination uptake rates. This does not indicate that better resourcing of flu campaigns has no impact on vaccination rates however, merely that the separation of effort and resources from the day-to-day running of the practice does not confer any measurable improvement in efficacy.
Use of IT systems and identifying eligible patients

Almost 90% of practices (375 of 418) reported having a staff member with dedicated responsibility for the identification of eligible patients. Having a dedicated staff member for identifying patients was associated with increased uptake of vaccine in older age groups (p = 0.038), but this trend, although present, did not reach significance in under 65s (p = 0.218). It is unclear whether increased vaccination rates result from increased numbers of eligible patients being accurately identified, and this might be a relevant area for further study.

Practices in the UK use a range of 10 main different IT systems for maintaining and using their patient databases. Computer software and its ease of use was hypothesised to be influential in enabling practices to identify their eligible patients effectively and efficiently. This is perhaps particularly true for at-risk under 65s, who need to be identified by their fulfilment of a number of clinical criteria [73], whereas patients aged 65+ are simply identified by their age on a pre-determined date. We therefore analysed differences in the vaccination rates achieved by practices depending on which IT software system they employ.

The EMIS system was the most commonly used software in our sample (used by 2104 of 3808 practices within the participating SHAs for which the information was available) and was therefore
chosen as the baseline comparator. For under 65s, both TPP SystmOne (used by 835 practices) and INPS (544 practices) were associated with significantly lower uptake rates (p <0.001 for both), whereas iSoft Synergy (131 practices) was associated with higher rates (p<0.001). Surprisingly, differences were also seen in the vaccination rates achieved in patients aged 65+, with INPS, iSoft Synergy and TPP all being associated with lower uptake rates (p<0.001, <0.001 and 0.063 respectively). Other or unspecified software systems accounted for a total of 194 remaining practices and were insufficient for separate robust analysis.

The majority of respondents to this survey (376/555; 67.8%) use a pre-built search programme provided by their IT system supplier to identify patients who are eligible for seasonal influenza vaccination, as shown in figure 12. Modifying the IT supplier’s standard search or creating a separate in-house search was associated with significantly higher uptake rates for patients aged 65+ than using an unmodified IT supplier’s search (p <0.001 and 0.027, respectively). It might be expected that those who modify or create a system search may simply indicate that the staff in these practices are more experienced with their IT system, while being aware of the eligibility criteria, and can therefore employ it more effectively to try to achieve their flu vaccination targets. However, this finding is surprising as older patients are identified simply on the basis of their age at a certain date, which should not require a complicated search strategy. It therefore seems likely that this finding does not reflect a causal association but might be an artefact suggesting simply that these practices have staff with increased motivation and/or interest in the process. Interestingly, the trend of increased uptake associated with modified or alternative IT search strategies was not significant for under 65s. This unexpected contrast may indicate that there was insufficient power to detect a change for under 65s (as, on the whole, this is a smaller group of patients).

The above approaches to identifying eligible patients were, in some cases, correlated with the IT system used, with those practices using EMIS being more likely to modify the standard search and those using iSoft Synergy being more likely to use an alternative program to search their database. The above findings, regarding the choice and use of IT system compared to vaccination rates achieved, should prompt further investigation to ensure that other factors (such staff experience) are not acting as confounding variables.

Practices run their main search(es) to identify eligible patients from practice databases predominantly in August and September of each year, as shown in figure 13. An average of 2.8 searches are performed; however there is no evidence that any significant differences in vaccination rates are associated with performing more than one search.
Figure 12: Main search method used by practices to identify patients who are eligible for influenza vaccination (n = 537)

- Search provided by the main IT system supplier and used directly: 45%
- Search provided by main IT system supplier but altered in house: 28%
- Alternative or add-on external search software used: 24%
- Own search program constructed: 3%
Most practices report that they have a mechanism to allow them to identify other patients who become newly eligible after their main search is performed but a minority (23/555; 4.1%) did not report this facility (figure 14). This small group of practices is likely to be at risk of achieving disproportionately low rates of vaccination for groups such as pregnant women, who may become pregnant (and therefore eligible) at any point in the season. A trend towards lower rates of vaccination of all age groups was seen for this group of practices but, perhaps as a consequence of the very small numbers involved, the trend did not reach statistical significance.

Identification of specific at-risk groups

The majority of practice managers appeared to be satisfied with their identification of patients, as shown in figure 15. However, a concerning minority of around 10% reported difficulty in identifying asthmatics (45 of 474; 9.5%), pregnant women (54 of 479; 11.3%) and non-professional carers (80 of 475; 16.8%) using their existing mechanisms. Interestingly, reporting of difficulties in identifying a particular subset of patients was not significantly correlated with lower uptake in that group. This might suggest that those practices with a greater awareness of their ability and performance in identifying eligible patients are motivated, by knowledge of any deficit, to improve their performance.
Figure 14: Responses to the question “Do you have a mechanism to identify patients who become eligible to receive vaccine after the initial search has been performed (e.g. new joiners, new chronic disease diagnoses, new pregnancies)?” (n = 555)

Figure 15: Perceived ease of identifying eligible patients, as reported by practice managers
The accurate identification of eligible asthmatic patients was felt to be a particularly interesting area for analysis, for a number of reasons. This group is not clearly defined within Department of Health guidance, which states only that vaccine should be offered to patients with a diagnosis of asthma that requires continuous or repeated use of inhaled or systemic steroids, or with previous exacerbations requiring hospital admission. The number of prescriptions defined by “repeated”, or the period of time over which this evaluation should be made, is not specified in any readily available guidance. The PRIMIS+ Read code query set, which although designed solely for the monitoring of uptake are nonetheless also used as a basis for the search programmes provided by most software providers, do not appear to exclude patients who have received only one prescription of a corticosteroid-containing medication during the previous year [73]. As inhaled corticosteroids can be used for a variety of other clinical presentations (such as hayfever), the concurrent presence of a diagnosis of some form of asthma with a single prescription of a steroid-containing inhaler within the previous year does not accurately identify patients who fulfil the DH criteria. Similarly, oral steroids are widely used for conditions which fall outside of the eligibility criteria and prescription of these drugs does not necessarily reflect that a patient requires flu vaccination. Although there is an obvious incentive for practices to ensure that patients do not receive vaccination unnecessarily, this is clearly a complex area that would benefit from clinical involvement from within the practice and, ideally, clarification at national level.

Furthermore, this asthmatic patient group is not categorised or defined by the QOF incentive scheme, and some of the required Read codes for defining the above categories might not be routinely used for other purposes. Lastly, this patient group encompasses many of the youngest patients who are likely to be eligible for flu vaccination. They are frequently found to be poorly engaged with primary care services and reluctant recipients of vaccine [52], thus their correct and consistent identification is an essential first stage towards effective targeting.

Figure 16 shows the current marked variation in criteria used to identify eligible asthmatics. It can be seen that many practices are identifying patients using the correct criteria, as indicated by clustering of the green bars toward the top of the chart. However, it is clear that there are relatively large proportions using incorrect criteria, many of which will result in the selection of higher than expected numbers of eligible patients. The clinical appropriateness of the eligibility criteria for asthma will not be discussed here. It should also be noted that staff knowledge of
Figure 16: Use of criteria to define eligible asthmatics (percentage of respondents choosing each criterion; green denotes current DH criteria; blue denotes incorrect criteria that may result in offering vaccine to patients who are ineligible (i.e. increase the denominator); red denotes incorrect criteria which may result in under-identification of eligible patients (i.e. reduce the denominator) [37, 73]. Total respondents = 737.
qualifying criteria and the criteria used in the practice's IT system search may differ considerably, where clinical staff are unaware of the correct criteria defining eligibility in such a complex area, there is a risk that patients may be inappropriately categorised for flu vaccination. It is clearly possible that the effect of calling a larger-than-necessary number of patients for vaccination, on both uptake rates and the overall burden of work for the practice, is likely to be detrimental to performance.

*Ordering and receiving vaccine*

On questioning, only 196 of 355 (55.2%) practice managers stated that they knew, or could easily find out, the total number of eligible patients among their practice population. This seems worryingly low, as this information is critical for determining the number of vaccines ordered. However, these responses may reflect the complexity of some of the search strategies required to identify eligible patients, as no significant association was found between knowing the number of eligible patients and the vaccination rates achieved.

Practice managers (total 462) also rated the importance of various factors which may affect their choice of vaccine supplier. Perhaps surprisingly, vaccine price was not (on average) the foremost consideration, falling behind issues of reliability and delivery flexibility, as shown in figure 17. This underlines the importance, to practices, of a reliable service from the vaccine supplier. There was a tendency for practices that chose a supplier based strongly on vaccine price to have higher rates of vaccination, although this did not reach statistical significance for patients aged 65+ and was only weakly significant for under 65s (p = 0.092). This trend may indicate that practices with a greater focus on cost and cost efficiency may be able to transfer those skills to the efficient targeting of patients and running of a vaccination campaign. Practices which reported choosing a vaccine supplier based strongly on delivery options showed a (non-significant) trend towards higher vaccination rates for under 65s but not those aged 65 plus. This trend may reflect the fact that, if appointments for vaccination have to be altered due to perturbation of vaccine supply, this may have a greater impact on patients of working age, or who were less inclined to attend in the first place.

Almost 60% of practice managers reported using some form of group purchase method for procuring their flu vaccines, though this was rarely through the local PCT, as shown in figure 18. Unsurprisingly, only a few practices were willing to disclose details of vaccine cost (figure 19). Prices paid varied from £2.80 - £7.15 per dose, with a median of £3.43. In this small group, those
who used some form of group or bulk purchase did not report a significantly different mean cost per dose to those who reported not using a group purchase scheme (£3.89 vs. £3.93, \( p = 0.46 \)).

Figure 17: Factors affecting choice of vaccine supplier and their importance (n = 462)

- Availability of sale or return terms
- Choice / availability of delivery date(s)
- Vaccine price
- Format / packaging of vaccine doses
- Availability of marketing materials

- Does not affect choice of supplier at all
- Slightly affects choice of supplier
- Moderately affects choice of supplier
- Strongly affects choice of supplier
Figure 18: Proportion of practices purchasing vaccines through a group or consortium (n = 334)

Figure 19: Showing reported prices paid per vaccine dose by responding practices; lines showing means and tied bars showing standard error of the mean (n = 61).
A number of respondents (102/621) reported that vaccines were not delivered on the date(s) expected, sometimes causing considerable perturbation of practice campaigns (see figure 20). One practice manager reported that, having experienced considerable delivery delays on previous occasions, this year they were planning to delay their entire vaccination campaign to ensure that they did not have to rebook appointments and clinics if the supply was delivered late again. Most practices seem to overcome the problems of disrupted delivery, when they occur, as having problems with delivery of vaccine stocks was not associated with any significant difference in vaccine uptake rates. However, the consequential additional workload imposed on practices may have impacted on other aspects of healthcare delivery not measured in this study.

**Figure 20:** Reported delivery of seasonal flu vaccine supplies to practices in 2010

A plot of the number of vaccine doses ordered for 2011-12 versus vaccines used in 2010-11 shows a tight correlation (figure 21a). On average, practices were found to have ordered with an average uplift of 8.8% (95% confidence interval 4.3 – 13.3%) on the number of doses given in the previous season. As vaccines are ordered as a total, these data cannot be differentiated into doses intended for vaccination of older patients or those under 65 years old. However, the data show that 445 of 568 contributors (78.3%) would be able to vaccinate 75% of all of their at risk patients (in accordance with the CMOs overall recommendations); while 559 (98.4%) would be able to vaccinate 60% of all of their at risk patients (figure 21b).
Figure 21: 
(a) Relationship between reported total number of vaccine doses ordered for coming season and actual number of doses administered in previous season (n = 568)

(b) Plot showing the maximum average achievable vaccination rate for the current season, based on the total number of vaccine doses ordered and the total number of eligible patients. Red line indicates the CMO’s target of 75%.
How do practices contact patients and/or publicise their campaigns?

Overall approach to patient contact

The majority of practices (570 of 622; 91.6%) use a mixture of both general publicity and personal invitations to encourage patients to attend for vaccination, as shown in figure 22. Using personal invitations, either alone or in combination with general publicity, was associated with significant increases in uptake. The use of personal invitations for all patients (not just those who do not respond to an initial general publicity campaign) was associated with the highest vaccination rates in the larger, 65+ age group (p = 0.003), although a similarly positive effect did not reach statistical significance in the under 65s.

Of 600 practices who reported how they offered vaccination to pregnant patients, 93 (15.6%) relied on the community midwifery service to advise patients to receive vaccination; 201 (33.5%) used their normal methods of communication only and 307 (51.2%) used their normal methods of communication plus collaboration with the community midwifery service. Involvement of the community midwife in offering vaccination showed a tendency to be associated with higher vaccination rates in pregnant patients, but not to a significant level (p = 0.129).

Collaborating with other local practices to promote the flu vaccination campaign was reported by 12.9% of practices and was significantly associated with higher uptake rates in under 65s, though this trend did not reach statistical significance in patients aged 65+ (p = 0.027 and 0.940, respectively).

Formats for general publicity in and around practices

A diverse range of methods of general (i.e. untargeted) publicity was reported to be used by practices in order to encourage patients to attend for vaccination, as shown in figure 23.

Using fewer different methods of general communication was associated with higher vaccination uptake rates for under 65s (p = 0.053), though no difference was seen for the older patient age group. The reason for the former finding is unclear, though it may reflect a more effective outcome from a simpler, less piecemeal approach in some cases. The latter finding, of non-significance in the older patient group, might suggest that this group are more likely to be habitual attenders (or non-attenders) and less likely to be influenced to alter a choice they have been making for many years.
Figure 22: Overall proportions of practices reporting each of the stated strategies for contacting patients in at-risk groups (numbers represent percentages; n = 622)

- General publicity and personal invitation for all patients: 49.6%
- General publicity followed by personal invitation for non-responders: 6.6%
- General publicity only: 41.4%
- Personal invitation only: 2.4%

Figure 23: General publicity methods used to encourage patients to attend for vaccination (total percentage of responding practices reporting each method shown; n = 404)
Alternatively, it may reflect that a similar increase in uptake rate in this older group would be proportionately smaller in terms of the higher baseline rate and thus more difficult to detect.

Surprisingly, advertising using local radio or newspapers was not associated with any significant difference in vaccination rates \( (p = 0.6) \), although this may have been confounded by the small numbers of practices making use of these methods.

Of 400 practices, 47.8% reported that their general promotional materials were available in languages other than English, if required. This was significantly associated with higher flu vaccine uptake in under 65s \( (p = 0.029) \), an effect which became more marked when this question was analysed for practices with higher proportions of non-white ethnicity patients \( (p = 0.026) \). The availability of publicity in other languages did not show a significant association for older patients, perhaps indicating that this age group is either less likely to be ethnically diverse or might encompass patients who have younger family members who are beginning to take a role in their care (including interpretation).

Interestingly, although the availability and supply of promotional materials was not reported to be a strong factor influencing choice of a vaccine supplier, the majority of practices do rely on suppliers to provide their posters and other promotional materials, as shown in figure 24.

Using publicity produced in-house (rather than materials produced by the vaccine manufacturer or DH, NHS or HPA) showed a non-significant tendency to be associated lower rates of vaccine uptake in all age groups. No significance difference was found between using materials produced by DH, NHS or HPA and using the vaccine manufacturers’ materials. However, the numbers of practices using the first three sources were low, probably reflecting the fact that there was no national campaign during the 2010-2011 season and relevant publicity materials may not have been either widely available or sought.

**Specific methods of individual patient contact**

Practices reported using a wide range of methods to send personal invitations for vaccination to their patients, as shown in figure 25. Using both letters and telephone calls was not associated with significantly different vaccination rates than using either letters or phone calls alone \( (p = 0.721 \text{ for patients aged 65+}; \ p = 0.852 \text{ for patients aged <65}) \). Only 29.9% of practices reported that personal invitations were available in a language(s) other than English, if required by patients. In contrast to our findings with general publicity, providing personal invitations in an alternative language was
Figure 24: Main source of promotional materials for primary care flu campaigns (n = 404)

- Vaccine supplier / manufacturer: 69.6%
- Department of Health / NHS / Health Protection Agency: 18.3%
- Own practice / in house: 11.6%
- Other: 0.5%

Figure 25: Methods used to invite individual patients to attend for vaccination (total percentage of responding practices reporting each method shown; n = 379)

- Letters: 90%
- Message added to individual prescription counterfoils: 80%
- Message given during other routine appointment: 70%
- Telephone call: 70%
- Message added to other routine letters: 60%
- Text: 40%
- Email: 10%
- Social networking: 0%
not associated with significant differences in vaccine uptake rates in either age group, even when corrected for the proportion of non-white ethnicity in practice populations.

Of those who reported providing individual invitations to patients, most (85.6%) explained in the invitation why they were calling the patient for vaccination. Surprisingly, this showed no association with vaccination uptake for older patients and even showed a tendency to associate with lower rates for under 65s. The reason for this finding is unclear and highlights an area for further investigation, as it may indicate that a different approach to communicating about flu and its risks is required for the younger population.

**Identifying and targeting non-responders**

The effort with which non-responders to the campaign are followed up and sent repeat invitations is, in many practices, associated with the indication for vaccination as classified by QOF, with patients who will generate a QOF-related payment due to flu vaccination receiving an average of 0.42 ± 0.09 reminders more than those who do not have a QOF-group illness (p < 0.001). This discrepancy is illustrated in figure 26. This indicates that the majority of eligible patients (all those aged 65+, plus some of those aged under 65), will fall into the latter category and often will not receive as many reminders as their more “profitable” counterparts. This fact is all the more concerning as our analyses have also shown that increasing numbers of reminders or repeat invitations are associated with significantly increased vaccine uptake in under 65s (p = 0.038), though not in those aged 65+).

Of 379 practices, 42.8% reported that they have an automatic IT system to generate reminders for patients who do not respond to the initial strategy for invitation. This ability was associated with higher vaccination rates in the under 65 age group, but not significantly (p = 0.331). No association was found for those aged 65+. Over 50% (227 / 415) of practices do not use a specific Read or IT code to record an appointment for influenza vaccination. A few (19 / 418; 4.5%) also report that they have no specific Read or IT code to record receipt of vaccination by the patient. Both circumstances will make it more difficult for a practice promptly and accurately to identify non-responders, in order to target them for repeat invitations. This is reflected in the fact that significantly higher rates of vaccination (for under 65s) are seen in practices who do employ a specific IT code to record appointments (p = 0.038). Those few practices that do not use (or are not aware of) Read codes for receipt of vaccination may also be under-reporting their uptake rates as a result of this and, although there were too few data in this group for robust analysis to investigate this hypothesis, it is an area which should be investigated during further work.
How do practices carry out their vaccination campaigns?

**Clinics and appointments**

A total of 257 practices reported that they started providing flu vaccine in either August or September; 283 reported that their campaigns began in October or November, as shown in figure 27. There was a tendency for earlier initiation of the flu campaign to be associated with higher vaccine uptake in all age groups, but this trend did not reach statistical significance.

More than 95% of practices hold the main vaccination sessions at their usual surgery premises and 75% hold the main sessions during normal surgery hours. Many practices go to great lengths to make their flu vaccination sessions fun and interesting for patients. Almost 40% collaborate with other local services to offer advice, activities and promotions (for example fire safety promotion, falls prevention advice, and refreshments in association with the local WRVS group). A few choose a non-medical location (for example the local Town Hall) to hold a “Flu Fayre” and many use inexpensive decorations (bunting, balloons etc.) to create a festive appeal. One enterprising practice told us “this year we’re holding a Saturday Beat the Flu Blues and Jazz Jabbing day”.

![Figure 26: Usual number of reminders sent to non-responders (total responses = 379)](chart)
Figure 27: Showing when practices start booking, and carrying out, flu vaccination appointments each season

Figure 28 demonstrates a summary of the findings with respect to the timing and types of appointments or sessions that practices use to provide flu vaccination to their patients. Most employ a mixture of formats, often reflecting that one approach (for example, appointment in timed blocks) is used for the main sessions of vaccination with another (for example, individual timed appointments) used when accommodating sporadic attenders after the main sessions have been conducted. Analysis of these data shows that offering individual timed appointments was weakly associated with higher uptake rates in the under 65 age group (p = 0.069), particularly as compared to offering open, non-booked sessions. There was little evidence to suggest that vaccination rates in patients aged 65+ were affected by the way appointments are offered, perhaps indicating that this group is more willing to comply with any format of attendance. Surprisingly, in our analyses, offering vaccinations at weekends, or before 8am or after 6pm, was not associated with any significant difference in the vaccination uptake rates achieved. Almost all practices (565 of 591; 95.6%) reported that they will offer vaccination opportunistically to at-risk patients who attend the surgery or vaccination session unexpectedly. Due to the small number of negative responses in this category it was not possible to perform a robust analysis on this variable.
Figure 28: Type and timings of practices' main vaccination sessions (responses shown as percentage of practices; n = 399)

Providing flu vaccination to housebound patients and care home residents

Five hundred and eighty-five practices provided information on the vaccination of their patients who were housebound or residents in a long-stay care home (see figure 29). Interestingly, providing flu vaccination for housebound patients during rather than before the main campaign was associated with significantly higher rates of uptake in both age groups, who are likely to make up the majority of patients affected by this approach (p = 0.046 for those aged 65+; p = 0.008 for those aged <65). A similar trend was seen for the vaccination of care home residents, but did not reach statistical significance. The finding with respect to housebound patients may suggest that those practices that integrate their home visits for vaccinations into the core flu campaign may derive benefit from the additional publicity, staff time and motivation that is likely to be available during that time. Additionally, the ability to offer vaccination to housebound patients prior to the main campaign suggests that the main campaign therefore starts later than is otherwise possible (i.e. not as soon vaccines are delivered); thereby allowing less time for its successful completion. This hypothesis would be supported by the trend for later campaigns to achieve lower rates of vaccination, as stated above.
Involvement of other community health-care teams in promoting and providing flu vaccination

Community nursing and midwifery teams were generally perceived to support practices by advocating vaccination to these groups of patients and/or pregnant women (see figure 30). However, a small but significant negative association was seen between practices agreeing that their district nursing team was involved in promoting vaccinations to care home residents and housebound patients and the rates of uptake seen in in older patients ($p = 0.053$). This finding suggests that practices assume that the community nursing support means that they can devolve some or all responsibility for vaccine promotion to these groups, and that these patients may not therefore receive the full benefits of the practice's usual publicity and invitations. It is also clear that there is a discrepancy between the extent to which midwives recommend vaccination and the extent to which they can (or will) provide it (see figure 30). Although administering flu vaccine is not part of the current role of many midwives, it is logical that the ability to both discuss and provide vaccination to pregnant women would increase uptake in this risk group by removing the need for referral and attendance at a separate clinic. Indeed, analysis supports this hypothesis, demonstrating that practices where the community midwives were active in administering flu vaccinations to pregnant patients achieved significantly higher rates of uptake in that at-risk group ($p = 0.023$).
Figure 30: Showing practices’ perceptions of involvement of community nurses and midwives in recommending and providing flu vaccinations for housebound patients and care home residents (n = 393).

<table>
<thead>
<tr>
<th>Perception</th>
<th>Strongly agree</th>
<th>Agree</th>
<th>Neither agree nor disagree</th>
<th>Disagree</th>
<th>Strongly disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>My local district nurses are active in recommending vaccination to housebound patients and care-home residents</td>
<td>0%</td>
<td>20%</td>
<td>40%</td>
<td>60%</td>
<td>80%</td>
</tr>
<tr>
<td>My local district nurses are active in providing vaccination to housebound patients and care-home residents</td>
<td>0%</td>
<td>20%</td>
<td>40%</td>
<td>60%</td>
<td>80%</td>
</tr>
<tr>
<td>My local midwives are active in recommending vaccination to pregnant patients</td>
<td>0%</td>
<td>20%</td>
<td>40%</td>
<td>60%</td>
<td>80%</td>
</tr>
<tr>
<td>My local midwives are active in providing vaccination to pregnant patients</td>
<td>0%</td>
<td>20%</td>
<td>40%</td>
<td>60%</td>
<td>80%</td>
</tr>
</tbody>
</table>

Consent and record keeping

A total of 583 practices reported their consent procedures, with 94.2% taking consent at the time of vaccination and 5.8% seeking consent at the time of booking the appointment. The vast majority (93.8%) normally record verbal or implied consent for the vaccination procedure, with the remainder usually documenting written consent for all patients. For most patients, verbal or implied consent will be appropriate and more effective in terms of both staff and patients' time.

With respect to recording receipt of vaccination, 557 of 598 practices (93.1%) reported that the patient record is updated at the time that vaccination is given; 389 of 417 (93.3%) have an IT mechanism to record that a patient has received vaccination elsewhere (for example, from an employer); and 408 of 417 (97.8%) record refusal of vaccine. This last point is important, both with respect to an increasing emphasis by the DH on performance management of vaccine uptake, and also with respect to potential issues of liability should an unvaccinated at-risk patient subsequently die, or suffer serious consequences, as a result of an influenza infection.
Ending the campaign

A total of 578 practices provided information on what influenced their decision on when to stop offering flu vaccination (figure 31). Having vaccinated all willing patients was the most frequent response (65.2%), while only 79 (13.7%) based their decision on HPA and/or CMO advice regarding the end of the flu season. Of major concern is the evidence that almost 50% of practices stop offering flu vaccines partly, or solely, because they have run out of doses.

Almost one third (28.9%) cited a financial factor in making their decision and concluding vaccinations based on attaining QOF targets was associated with increased uptake rates for those aged 65+ \( (p = 0.048) \); in those aged under 65 this was only weakly significant \( (p = 0.100) \), perhaps influenced by the smaller numbers of patients in this group. These findings suggest that practices that focus on financial targets are motivated to continue their efforts to vaccinate patients beyond the point at which other practices may stop.

Figure 31: Usual reasons underlying when practices stop vaccinating eligible patients
How do practices review their performance?

Reviewing uptake rates and assessing strategies

Figure 32 shows how frequently practices reported reviewing their flu vaccine uptake rates during the vaccination season itself. We hypothesised that near real-time monitoring of progress can help practices to recognise and rectify any shortfall in vaccinations, should it occur. However, although a trend was seen for more frequent monitoring of rates to associate with higher vaccine uptake rates, a statistically significant association was not found when comparing monitoring every two weeks or less with monitoring on a monthly or less frequent basis.

Figure 32: Reported frequency of reviewing flu vaccination uptake rates in 2010-2011 (n = 587)

Figure 33 shows how practices review their final vaccination rates and the effectiveness of their vaccination strategies after the vaccination season has finished. Practices which produced a written report reviewing their uptake rates for flu vaccination had a highly significant associated increase in vaccination rates achieved in all age groups, compared to those practices which did not produce a written report (p = 0.006 for patients aged 65+; p = 0.002 for patients aged <65 years). Similarly, reviewing the practice’s flu vaccination strategy in a written format was also significantly associated with achieving higher rates of vaccination uptake (p = 0.067 for patients aged 65+; p = 0.028 for patients aged <65 years). These findings are likely to indicate that practices which do produce such
reports take a more rigorous or professional approach to conducting their campaigns, and/or have more well-informed staff, resulting in more effective performance.

Staff awareness of practice performance, including comparison with other local providers

When asked, only 49.9% of practice managers; 40.2% of nursing staff; and 40.4% of GPs felt that they knew (or would easily be able to find out) what their practice's vaccination rates were. Managerial and nursing staff awareness of the practice's uptake rates was significantly associated with higher rates of vaccination in patients aged 65 and over, but not in under 65s (p = 0.022 and 0.985, respectively). It is possible that the lack of knowledge of rates for the younger age groups reflects that fact that they are not identified as a group in this way at the practice level, but rather on the basis of individual risk factors, hence staff may not know the average rate overall. In contrast, GPs' knowledge of their practices' vaccination rates was not significantly associated with vaccination rates in either age group, perhaps reflecting the fact that GPs do not usually have a high level of involvement in the practice's flu vaccination campaign.
The actual accuracy of clinical or administrative staffs’ knowledge of vaccination rates was variable. In general, stated knowledge of 65 years and over vaccination rates was fairly accurate, but there was little correlation between reported and actual rates of vaccination for under 65s. Example plots showing actual and reported vaccination rates for GPs are shown in figure 34. When practice managers’ knowledge of vaccination rates was compared with data on the IT system in use at practices, it was found that those using EMIS were over-estimating their actual rates by an average of 7.6%, whereas those using INPS under-estimated their actual rates by an average of 14.1% (p = 0.016 and 0.014 respectively). These findings support the hypothesis that the IT system employed by a practice, and the ease and effectiveness with which it can be used by the staff, is central to the accurate and efficient running of a flu vaccination campaign.

Overall, 39.4% and 38.3% of practice staff were aware of other local practices’ flu vaccination rates and strategies, respectively. Staffs’ awareness of the strategies used and rates achieved in the local area showed a tendency to correlate with higher vaccination rates for patients at their own practices, but these findings did not reach statistical significance once adjusted for clustering within participating practices.

Other factors

*Personal motivations and attitudes of staff*

Figure 35 shows the reported balances, between clinical and financial benefits, that motivate GPs to ensure that their at-risk patients receive the flu vaccine. There were no significant differences found between vaccination rates for practices whose GPs were more clinically motivated, and the rates for practices whose GPs were more financially motivated to provide the flu vaccination. These finding are again likely to reflect that GPs themselves do not usually have a strong influence in the practice’s flu vaccination campaign.
Figure 34: Scatter plots showing vaccination rates reported by GPs as compared with actual uptake rates, for the 2010-2011 season, in (a) patients aged 65 years and over, and (b) patients aged under 65 years.
Figure 36 shows a summary of GPs', nurses' and practice managers' views of the flu vaccination campaign. On analysis, we did not find significant evidence that practices' whose receptionists are perceived as able to discuss basic benefits of the flu vaccine with patients achieve higher vaccination rates. However, there was a significant association between for staff encouraging vaccination among colleagues and other staff and practices with higher rates of vaccine uptake in older patients (p = 0.004 for rates in patients aged over 65 years). A similar trend was seen for patients under the age of 65, although this did not reach statistical significance. There was also a trend for positive attitudes of staff towards personal vaccination to be reflected in increased rates of patient vaccination achieved by a practice but, again, this was not significant once the analysis had been adjusted to take account of clustering of participants within the same practices. These observations suggest that, despite the contrast between the responses of a minority of staff to “I encourage patients to attend for vaccination” and “I am happy to have the flu vaccine myself”, patients might respond to subconscious or behavioural indications of a healthcare worker’s beliefs and be discouraged from vaccination in these cases. Perhaps more obviously, staff members who encourage vaccination of their colleagues are probably more likely to be fully engaged in and supportive of all aspects of their practice's flu vaccination campaign.
A high proportion of respondents (274 of 700; 39.1%) did not feel that the national media encourage patients to receive flu vaccination. When given the opportunity to comment on this point, participants in our consultation and survey study cited the lack of a government advertising campaign to support flu vaccination, plus ill-substantiated and poorly refuted press stories about the risks of vaccination with an H1N1 antigen-containing vaccine, as causes of noticeable drops in vaccine uptake last season. Over one third (36%) of those who provided additional free text comments stated that poor national promotion and/or negative media stories had a noticeable impact on vaccine uptake for their practice during 2010-11. National media were also felt to affect the timing of uptake, with some patients only responding to invitations after stories about severe flu infections broke in the media. The real impact of national publicity on personal actions is difficult to quantify but, in view of the DH’s decision not to reinstate the national publicity campaign this season, these reports are potentially of concern.

In total (n = 606), 97.4% of nursing and managerial staff agreed or strongly agreed that their GP colleagues at their practice encourage patients to receive vaccination; this figure was 99.3% with
respect to the perception of practice nursing colleagues by GPs and practice managers (n = 443). Similarly, a total of 92.6% (n = 609) and 93.7% (n = 254) felt supported by their GPs and practice managers, respectively, for the work they do to provide the vaccination campaign. More than half of all participants (371 of 680; 54.6%) stated that they would make use of an online clinical learning package about flu and flu vaccination, if available (figure 37). These positive responses support the recently-proposed development of a DH e-learning resource for this purpose. Furthermore, a similar proportion of practice managers (208 of 417; 49.9%) stated that they would make use of a similar package aimed at improving the identification of at-risk patients and reporting of vaccination data.

Figure 37: Distribution of staff responses when asked whether they would make use of a clinical e-learning package about flu and flu vaccination (n = 93 GPs, 241 nursing staff and 346 practice managers)

Perceived barriers to vaccination

A total of 672 staff commented on what they perceived to be the main barriers to increasing vaccination. The results are displayed in figure 38. It is clear that patient factors (education, beliefs or motivation about the flu vaccine) were considered to be by far the strongest barrier, perhaps indicating that many practice staff feel unable to increase uptake as it is largely beyond their control. In a few cases, religious belief, a true clinical allergy or previous severe reaction to
vaccination will present insurmountable contra-indications to the flu vaccine. It is also probably true that, as our contributors commented “there will always be a minority who consistently decline” or “repeatedly ignore all communication from [the] practice”. However, with effective communication of accurate knowledge, many patients’ negative and inaccurate beliefs about vaccine allergies, risks and benefits of vaccination could be dispelled. Unfortunately, effective and personalised discussion of patients’ concerns requires significant clinical time and, more importantly, is dependent on the patient initiating or accepting some form of contact from the surgery in the first place. Nonetheless, it is essential that patients are offered appropriate information, a clear invitation for vaccination and adequate opportunity to discuss any concerns before making their decision. It is therefore important that practices remain willing to encourage those patients who refuse, neglect or cannot be bothered to take up flu vaccination.

<table>
<thead>
<tr>
<th>Perceived barriers to increasing vaccination uptake rates</th>
<th>Total respondents selecting this factor</th>
<th>Total score based on respondents’ rankings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient education, beliefs and/or motivation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Levels of staffing/funding</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Difficulties with recalling patients</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Staff education, beliefs and/or motivation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Difficulties with campaign logistics</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Difficulties with identifying patients</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Difficulties with reporting vaccination data</td>
<td></td>
<td></td>
</tr>
<tr>
<td>We don’t need to increase our rates</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Results of multivariable logistic regression analysis

The significant outcomes of multivariable analysis for strategies identified from responses from all three groups of staff (GPs, nursing staff and practice managers) are shown in Table 2. Two factors were found to be independently and significantly correlated with increased rates of flu vaccination in all age groups. These were:

- having a lead member of staff for planning the practice’s flu vaccination campaign and;
- producing a written report to review flu vaccine uptake rates either within and/or outside the practice

In patients under the age of 65, these two factors were associated with an odds ratio of 1.37 and practices that reported these two behaviours achieved vaccination rates that were 8% higher than practices that did not (54.0% vs. 46.1%).

In patients aged 65 or over, a further two factors were also found to remain independently correlated with increased rates of flu vaccination. These were:

- sending a personal invitation to all eligible patients and;
- only stopping vaccination when QOF targets are reached

The overall odds ratio associated with the implementation of all four factors found to be significant in those aged 65 years or over was 1.45, and predicts a 7% rise in vaccination rates (78% vs. 71%).

Two additional strategies were found to remain correlated with increased rates of flu vaccination in patients aged 65 years or more based on a subset of responses from practice managers only (Table 3). These were:

- having a lead member of staff for identifying eligible patients in the practice and;
- identifying eligible patients using a modified manufacturer’s search program or an in-house search program

The implementation of these two factors in those aged 65 years and over predicts a 4% rise in vaccination rates (78% vs. 74%).

The active involvement of midwives in providing flu vaccination had been found to be significantly associated with higher levels of vaccine uptake in pregnant women. As this was the only variable found to be significant in this small subset of data, multivariable testing was not possible. However,
given the current low levels of vaccine uptake and the importance of clarifying the best strategies for vaccine delivery in this new risk group, we have calculated the potential effect of implementing this strategy more widely for this group. Applying the odds ratio of 1.195 predicted by the univariable analysis, we estimate that the provision of vaccination by midwives rather than GPs is associated with a 4% increase in vaccine uptake (45% vs 41%).

For the other factors found to be significantly associated with uptake rates in either age group on univariable analysis, multivariable analysis did not discriminate any factor as independently significant and/or insufficient factors were significant at the 5% level to allow multivariable testing.
Table 2: Statistically significant results found on multivariate regression analysis of responses from all three types of staff

<table>
<thead>
<tr>
<th>Factor</th>
<th>Patient age group</th>
<th>Regression co-efficient</th>
<th>95% CI</th>
<th>p-value</th>
<th>Number of staff types</th>
<th>Number of clusters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Producing a written report to review flu vaccine uptake rates</td>
<td>&lt; 65 years</td>
<td>0.113</td>
<td>0.042 – 0.184</td>
<td>0.002</td>
<td>3</td>
<td>783</td>
</tr>
<tr>
<td></td>
<td>≥ 65 years</td>
<td>0.065</td>
<td>0.023 – 0.107</td>
<td>0.010</td>
<td>3</td>
<td>659</td>
</tr>
<tr>
<td>Having a lead member of staff for planning the practice’s flu vaccination campaign</td>
<td>&lt; 65 years</td>
<td>0.203</td>
<td>0.054 – 0.352</td>
<td>0.008</td>
<td>3</td>
<td>783</td>
</tr>
<tr>
<td></td>
<td>≥ 65 years</td>
<td>0.144</td>
<td>0.035 – 0.253</td>
<td>0.010</td>
<td>3</td>
<td>659</td>
</tr>
<tr>
<td>Sending a personal invitation to all eligible patients</td>
<td>≥ 65 years</td>
<td>0.081</td>
<td>0.035 – 0.127</td>
<td>0.001</td>
<td>3</td>
<td>659</td>
</tr>
<tr>
<td>Only stopping vaccination when QOF targets are reached</td>
<td>≥ 65 years</td>
<td>0.085</td>
<td>0.004 – 0.166</td>
<td>0.039</td>
<td>3</td>
<td>659</td>
</tr>
</tbody>
</table>

Table 3: Statistically significant results found on multivariate regression analysis of responses from practice managers only

<table>
<thead>
<tr>
<th>Factor</th>
<th>Patient age group</th>
<th>Regression co-efficient</th>
<th>95% CI</th>
<th>p-value</th>
<th>Number of staff types</th>
<th>Number of clusters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identifying eligible patients using a modified manufacturer’s search program</td>
<td>≥ 65 years</td>
<td>0.115</td>
<td>0.056 – 0.175</td>
<td>0.000</td>
<td>1</td>
<td>395</td>
</tr>
<tr>
<td>Identifying eligible patients using an in-house search program</td>
<td>≥ 65 years</td>
<td>0.096</td>
<td>0.028 – 0.163</td>
<td>0.006</td>
<td>1</td>
<td>395</td>
</tr>
<tr>
<td>Having a lead member of staff for identifying eligible patients in the practice</td>
<td>≥ 65 years</td>
<td>0.086</td>
<td>0.001 – 0.170</td>
<td>0.046</td>
<td>1</td>
<td>395</td>
</tr>
</tbody>
</table>
Public and patient feedback

Levels of public and patient participation

Having undertaken the statistical analyses outlined above, some of the findings with the highest level of direct relevance to patients and/or the general public were selected for discussion and evaluation during the patient and public feedback events. The questionnaire which was formulated for the feedback exercise is attached in Annex 2.

Despite the comprehensive local advertising campaign previously described, attendance at both meetings was low: with 8 members of the existing Patient Participation Groups attending the in-house feedback meeting; and only one member of the public attending the public feedback forum. Two further participants completed the questionnaire online via the advertised web-link.

This overall level of participation (total 11 persons) was disappointing, and the underlying reasons for it are unclear. We hypothesise that a number of factors may have contributed. The feedback was conducted in an area of relatively high vaccine uptake and where an established and popular annual flu vaccination event is held. It is perceived that the local population is relatively satisfied with, and supportive of, flu vaccine provision and thus were less likely to have a strong drive to attend. Additionally, due to the overall time constraints in carrying out the study, the feedback sessions were held in early autumn, at a time when flu is not circulating and thus peoples’ personal awareness or experience of flu was likely to be low. This may have lessened the perceived relevance of the meetings. We also note that the main public feedback session was held on an unseasonably hot and fine day, which may have caused potential attendees to re-evaluate their plans to attend. However, we also believe that the low attendance may simply be due to public apathy towards the flu vaccine, even in this apparently relatively well-engaged community. If the lack of public attendance at our feedback sessions does indeed reflect public and patient attitudes towards flu vaccination, this would support practices’ beliefs that patient motivation is a key barrier to vaccine uptake and highlights one of the difficulties that must be overcome if vaccination uptake rates are to be increased.

Public and patient feedback on the study’s key findings

Despite the low level of involvement, we were able to gather some helpful indications of public sentiment. The full results are set out in Annex 4. Although there were insufficient data to permit any robust analysis, the descriptive statistics indicate that those who provided their views on the proposals were supportive of:
• practices sending a personal invitation to all eligible patients
• professional publicity materials being used
• NHS publicity materials being provided in preference to materials from the vaccine manufacturers
• timed appointments being provided for flu vaccination
• knowing whether their GPs and other practice staff had themselves received the flu vaccine

Most of those who contributed did not feel that either national government campaigns or the national media influenced their attitude towards flu vaccination. It should be noted, however, that the participants would have been naturally self-selected for an interest in (and perhaps knowledge of) flu vaccination and, during open discussion, 9 of 11 indicated that they supported and received the vaccine themselves.
CONCLUSIONS AND DISCUSSION OF RECOMMENDATIONS

Our study has yielded many findings that suggest practical ways in which practices might improve and maximise uptake of seasonal flu vaccine in their at-risk patients. A number of these findings align with approaches that can be viewed as logical and representative of common sense. However, this study has for the first time documented evidence of the presence and extent of associations with rates of vaccine uptake, which now support these approaches. Other findings have proved surprising or unexpected, prompting further work to investigate their influence on flu vaccination rates. Seven key factors have been identified as being associated with higher rates of flu vaccine uptake and we propose that these practices should be strongly recommended across the UK in order to facilitate increased levels of flu vaccination. The main evidence-based recommendations in this section are highlighted in **bold text**.

*Communication among primary care teams*

Communication with patients might always have been expected to be important, but many of the statistically significant outcomes of the analyses shown in the preceding section are directly or indirectly associated with the quality or extent of communication within practices themselves. The very strong association of higher vaccination rates with the circulation of a written report about the practice’s performance and strategy was identified. This clearly indicates that a higher level of staff awareness about the flu vaccination campaign and how well the practice performs enables those staff to be better and more actively motivated. Circulation of a written summary of the practice’s uptake rates may improve practices’ performance in a number of ways. First, the ability to produce such a report requires that at least one member of staff would need to be able to access the data required and take the time and responsibility to do this. Secondly, the circulation of summary data allows the whole staff to become informed about their performance in relation to national averages and to identify, more easily, where improvements to performance are most necessary. Staff may be more likely to be able to reflect on this information, individually and together, if it is presented in a written format.

Other findings, such as the association of staff knowledge of a practice’s vaccination rates with increased vaccine uptake, support the conclusion that, for a practice and their team to achieve optimal results, it is essential that all clinical and administration staff are well informed about their practice’s flu vaccination campaign. At present, however, most practice staff are not aware of
their uptake rates for influenza vaccine. Our results clearly suggest that practices should ensure that key outcomes of their flu vaccination campaigns are provided to their clinical and administrative staff. The Department of Health’s Immform web application enables all practices to access and monitor statistics showing their previous vaccination rates, both overall and in the various at-risk patient groups, and thus offers a simple and valuable mechanism by which practices can obtain and review these data [45].

We recommend that a brief written summary, containing a short overview of the completed season’s performance, together with changes to be implemented for next season and key dates, should be circulated to all practice staff. It should be considered good practice to compare the practice’s performance to local and national averages when conducting and distributing this document. Furthermore, it is possible for to make use of their IT systems to obtain real-time data showing progress during the vaccination campaign and to use this information to motivate patients and staff. One example of a simple and effective format for presenting this information might be a progress “thermometer”, which could be displayed as a poster or in electronic form on practice computers. This form of graphical depiction can be created and automatically updated using simple spreadsheet techniques (example provided [74]), or could take the form of a real-time monitor on a practice website (numerous free HTML widgets are available via the internet) and is easily and quickly interpreted by staff. A display of this sort could also be displayed in patient areas and might also then contribute to patients’ awareness and motivation. Staff who administer the vaccines might also be motivated (and even surprised) by comparisons of how many patients they have successfully vaccinated.

Our findings suggest that awareness of the practice’s performance and strategy in the context of that of other local practices is associated with higher rates of vaccine uptake. Sharing campaign strategies and evidence of the outcomes achieved will allow practices that are struggling to raise their rates to benefit from a much wider range of experience, expertise and ideas for improvement than might be available within their practice. It is also likely to generate a competitive atmosphere between local providers which, though not antagonistic, would be expected to stimulate staff to improve their local standing. An ideal mechanism for this data and strategy sharing would be through the local Primary Care Organisation.

Production and provision of accurate vaccine uptake data is essential for primary care teams to be able to assess and improve their performance. We therefore conclude that it is may be useful for Primary Care Organisations to provide feedback of these data to practices, along with interpretation to indicate the scope for, and requirements of, any improvement. For example, it
would be helpful to provide calculations to inform each practice how many vaccine doses they are estimated to require to meet or surpass the CMO’s targets in their eligible population and how this figure relates to the number of doses administered during the previous season (or ordered for the coming one). This strategy is already being implemented successfully by the Vaccination and Immunisation co-ordinators across Yorkshire and Humber SHA and a spread-sheet template has been designed to support the process.

We also advise that practices should work closely with their Primary Care Organisation to ensure that vaccines for staff are provided at an early stage in the season. Primary care teams are the main front-line for care of patients with influenza, most of whom will remain in the community rather than requiring hospital care. GPs and their teams are also likely, therefore, to be at the highest risk of acquiring and transmitting the infection themselves. If staff are to be effectively encouraged to support and accept the importance of vaccination for themselves, this must be reinforced by ensuring that vaccination is readily available to them. We therefore suggest that the protection of primary care teams should be prioritised and that Primary Care Organisations should ensure that staff are consistently offered flu vaccination before mid-November each year.

*Organisation and administration of the campaign*

Our initial fact-finding interviews with experienced practice staff, together with the evidence gained using the questionnaire survey, revealed the high complexity of the administration and management involved in carrying out a successful flu vaccination campaign. The numerous factors to be considered when planning vaccine purchasing; the identification of appropriate patients; the diversity of strategies employed to communicate with the eligible patient population; and the many considerations involved in providing and co-ordinating additional clinics and staff capacity, all require considerable administrative and managerial time, skill and experience. Our findings indicated a statistically significant association between higher staffing rates (particularly of nursing staff) and increased rates of flu vaccination, so we advise practices to ensure that they plan ahead to fill vacancies in nursing, auxiliary and administration staffing prior to the campaign, where possible. Larger practices tend to have lower rates of staffing as a baseline and are therefore at a greater risk of staff vacancies adversely impacting upon the effectiveness of their vaccination campaign. Such practices may wish to consider engaging temporary additional staff to ensure that they can contact, invite and vaccinate their at-risk patients within an appropriate timescale.
Staff who are involved in the planning and assessment of campaigns will be more likely to become engaged in the delivery of the service and may often be able to contribute practical suggestions for increasing efficiency and effectiveness. We suggest that practices consider holding a formal meeting, to review the previous season’s performance rates and to plan both the delivery of the next season’s flu campaign and the focus of efforts to increase rates. We advise that this meeting is held shortly after conclusion of the influenza / influenza vaccination season and prior to ordering the next season’s vaccine doses. Relevant attendees will vary in different settings, but would normally include representation from those most closely involved in the campaign, i.e. managerial, nursing and administration staff. Practices should also invite attendance from representatives of the district nursing team, local care homes and community midwives. Community healthcare teams, such as midwifery and district nursing services, can provide invaluable support to practices by promoting and providing flu vaccination. If a good working relationship with these teams does not yet exist, it is particularly important to involve them in planning the flu campaign at an early stage, in order that better collaborations and improved communication links may be developed. It may be helpful to liaise with other local practices and the local PCT or commissioning organisation if more formal arrangements are required.

Where community nursing, midwifery and care home teams are to take an active role in providing vaccinations, effective communication is essential. Robust arrangements must be agreed and implemented for the transfer of vaccine stocks, and the documentation of their use, to ensure that patient records can be updated accurately and promptly and that vaccine stocks can be managed effectively. We suggest that specific members of these teams should be nominated to take responsibility for communicating with the practice(s) for the duration of the campaign.

We recommend that each practice should identify a lead member of staff who has the primary responsibility for organising, or driving the organisation of, the practice’s influenza vaccination campaign. This approach, together with the identification of a lead staff member with responsibility for identifying at-risk patients from the practice database, has been shown to be very significantly associated with higher vaccination rates. It should be considered essential for the latter staff member to ensure that they maintain an up-to-date knowledge of how to use the practice software and of the search criteria required to identify at-risk patients. They should also be supported to develop the requisite skills to adapt and enhance these searches, as this can also be associated with higher vaccination rates.

The latest Read code search set should be used to perform a search for eligible patients by August, at the latest, each year. These lead members of staff should also endeavour to ensure that all
members of staff are aware of the importance of applying the correct Read-codes to patient records on a timely, day-to-day basis throughout the year. This will enable at-risk patients to be more easily identified when needed and is of particular importance for at-risk groups for influenza that may otherwise be difficult to identify accurately, such as eligible asthmatics and non-professional carers. Specific care should be taken when categorising patients with asthma, to ensure that ineligible patients are not being called for vaccination so that efforts and resources can be concentrated on those at-risk.

Practices should endeavour to ensure that they have a reliable, and preferably automatic, system in place to detect and invite patients who become eligible for vaccination after the flu vaccination season has begun. Where applicable, this should include a robust protocol for the timely transfer of such information from and to other community care teams (such as midwives). It is also important that practices have a robust, and again preferably automatic, system for identifying non-responders to invitations, so that these patients may be targeted for follow up. Bookings for flu vaccination and receipt of flu vaccine should be identifiable by Read code, in order to avoid unnecessary effort and duplication by staff. We advise that all non-responding patients should receive a minimum of one reminder to attend for vaccination. Practices may find it helpful to use different mechanisms and/or formats for initial and follow-up invitations. Practices that are able to review their uptake rates in real-time during the season may, if necessary, be able to make that appropriate changes or additions to capacity and target any groups showing particularly low uptake to receive additional invitations and information.

We advise that practices start vaccinating their patients as soon as possible, depending on the availability of flu vaccine. This is likely to be around the end of September or beginning of October. Patients should receive vaccination at least two weeks prior to the start of the influenza season in order to be protected. Practices should therefore aim to complete their main vaccination sessions by the beginning of November. For those patients who become eligible later, or who do not respond to the initial campaign, practices should usually continue to offer vaccination until the end of March, or as advised by their PCT or SHA Vaccinations Lead.

If non-practice staff, for example district nursing teams or nursing staff at care homes, are involved in the vaccination of housebound patients and care-home residents, there should be explicit agreement between them and the practice regarding the provision of vaccination. Appropriate arrangements should be agreed for the timely provision of vaccine doses and record keeping. It is good practice for patients in these categories to be vaccinated during the core campaign.
Vaccinations can often be combined with other clinical reasons for visiting but should not be delayed unduly while waiting for this opportunity.

*Communicating with patients and encouraging attendance*

Practices that employ a combination of generalised and personal publicity and invitations are likely to achieve the best outcome and attract the higher proportion of their at-risk patients. It is important that communication to patients reaches beyond the practice environment to encourage those who are infrequent attenders, as it is likely that those who are poorly compliant with medical care will be among those who will benefit most from vaccination. The practice’s IT system can, in many cases, be used automatically to produce and/or send text, email or printed messages for inviting or reminding patients to attend. We suggest that texts and emails are likely to be the most cost-effective and efficient forms of individual patient invitation, where these are able to be integrated with the practice IT system. However, the efficacy of these approaches may be limited by the number of patients in at-risk groups who can be relied upon access messages in these ways, and is also dependent on whether appropriate, accurate and up-to-date contact details are held.

**We recommend that practices should send personal invitations to all eligible patients.** Practices should consider including information in alternative languages and/or formats. In some cases this may be effectively provided or accessed via a web-link to national documents. Patients should be offered the opportunity to reschedule their appointment to an alternative time and/or date if they cannot, or do not, attend it. Invitations should also include a request to patients to inform the practice if they wish to refuse vaccination so that this can be documented in the patient’s record. The primary barrier to increasing vaccination rates is seen to be patient choice and it is clear that a minority of patients will always refuse vaccination. We advise that a central tenet of practices’ vaccination campaigns must be to ensure that all at-risk patients receive appropriate information to enable them to make an informed decision about receiving flu vaccination. Practice staff should therefore endeavour to ensure that the patient understands the risks associated with influenza infection, together with the benefits offered by vaccination, and has also had the opportunity to raise and discuss any concerns. The appropriate evidence that should be documented to record a refusal was not investigated in this study but it may, increasingly, become a focus for discussion. However, we advise that a record of refusal should only be entered where the patient has made an active declaration of their intent not to accept the invitation. Such patients should be re-invited again in subsequent years as they may change their mind.
Promotion to patients, in some form or other, is essential for reaching patients who have not previously accepted vaccination and increasing their likelihood of uptake. The availability of promotional materials was not found to be a strong driver of vaccine supplier choice, but – given that two thirds of practices use mainly the materials provided by their supplier – it is essential that these materials are suitable for the surgery’s needs. In addition, we recommend that promotional materials from the Department of Health and Health Protection Agencies should be actively offered to practices by their local Primary Care Organisation. Many staff are concerned about the effect of media stories on patients’ perceptions of the flu vaccine and willingness to accept the invitation for vaccination. The real impact of national media and advertising remains unclear and was not investigated in this study. However, we recommend that this issue continues to be an area of focus for further investigation.

Receiving information about flu vaccination from several different sources is likely to reinforce the message to patients. National and/or regional advertising for flu vaccination is used in some areas of the UK and can be reinforced with local publicity, perhaps co-ordinated by the local PCT or other commissioning organisation. An invitation from the local surgery then brings personal and practical relevance to the wider campaign. Practices should also ensure that patients have easy access to a knowledgeable staff member who can answer vaccine-related queries from patients, and that information is available in alternative languages and large print as applicable to the local population.

Offering additional activities or promotions may attract patients to a vaccination session. Disabled access and toilet facilities were offered by most surgeries in our study, while a few were able to arrange refreshments, children’s play areas or extra seating. Most practices will find it effective to hold dedicated vaccination sessions and our findings indicate that, to achieve higher rates of uptake, patients should be offered timed appointments to attend. It should be considered good practice to make vaccination appointments available at different times of the normal working day. However, we found little evidence of benefit from offering very early (before 8am) or late (after 6pm) appointments, or weekend appointments. This is likely to reflect that the majority of eligible patients will be either retired or not working full time, and they may prefer to attend during routine working hours. It might also suggest that for most patients who attend, belief in the merits of flu vaccination is a more significant factor in their attendance for vaccination than any inconvenience of the sessions offered or available to them. However, in order to accommodate and increase vaccination for the under 65s, in whom the rate of vaccination is currently much lower than for older patients, some opportunities for vaccination should be available outside of normal
working hours to help those who are normally at work to attend easily. If these patients are infrequent attenders, practices may wish to consider allowing time for other routine monitoring activity; for example updating the patient record with details of smoking status. In most cases, where a patient is competent to give consent, it is sufficient (and efficient) for this to be taken in verbal or implied form at the time of vaccination.

**We recommend that practices should arrange to work with their local midwifery service to provide vaccination for pregnant women, and to provide consistent and accurate advice about the benefits to both mother and baby.** An integrated approach, whereby vaccination can be discussed and provided at the first booking or follow-up clinic attended during the flu season, is likely to prove efficient. The active involvement of midwives in providing vaccination is significantly associated with higher rates of vaccine uptake and we therefore recommend that this approach be arranged whenever possible. In the longer term, a national framework agreement to transfer responsibility for the provision of flu vaccine in pregnancy to midwives may be helpful. However, as a number of pregnant women may also have chronic medical conditions that render them eligible for flu vaccination, any such agreement will still require good communication between GPs and community midwives to be maintained.

*Training and motivation*

Most practice staff feel familiar with the flu vaccine and are happy to recommend it to patients. However, information about flu vaccines changes over time and it is important that staff keep themselves up to date in order to offer patients the best and most recent information. We understand that the Department of Health is hoping to produce a short e-learning package that may assist with this. In the meantime, however, practices should ensure that their staff have access to the latest sources of information (examples [18, 37, 75]) and consult with colleagues if uncertainty arises. We advise that practices should ensure that both new and existing staff are provided with annually-updated information about flu and flu vaccination (as well as with detail of the practice’s performance and strategy as discussion above). We also suggest that members of the community healthcare teams should also be offered access to any of the training materials available in primary care, in order to increase their knowledge of (and motivation to improve) local performance.
The vast majority of staff in primary care support the flu vaccination campaign and view it as a worthwhile use of NHS resources. Practice teams work hard, and often innovatively, to provide vaccination to patients. It is therefore of concern that a small but significant proportion of this group remains unwilling to be vaccinated against flu themselves. While a few staff will be unable to receive vaccination for medical or religious reasons, we recommend that all healthcare workers should bear in mind their duty of care towards their patients and how a personal unwillingness to receive vaccination may impact on their (and their colleagues’) ability to carry out that professional duty, or even put their patients at risk. NHS employers might also wish to consider how subsequent time off due to a flu illness should be managed in staff who have chosen to decline vaccination.

This study’s findings suggested that the effectiveness of a practice’s flu vaccination campaign was increased when staff supported and encouraged personal vaccinations, whether through an increased motivation to support the campaign as a whole or through communication of this positive attitude to their at-risk patients. All staff should have the opportunity to discuss concerns about vaccination confidentially with their occupational health advisor. As employers, GPs should ensure that they support and enable the vaccination of their staff and provide clear, accurate and up-to-date information on the risks, benefits and effectiveness of the vaccine.

Financial considerations and targets

Our findings suggest that financial concerns and incentives are central to the level of flu vaccination attained. These issues must be considered carefully if improvements are to be sought and achieved. Practices obtain income from the provision of flu vaccination in at least four separate areas: a payment through a specific Enhanced Service contract; additional Item of Service payments (per vaccine administered) for those practices who hold General Medical Service contracts; income gained through achieving targets for vaccinating certain at-risk groups through the Quality and Outcomes Framework of payments; and profit made due to any difference between the vaccine tariff price (which is reimbursed for each vaccine administered) and whatever price the practice is able to negotiate for its supply. This income supports all of the activities required for providing a successful campaign. These costs are multiple and varied, ranging from additional clinical refrigeration capacity to extra staff time.

We have found that those practices that perform well in the QOF scheme and/or use their QOF targets to inform or direct some aspects of their flu campaign, achieve significantly higher rates of vaccination. This suggests that financial incentives help to promote the development of efficient
administration and service delivery within practices, and that they may also offer specific motivation to achieve better results. At present, the QOF framework allows practices to be increasingly rewarded for vaccinating up to 85-90% of patients with qualifying underlying conditions. The maximum levels therefore exceed the current CMO targets for those groups and attaining them would help most practices to raise the overall average uptake rates for all eligible groups. Our analyses do indeed indicate that practices that stop offering vaccine only once they have reached their QOF targets achieve higher overall levels of vaccination. Practices were found to send more vaccination reminders to patients who will contribute to a QOF payment and, furthermore, sending higher numbers of reminders was associated with increasing levels of vaccine uptake, thus resulting in a logical pathway via which such an incentive improves results. We therefore recommend that, as a minimum, practices should continue to offer flu vaccine and send reminders to patients until they have met the highest targets for flu vaccination rates within QOF. A strategy of only ceasing vaccination when QOF targets have been met requires practices to maintain awareness of their performance and uptake rates throughout the season. Practices must then also to be able to target non-responding patients to receive additional reminders or other follow-up. However, patients with a non-QOF indication for vaccination are clearly disadvantaged by the scheme. We therefore suggest that a universally applicable scheme of payments, which rewards the flu vaccination of increasing proportions of the practice’s at-risk population up to a maximum of 100%, might offer advantages over QOF in this respect and could be considered for evaluation.

From a financial perspective, practices currently source and order their vaccines at their own risk. They must plan and negotiate carefully to ensure that the practice receives vaccine of the correct types, presented in suitable formats (e.g. individually wrapped, ready to use), and delivered in appropriate batches. All of these factors are likely to influence the negotiation of vaccine price with the supplier(s). Practices will usually need to order their vaccines 6-8 months before the campaign starts, in order that manufacturers can assess and satisfy the demand for stocks, which must be manufactured on an annual basis as advised by the WHO. These timings mean that a practice’s at-risk population may subsequently change in size and composition prior to vaccine stocks being delivered. Practices’ plans may also be affected by failures in production by manufacturers or by the discovery of unforeseen side effects (which might limit the groups to which a specific vaccine can be given). Although practices can ameliorate the effects of these problems by sourcing vaccines from several different suppliers and/or manufacturers, such difficulties largely arise from innate characteristics of the flu vaccine production process and cannot be predicted or avoided by practices. Practices must therefore maintain some financial and organisational flexibility in their
campaign if they are to achieve good rates of vaccination when such difficulties arise. This flexibility is likely to result in some potential inefficiency and increased costs.

We suggest that a more widespread and predictable problem is that there is currently a significant financial risk involved for practices attempting to improve their vaccination rates. This is particularly true for practices with poor rates of flu vaccination uptake, for which an uplift in rates of more than just a few percentage points is desirable. As practices are only reimbursed on the basis of the number of vaccines administered, they face a financial penalty if they buy more doses than are used, ultimately. Although practices should, and often do, make use of a buy-back scheme offered by some suppliers, negotiation of this facility is likely to increase the cost of the vaccine and it is usually limited to a few percent of the vaccine doses in the overall order. A negative cycle is therefore perpetuated, with practices that achieve low rates facing a financial disincentive to maximise the order in the following season, thereby continuing to limit the maximum uptake they can achieve. A central procurement strategy for flu vaccines, which has recently undergone consultation by the Department of Health, should remove this financial stricture and allow practices to aim for much higher vaccination rates without risking financial penalty [76]. However, at the same time it might act as a significant disincentive to the many practices that derive a significant proportion of the funding for their flu campaigns from vaccine procurement, and for which this income might be an important motivator to maintain or increase flu vaccination rates.

It is clear that considerable effort and resources are required to deliver a successful flu vaccination campaign. Furthermore, we have demonstrated that staffing rates in primary care are positively associated with the rates of vaccine uptake achieved. Given that staff costs are usually the single biggest area of expenditure for most practices, it is important that practices remain sufficiently resourced in the long-term to maintain adequate staffing levels for this sort of activity. We suggest that any replacement incentive should not be limited by targets of under 100% but should allow practices to benefit from (and therefore fund appropriately) successful efforts to maximise the rate of flu vaccine uptake in – and thus the benefit to - their at-risk patients.

Limitations and proposals for further work

A significant limitation of the present study may have been the element of self-selection occurring in staff who chose to complete the questionnaire: with staff who were already more motivated by, and engaged in, the flu vaccination campaign being more likely to take part. We found no evidence
of this potential bias when comparing the vaccination rates of participating practices with national data. However, it remains possible that, within those same practices, the answers of the members of staff who chose to complete the questionnaire did not reliably represent the views of the practices’ staff as a whole. Furthermore, in any study involving the testing of a large number variables against a single outcome (in this case, vaccination rate), the likelihood of an apparently significant finding occurring by chance alone are increased. We determined that the data offered little power for multiple regression analysis and therefore would suggest that further study of some the more significant and/or surprising findings may be helpful to confirm the extent and other associations of their influence. Specific areas that we suggest may benefit from further investigation include:

- the impact of ethnicity and language needs on uptake of invitation for influenza vaccination
- the mechanisms by which a dedicated member of staff for identifying at-risk patients may allow a practice to achieve flu higher vaccination rates
- the efficacy with which at-risk patient groups are identified and with which practices’ flu campaigns can be monitored, based upon the choice of practice IT system and associated software
- the optimal content and format for letters of invitation to invite patients for flu vaccination
- patient views on the source and content of publicity and invitations to promote flu vaccination

The preceding results represent an overview of our initial findings from the survey and from the data-gathering exercise that was performed during the present study. Many additional relevant analyses have been suggested by these results and further work will continue to investigate some of the most important areas identified. Such analyses include: use of vaccination uptake data for several preceding years to determine the extent to which the approaches taken by practices to the flu vaccination campaign are associated with trends in vaccination rates over time; use of early- and late-season vaccination uptake data to determine the extent to which the approaches to the flu vaccination campaign taken by practices are associated with achieving the timely vaccination of the at-risk population; use of additional covariate data such as GP satisfaction survey scores, markers of population mobility and generic prescribing rates to identify additional factors associated with differences in vaccine uptake.
KEY RECOMMENDATIONS

When planning their flu vaccination campaign, practices should:

- identify a lead member of staff with responsibility for running the vaccination campaign;
- identify a lead member of staff with responsibility for the identification of eligible patients
- be able to modify searches of the practice IT system in order to identify eligible patients more accurately, if necessary.

When inviting patients for flu vaccination, practices should:

- send a personal invitation to all eligible patients;
- collaborate with their local community midwives to offer and provide vaccination to pregnant women.

When providing flu vaccination, practices should:

- only stop offering vaccination once they have achieved the highest targets in both QOF-qualifying and non-QOF qualifying patients;

When reviewing their flu vaccination campaign, practices should:

- document their uptake rates in a written report and provide this to all practice staff, especially those with involvement in provision of the flu vaccination campaign.
SUPPLEMENTARY RECOMMENDATIONS

When planning their flu vaccination campaign, practices are advised to:

- ensure that they communicate their plans for the vaccination campaign to clinical and administrative staff within the practice. It is suggested that community midwives, community nursing teams and local care homes should be consulted when formulating these plans and included in the dissemination of subsequent information;

- ensure that they plan ahead to fill vacancies in nursing, auxiliary and administration staffing prior to the campaign, where possible;

- run at least one search to identify their eligible patients no later than August and ensure that correct Read codes are applied to patient records throughout the year to enable accurate identification of those who are eligible for vaccination;

- ensure that they have an automatic mechanism in place to identify patients who become newly eligible after the planning, or the campaign itself, has started. Practices should also ensure that efficient communication systems are in place for community care teams to identify eligible patients to the practice, and vice versa, where necessary;

- encourage their staff to receive flu vaccination, providing appropriate and up-to-date information about the benefits to themselves, colleagues and patients when required. Sources of such information include the local PCT, SHA and Occupational Health services.

When inviting patients for flu vaccination, practices are advised to:

- take responsibility for the invitation of all their eligible patients, even where other service providers are involved in their care. Practices should not assume that a patient will be receiving information about vaccination, or the vaccine itself, from another source (such as their employer or secondary care);

- integrate patient call and recall activities into the routine work of the practice, although allocation of additional staff time and/or funding may also increase effectiveness;

- use professionally-produced literature and publicity materials to support their promotion of vaccination. These may be available from the local PCT or SHA or from vaccine manufacturers.
- ensure that publicity and other information is made available in alternative languages, where applicable and depending upon the local population, to ensure that vaccination is promoted to the widest possible audience;

- consider collaborating with other local practices to advertise the vaccination campaign, in order to increase coverage and reinforce their own promotion. This is particularly effective for the under 65 age group, who may be more mobile from day-to-day in the community and whose relationship with their surgery may be less consistent and/or more intermittent than that of the older population.

**When running their flu vaccination campaign, practices are advised to:**

- plan to begin vaccinating their eligible patients as soon as their vaccine doses are delivered;

- allocate appointments for vaccination (either individually or in blocks), rather than offer open / walk-up sessions, in order to increase patient attendance and the efficiency of their campaign;

- use a separate IT or Read code for vaccination bookings to facilitate efficient follow-up of patients who do not respond to invitation. This is particularly important for under 65s;

- send prompt reminders to patients who do not respond to invitation. More reminders are associated with higher rates of uptake and we advise that patients in all risk groups should be treated equally in this respect;

- ensure that all patients receive accurate information about the benefits of vaccination. Patients who actively decline vaccination in one year should have this refusal recorded but should continue to be offered vaccine in future years.

- review their rates of vaccine uptake at least every two weeks while offering vaccination, in order to be able to target practice activities effectively;

- aim to have concluded their vaccinations by the end of October, in order that patients are able to develop immunity before influenza usually begins to circulate in the community. However, when patients attend, or become eligible, later in the season, practices should continue to provide them with vaccination as soon as possible;
- continue to make vaccine available for all unvaccinated patients in at-risk groups until influenza stops circulating, or as directed by the local PCT Vaccinations and Immunisations co-ordinator (usually by the end of February).

**When reviewing their flu vaccination campaign, practices are advised to:**

- consider reviewing their uptake rates alongside other similar practices in a local forum (such as the local commissioning organisation);

- be willing to discuss their campaign strategies, and evidence of what is effective in maximising uptake, with other local practices so that good practice can be shared and optimised, particularly where this is specific to local community factors or individual at-risk groups;

- use this information to plan amendments to the following year’s campaign at an early stage, while aiming to meet (and if practicable exceed) the CMO’s targets. Practices should also maintain an awareness of any emerging evidence for strategies that may improve vaccination rates and ensure that such information is disseminated to their staff.

**Further, we advise that the Department of Health:**

- maintains the financial incentive for practices to provide flu vaccination and continue to improve their rates. A sole focus on targets may promote complacency once these targets are attained, however, and consideration could be given to introducing an incentive for practices to maximise their vaccination uptake rates in all eligible patient groups.
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72. Practice-level ethnicity and other demographic data for 2009 kindly provided by Dr Mark Ashworth, Department of Primary Care & Public Health Sciences, King’s College London.
75. Seasonal Flu Plan, 2011, Department of Health.
ANNEX 1

The practice manager or flu co-ordinator questionnaire

PLANNING YOUR FLU VACCINATIONS

Does your practice have a lead member of staff for planning seasonal influenza vaccination?

Yes  No  I don't know

Do you hold one or more meeting(s) to plan your practice’s seasonal flu vaccination campaign?

Yes  No  I don't know

If yes, who attends this meeting?

Practice Manager  GP  DNA representative
Practice nurse  District Nurse  Don't know
Healthcare Support Worker  Loop card team  Don't know
Practice admin staff  ICT representative
Other (please specify):

Do you have a regular mechanism for informing other staff members about the flu vaccine and your practice’s campaign?

Yes - verbal information (e.g. at practice meeting)  No - verbal and written information provided
Yes - written information (e.g. by email)  No - written information (e.g. by other)
Yes - other  Don't know

Please provide the following two dates:

What is the earliest date on which vaccination appointments are available to be booked this year?

Month  Day

What is the earliest date on which vaccination appointments can be attended this year?

Month  Day

IDENTIFYING ELIGIBLE PATIENTS

Do you use a pre-built / standard software program to identify patients who are eligible for influenza vaccination?

Yes - provided by the main IT system supplier and used directly  No - own search program constructed
Yes - provided by main IT system supplier but shared in house  Other - please specify below
Yes - alternative or add-on software used  I don't know
If other, please describe:

When, approximately, do you run the search(es) to identify your eligible patients each year? Tick all that apply

Apr  May  Jun  Jul  Aug  Sep  Oct  Nov  Dec  Jan  Feb

Do you have a mechanism to identify patients who become eligible to receive vaccine after the initial search has been performed (e.g. new joiners, new chronic disease diagnoses, new pregnancies)?

Yes  No  I don't know

If yes, which of the following methods do you use?

Regular automatic IT searches  Regular manual IT searches  Ad hoc manual updates / notifications by staff
Other (please specify):
IDENTIFYING ELIGIBLE PATIENTS - SPECIAL GROUPS

Current DH guidelines state that only patients with severe asthma should usually be offered seasonal influenza vaccination. There is no separate Read code or QOF recording method for these patients, which can make identification difficult.

Please tick to indicate what Read code or prescription history criteria you use for identifying asthmatic patients who should receive vaccine (leave all answers blank if not known):

- Diagnosis of asthma
- Attendance at practice asthma clinic
- Hospital referral for asthma
- Hospital admission for asthma
- Inhaled steroids on repeat prescription
- One steroid (glucocorticoid) on repeat prescription
- Inhaled steroids x 1
- Inhaled steroids 2 or more
- Continuous inhaled steroids
- One steroid (glucocorticoid pause x 1)
- One steroid (glucocorticoid/pause x 2 or more
- Continuous oral steroids (glucocorticoids)

To what extent do you agree with the following statements?

- Agree
- Neither agree nor disagree
- Disagree
- Strongly disagree

- I can easily identify eligible asthmatic patients from my practice list
- I can easily identify pregnant patients from my practice list
- I can easily identify care home residents from my practice list
- I can easily identify non-professional carers from my practice list

STAFF AND LOGISTICS

Regarding staff numbers:

- Practice nurses (WTE) work at your surgery?
- Healthcare support workers (WTE) work at your surgery?
- Receptionists (WTE) work at your surgery?

How many...

- Practice nurses (WTE) work at your surgery?
- Healthcare support workers (WTE) work at your surgery?
- Receptionists (WTE) work at your surgery?

Do you allocate:

- Separate funding for patient invitation and recall activity?
- Separate staff time for patient invitation and recall activity?
- Separate administration capacity (e.g. phone lines, office space) for patient invitation and recall activity?

How many staff, on average, carry out vaccinations during the main appointments or sessions?

- Practice nurse
- Healthcare support worker
- Infection
- Non-practice / agency staff

Was your seasonal flu vaccine stock delivered as planned last year?

- Yes
- No
- I don't know
VACCINE CHOICE AND ORDERING

How many vaccine doses have you ordered for 2011-12? Leave blank if you do not know or do not wish to answer.

What is the cost/unit of your main vaccine ordered for 2011-12? Please state the actual cost to the practice and, if more than one supply used, please give the average cost. Leave blank if you do not wish to answer.

How did you decide how many doses to order this year?
- based on number of doses ordered last year
- based on number of vaccines given last year
- based on number of eligible patients in practice
- combination of the above
- I don't wish to answer
- Other (please specify)

Did you use any of the following methods did you use when purchasing vaccine for the coming season?
- purchase via LMC
- purchase via PCT
- purchase via other group or consortium

To what extent do the following factors affect your choice of vaccine supplier(s)?

<table>
<thead>
<tr>
<th>Factor</th>
<th>Doesn't affect choice at all</th>
<th>Slightly affects choice</th>
<th>Moderately affects choice</th>
<th>Strongly affects choice</th>
<th>Supplier 1</th>
<th>Supplier 2</th>
<th>Supplier 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vaccine price</td>
<td></td>
<td></td>
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<tr>
<td>Availability of vaccine stock</td>
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<tr>
<td>Order minimum order size</td>
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<tr>
<td>Order availability of delivery dates</td>
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<tr>
<td>Availability of marketing materials</td>
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<tr>
<td>Packaging of vaccine doses</td>
<td></td>
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</tr>
</tbody>
</table>

IT AND RECORD KEEPING

Please answer the following questions:

Is there a dedicated member of staff who is responsible for identifying eligible patients in your practice population? YES NO I DON'T KNOW

Would you or your practice make use of an electronic package about identifying eligible patients and reporting vaccination data, if available? YES NO I DON'T KNOW

Are appointment bookings for influenza vaccination identified by a dedicated IT code on the patient record? YES NO I DON'T KNOW

Is receipt of influenza vaccination identified by a dedicated IT code on the patient record? YES NO I DON'T KNOW

Do you have an IT mechanism to record patients who report that they have received vaccine from other sources, e.g. from their employer or secondary care? YES NO I DON'T KNOW

Are patient records updated with vaccine details at the time vaccine is given? YES NO I DON'T KNOW

Do you ask patients to let you know if they refuse the vaccine? YES NO I DON'T KNOW

Do you have a mechanism for providing vaccination for non-eligible patients? YES NO I DON'T KNOW
### Inviting Patients to Attend for Vaccination

**How do you encourage patients to attend for vaccination?**
- [ ] General publicity only
- [ ] General publicity and personal invitation for all patients
- [ ] General publicity followed by personal invitation for non-responders
- [ ] Personal invitation only
- [ ] No publicity or invitations used
- [ ] I don’t know
- [ ] Other

If other, please specify:

**How are your pregnant patients usually offered flu vaccination?**
- [ ] Normal communications as above
- [ ] Via community midwifery or antenatal clinic
- [ ] Normal communications plus via community midwifery or antenatal clinic
- [ ] I don’t know

Other (please specify):

### Inviting Patients to Attend for Vaccination - Personal Invitations

**Which of the following personal invitation methods do you use to invite patients to attend for vaccination? Tick all that apply**
- [ ] Letters
- [ ] Telephone call
- [ ] Text
- [ ] Email
- [ ] Social networking
- [ ] Other (please specify)

**Regarding individual invitations for vaccination that you use:**

<table>
<thead>
<tr>
<th>Are the invitations provided in languages other than English, if required?</th>
<th>Yes</th>
<th>No</th>
<th>I don’t know</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do you have an automatic system to generate reminders if a patient does not respond to invitation?</td>
<td>Yes</td>
<td>No</td>
<td>I don’t know</td>
</tr>
<tr>
<td>Do you explain why the patient is eligible for flu vaccination in the invitation?</td>
<td>Yes</td>
<td>No</td>
<td>I don’t know</td>
</tr>
</tbody>
</table>

**What is the total number of reminders, after the initial invitation, that you usually provide if the following categories of patients do not respond?**

- [ ] Patient is in QOF target group
- [ ] Patient is NOT in QOF target group
### CARRYING OUT THE VACCINATIONS - CONSENT AND FOLLOW-UP

**When is consent usually requested?**
- At time of initial invitation or booking
- At time of vaccination

**Is patient consent mainly:**
- Written?
- Verbal or implied?

**What provision is made for patients who can't (or don't) attend the main vaccination session or dates? Tick all that apply**
- Additional whole clinic
- Additional sporadic appointments
- I don't know
- Other (Please Specify):

**When do you stop offering vaccination? Tick all that apply**
- When practice vaccine stocks have run out
- When flu virus stops circulating
- At financial year and (31st March)
- When all willing patients have been vaccinated
- I don't know
- Other (Please Specify):

### CARRYING OUT VACCINATIONS - HOUSEBOUND PATIENTS AND CARE HOME RESIDENTS

**Please indicate how the following patient groups are vaccinated (tick all that apply):**
- Visited by GP
- Visited by Practice Nurse
- Visited by District Nurse
- Vaccinated by Trained Care
- Other
- I don't know

**Housebound patients**
- Visited by GP
- Visited by Practice Nurse
- Visited by District Nurse
- Vaccinated by Trained Care
- Other
- I don't know

**Care home residents**
- Visited by GP
- Visited by Practice Nurse
- Visited by District Nurse
- Vaccinated by Trained Care
- Other
- I don't know

**Please indicate when the following patient groups are vaccinated, on the whole:**
- Before the main campaign
- During the main campaign
- After the main campaign
- I don't know

- Housebound patients
- Care home residents

**To what extent do you agree with the following statements?**

- My local district nurses are active in recommending vaccination to housebound patients and care-home residents
- My local district nurses are active in providing vaccination to housebound patients and care-home residents
- My local relatives are active in recommending vaccination to pregnant patients
- My local relatives are active in providing vaccination to pregnant patients
REVIEWING PERFORMANCE

We are interested in whether the current reporting methods accurately reflect the vaccination rates you achieve in your practice.

Do you know, or are you able to find out, how many eligible patients are there on your practice list for 2011-12?

☐ No
☐ Yes - if so, please enter the total number here

Do you know, or are you easily able to find out, what percentage of eligible OVER 65 YEAR OLD PATIENTS your practice vaccinated in 2010-11?

☐ No
☐ Yes - if so, please enter this here (to the nearest whole percent)

Do you know, or are you easily able to find out, what percentage of eligible AT-RISK UNDER 65 YEAR OLD PATIENTS your practice vaccinated in 2010-11?

☐ No
☐ Yes - if so, please enter this here (to the nearest whole percent)

With regard to other local practices:

Are you aware of the flu vaccination rates achieved by other local practices?

☐ Yes
☐ No

Are you aware of the flu vaccination strategies used by other local practices?

☐ Yes
☐ No

How frequently, on average, did you or other staff review your flu vaccination rates during your 2010-11 vaccination season?

☐ less than every week
☐ every two weeks
☐ every month
☐ every two months or more
☐ rates were not reviewed during the season
☐ I don’t wish to answer

After the 2010-11 flu vaccination season, how did you review?

☐ Your flu vaccination RATES?
☐ Your flu vaccination STRATEGY?
### YOUR VIEWS ON FLU VACCINATION

**To what extent do you agree with the following statements?**

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly agree</th>
<th>Agree</th>
<th>Neither agree nor disagree</th>
<th>Disagree</th>
<th>Strongly disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>I have enough information to be able answer patients' questions</td>
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</tr>
<tr>
<td>about vaccination, if required</td>
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<tr>
<td>My reception and/or telephone staff are able explain the benefits of</td>
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<td></td>
</tr>
<tr>
<td>vaccination, if required</td>
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<tr>
<td>My GPs support me in running the influenza vaccination campaign</td>
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</tr>
<tr>
<td>My GPs encourage eligible patients to receive vaccination</td>
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<td></td>
</tr>
<tr>
<td>My practice nurse encourage eligible patients to receive vaccination</td>
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<tr>
<td>The national media encourages my patients to attend for vaccination</td>
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<td></td>
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<tr>
<td>I encourage eligible patients to receive vaccination</td>
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<td></td>
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<tr>
<td>I encourage my staff/colleagues to receive vaccination</td>
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<tr>
<td>Am a healthcare worker, I am happy to have the flu vaccine myself</td>
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<tr>
<td>I think the influenza vaccination programme is a worthwhile use or</td>
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<tr>
<td>NHS resources</td>
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</tr>
</tbody>
</table>

### AND FINALLY ....

Would you or your practice make use of an e-learning tutorial about the clinical aspects of influenza and influenza vaccination, if available?

- [ ] Yes
- [ ] No
- [ ] I don't know

What would you describe as the three biggest barriers to increasing vaccination rates in your practice?

Please choose up to 3 factors from the list below and rank them in order of importance (1 = most important).

If another issue important to your practice's vaccine uptake is not mentioned here, please describe this in the box provided.

<table>
<thead>
<tr>
<th>Factor</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient education, beliefs and/or motivation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Staff education, beliefs and/or motivation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Levels of staffing / funding</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Difficulties with campaign logistics</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Difficulties with identifying patients</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Difficulties with recalling patients</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Difficulties with reporting vaccination data</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>We don't need to increase our rates</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

If other, please specify: |
The practice nursing staff and health-care support worker questionnaire

PLANNING YOUR FLU VACCINATIONS

Does your practice have a lead member of staff for planning seasonal influenza vaccination?
- Yes
- No
- I don't know

Do you hold one or more meeting(s) to plan your practice's seasonal flu vaccination campaign?
- Yes
- No
- I don't know

If yes, who attends this meeting?
- Practice Manager
- GP
- Practice Nurse
- District Nurse
- Healthcare Support Worker
- Local care home
- Practice admin staff
- POT representative
- Other (please specify)

Was your seasonal flu vaccine stock delivered as planned last year?
- Yes
- No
- I don't know

IDENTIFYING ELIGIBLE PATIENTS

Current DH guidelines state that only patients with severe asthma should usually be offered seasonal influenza vaccination. There is no separate Read code or QOF recording method for these patients, which can make identification difficult.

Please tick to indicate what Read code or prescription history criteria you use for identifying asthmatic patients who should receive vaccine (leave all answers blank if not known):

<table>
<thead>
<tr>
<th>Criteria</th>
<th>within 6 months</th>
<th>within 1 year</th>
<th>ever</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diagnosis of asthma</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Attendance at practice asthma clinics</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Hospital referrals for asthma</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Hospital admission for asthma</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Inhaled steroid on repeat prescription</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>One steroid (glucocorticoid) on repeat prescription</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Inhaled steroid x1</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Inhaled steroid x2 or more</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Continuous inhaled steroids</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>One steroid (glucocorticoid) course x1</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>One steroid (glucocorticoid) course x2 or more</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Continuous one steroids (glucocorticoid)</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>
INVITING PATIENTS TO ATTEND FOR VACCINATION

How do you encourage patients to attend for vaccination?
- general publicity only
- general publicity and personal invitation for all patients
- general publicity followed by personal invitation for non-responders
- personal invitation only
- no publicity or invitations used
- I don't know
- other

If other (please specify):

How are your pregnant patients usually offered flu vaccination?
- normal communications as above
- via community midwifery or antenatal clinic
- normal communications PLUS via community midwifery or antenatal clinic
- I don't know

Other (please specify):

When is consent usually requested?
- at time of initial invitation or booking
- at time of vaccination

Is patient consent mainly:
- written?
- verbal or implied?

CARRYING OUT THE VACCINATIONS

With regard to the timings of your main vaccination clinics or sessions:

<table>
<thead>
<tr>
<th>Question</th>
<th>Yes</th>
<th>No</th>
<th>I don't know</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is vaccination performed in dedicated clinic sessions?</td>
<td></td>
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<tr>
<td>Do you associate individual times with appointments?</td>
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<tr>
<td>Do you allocate appointment blocks?</td>
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<tr>
<td>Do you operate an open / walk-in session?</td>
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<tr>
<td>Is vaccination available at weekends?</td>
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<tr>
<td>Is vaccination available before 9am?</td>
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<tr>
<td>Is vaccination available after 5pm?</td>
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<tr>
<td>Is vaccination available ad-hoc / opportunistically to patients who attend at an unplanned time?</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

What provision is made for patients who can't (or don't) attend the main vaccination session or dates? Tick all that apply

- additional whole clinics
- additional sporadic appointments
- I don't know

Other (please specify):

How many staff, on average, carry out vaccinations during the main appointments or sessions?

<table>
<thead>
<tr>
<th>Profession</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Practice nurse</td>
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<td></td>
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<tr>
<td>Healthcare support worker</td>
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<tr>
<td>Practice OP</td>
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<tr>
<td>Non-practice / agency staff</td>
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</tr>
</tbody>
</table>

Are patient records updated with vaccine details at the time vaccine is given?

- Yes
- No
- I don't know
CARRYING OUT THE VACCINATIONS

Please indicate how the following patient groups are vaccinated (tick all that apply):

Housebound patients
- visited by GP
- visited by Practice Nurses
- visited by District Nurses
- vaccinated by trained carer
- other
- I don't know

Care home residents
- [ ]
- [ ]
- [ ]
- [ ]
- [ ]
- [ ]

Please indicate when the following patient groups are vaccinated, on the whole:

Housebound patients
- before the main campaign
- during the main campaign
- after the main campaign
- I don't know

Care home residents
- [ ]
- [ ]
- [ ]
- [ ]
- [ ]
- [ ]

When do you stop offering vaccination? Tick all that apply

- when practice vaccine stocks have run out
- when all willing patients have been vaccinated
- when QOF targets have been reached
- at financial year end (1st Jan)
- when flu virus stops circulating
- I don't know

REVIEWING PERFORMANCE

We are interested in whether the current reporting mechanisms accurately reflect the vaccination uptake rates you achieve in your practice.

Do you know, or are you easily able to find out, what percentage of eligible OVER 65 YEAR OLD PATIENTS your practice vaccinated in 2010-11?

- [ ]
- Yes - if so, please enter the nearest whole percent

Do you know, or are you easily able to find out, what percentage of eligible AT-RISK UNDER 66 YEAR OLD PATIENTS your practice vaccinated in 2010-11?

- [ ]
- Yes - if so, please enter the nearest whole percent

Are you aware of the flu vaccination rates achieved by other local practices?

- [ ] Yes
- [ ] No
- [ ] I don’t wish to answer

How frequently, on average, did you or other staff review the practice flu vaccination rates DURING last year’s flu vaccination season?

- [ ] every week
- [ ] every two weeks
- [ ] every month
- [ ] every two months or more
- [ ] rates were not reviewed during the season
- [ ] I don’t wish to answer

AFTER last year’s flu vaccination season, how did you review the vaccination rates achieved in your practice? Tick all that apply.

- [ ] written report published within practice
- [ ] written report published outside practice
- [ ] formal meeting within practice
- [ ] formal meeting with other practices and/or CDT
- [ ] individual reflection
- [ ] no review performed
- [ ] I don’t remember / I don’t wish to answer
YOUR VIEWS ON FLU VACCINATION

To what extent do you agree with the following statements?

- I have enough information to be able answer patients’ questions about vaccination, if required
- My reception and/or telephone staff are able to explain the benefits of vaccination, if required
- My GPs support me in running the influenza vaccination campaign
- My GPs encourage eligible patients to receive vaccination
- My practice nurses encourage eligible patients to receive vaccination
- The national media encourages my patients to attend for vaccination
- I encourage eligible patients to receive vaccination
- I encourage my staff / colleagues to receive vaccination
- As a healthcare worker, I am happy to have the flu vaccine myself
- I think the influenza vaccination programme is a worthwhile use of NHS resources

AND FINALLY...

Would you or your practice make use of an e-learning tutorial about the clinical aspects of influenza and influenza vaccination, if available?

- Yes
- No
- I don’t know

What would you describe as the three biggest barriers to increasing vaccination rates in your practice?

Please choose up to 3 factors from the list below and rank them in order of importance (1 = most important).

If another issue important to your practice’s vaccine uptake is not mentioned here, please describe it in the box provided.

- Patient education, beliefs and/or motivation
- Staff education, beliefs and/or motivation
- Levels of staffing / nursing
- Difficulties with campaign logistics
- Difficulties with identifying patients
- Difficulties with recalling patients
- Difficulties with reporting vaccination data
- We don’t need to increase our rates
- Other

If other, please specify
The GP questionnaire

### STAFF AND LOGISTICS

**Are you:**
- [ ] GP partner/principal?
- [ ] A salaried/associate GP

**How many patients do you see during a normal working day?**

Please enter a whole number: 

**How many ...**
- [ ] GP partners/principals (WTE) work at your surgery?
- [ ] Salaried/associate GPs (WTE) work at your surgery?
- [ ] Practice nurses/nurse practitioners (WTE) work at your surgery?
- [ ] Health care support workers (WTE) work at your surgery?

**Is your practice accredited for GP training?**
- [ ] Yes
- [ ] No
- [ ] I don’t know / I don’t wish to answer

### PLANNING YOUR FLU VACCINATIONS

**Does your practice have a lead member of staff for planning seasonal influenza vaccination?**
- [ ] Yes
- [ ] No
- [ ] I don’t know

**Do you hold one or more meeting(s) to plan your practice's seasonal flu vaccination campaign?**
- [ ] Yes
- [ ] No
- [ ] I don’t know

**If yes, who attends this meeting?**

- [ ] Practice Manager
- [ ] Practice Nurse
- [ ] Healthcare Support Worker
- [ ] Practice admin staff
- [ ] GP
- [ ] District Nurse
- [ ] Local care home
- [ ] PCT representative
- [ ] SHA representative
- [ ] Don’t know

Other (please specify): 

---

96
IDENTIFYING ELIGIBLE PATIENTS

Current DH guidelines state that only patients with severe asthma should usually be offered seasonal influenza vaccination. There is no separate Read code or QOF recording method for these patients, which can make identification difficult.

Please tick to indicate what Read code or prescription history criteria you use for identifying asthmatic patients who should receive vaccine (leave all answers blank if not known):

<table>
<thead>
<tr>
<th>Diagnosis of asthma</th>
<th>within 6 months</th>
<th>within 1 year</th>
<th>ever</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attendance at practice asthma clinic</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hospital referral for asthma</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hospital admission for asthma</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inhaled steroid on repeat prescription</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oral steroid (glucocorticoids) on repeat prescription</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inhaled steroid x 1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inhaled steroid x 2 or more</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Continuous inhaled steroids</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oral steroid (glucocorticoids) x 1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oral steroid (glucocorticoids) x 2 or more</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Continuous oral steroids (glucocorticoids)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Do you have a mechanism for providing vaccination for non-eligible patients?
- [ ] Yes
- [ ] No
- [ ] I don’t know

INVITING PATIENTS TO ATTEND FOR VACCINATION

How do you encourage patients to attend for vaccination?
- [ ] General publicity only
- [ ] General publicity and personal invitation for all patients
- [ ] General publicity followed by personal invitation for non-responders only
- [ ] Personal invitation only
- [ ] No publicity or invitations used
- [ ] I don’t know
- [ ] Other

If other (please specify) _______________

When do you stop offering vaccination? Tick all that apply
- [ ] When practice vaccine stocks have run out
- [ ] When QOF targets have been reached
- [ ] When flu virus stops circulating
- [ ] When all willing patients have been vaccinated
- [ ] At financial year end (31st March)
- [ ] I don’t know
- [ ] Other (please specify) _______________
REVIEWING PERFORMANCE

We are interested in whether the current reporting methods accurately reflect the vaccination rates you achieve.

Do you know, or are you able to find out, what percentage of eligible patients your practice vaccinated in 2010-11?

☐ Yes  ☐ No  ☐ I don’t know/ I don’t wish to answer

If you answered yes please tell us, on the basis of any information easily available to you at the moment, what percentage of eligible patients your practice vaccinated in 2010-11?

(please indicate to the nearest whole percent)

Over 65 year old patients

At risk under 65 year old patients

With regard to other local practices:

Are you aware of the flu vaccination RATES achieved by other local practices?

☐ Yes  ☐ No

Are you aware of the flu vaccination STRATEGIES used by other local practices?

☐ Yes  ☐ No

After the 2010-11 flu vaccination season:

How did you review your flu vaccination RATES?

☐ Written report published within practice  ☐ Written report published outside practice

☐ Formal meeting with own practice  ☐ Formal meeting with other practices

☐ Individual reflection  ☐ No review performed  ☐ I can’t remember/ I don’t wish to answer

YOUR VIEWS ON FLU VACCINATION

Financial remuneration and improved patient outcomes could both be given as motivating factors for GPs when working to deliver flu vaccines to a practice population.

Using the scale, please indicate where the balance of these two factors lies for you.

To what extent do you agree with the following statements?

I have enough information to be able answer patients’ questions about vaccination, if required

☐ Strongly agree  ☐ Agree  ☐ Neither agree nor disagree  ☐ Disagree  ☐ Strongly disagree

My reception and/or telephone staff are able explain the benefits of vaccination, if required

☐ Strongly agree  ☐ Agree  ☐ Neither agree nor disagree  ☐ Disagree  ☐ Strongly disagree

The national media encourages my patients to attend for vaccination

☐ Strongly agree  ☐ Agree  ☐ Neither agree nor disagree  ☐ Disagree  ☐ Strongly disagree

My practice nurse(s) encourage eligible patients to receive vaccination

☐ Strongly agree  ☐ Agree  ☐ Neither agree nor disagree  ☐ Disagree  ☐ Strongly disagree

I encourage eligible patients to receive vaccination

☐ Strongly agree  ☐ Agree  ☐ Neither agree nor disagree  ☐ Disagree  ☐ Strongly disagree

I encourage my staff / colleagues to receive vaccination

☐ Strongly agree  ☐ Agree  ☐ Neither agree nor disagree  ☐ Disagree  ☐ Strongly disagree

As a healthcare worker, I am happy to have the flu vaccine myself!

☐ Strongly agree  ☐ Agree  ☐ Neither agree nor disagree  ☐ Disagree  ☐ Strongly disagree

I think the influenza vaccination programme is a worthwhile use of NHS resources

☐ Strongly agree  ☐ Agree  ☐ Neither agree nor disagree  ☐ Disagree  ☐ Strongly disagree
Would you or your practice make use of an e-learning tutorial about the clinical aspects of influenza and influenza vaccination, if available?

- Yes
- No
- I don't know

What would you describe as the three biggest barriers to increasing vaccination rates in your practice?

Please choose up to 3 factors from the list below and rank them in order of importance (1 = most important).

If another issue important to your practice's vaccine uptake is not mentioned here, please describe this in the box provided.

<table>
<thead>
<tr>
<th>Patient education, beliefs and/or motivation</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Staff education, beliefs and/or motivation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Levels of staffing / funding</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Difficulties with campaign logistics</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Difficulties with identifying patients</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Difficulties with recalling patients</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Difficulties with reporting vaccination data</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>We don't need to increase our rates</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

If other, please specify
## ANNEX 2

Questions used in the public and patient feedback survey

### BEING INVITED FOR A FLU VACCINE

1. Our studies show that GP practices that send out a personal invitation to all their eligible patients tend to vaccinate more of their patients than GP practices that rely on generalised publicity only.

   Do you agree that all practices should send a personal invitation to their eligible patients?
   - Strongly agree
   - Agree
   - Neither agree nor disagree
   - Disagree
   - Strongly disagree

2. Our studies suggest that GP practices that use professionally-produced posters and other publicity materials vaccinate more of their eligible patients than GP practices who produce home-made materials instead.

   Do you agree that all practices should use professionally-produced posters and publicity?
   - Strongly agree
   - Agree
   - Neither agree nor disagree
   - Disagree
   - Strongly disagree

3. Our studies show that some GP practices use publicity materials which are supplied by the vaccine manufacturers, whereas other use publicity information supplied by the NHS.

   What source of publicity information you would prefer to be used?
   - Would strongly prefer to see information from the vaccine manufacturer
   - Would slightly prefer to see information from the vaccine manufacturer
   - No preference
   - Would slightly prefer to see information from the NHS
   - Would strongly prefer to see information from the NHS

### ATTENDING FOR YOUR FLU VACCINE

4. Our studies show that GP practices that give patients a timed appointment for getting their vaccine have better uptake than those who operate open or "walk-up" sessions.

   Do you agree that all practices should offer timed appointments for getting their vaccine?
   - Strongly agree
   - Agree
   - Neither agree nor disagree
   - Disagree
   - Strongly disagree

5. Our studies show that GP practices that offer flu vaccinations in the evenings or at weekends DO NOT achieve higher rates than those who do not offer appointments at these times.

   Is it important to you to be able to get an evening or weekend appointment for the flu vaccine?
   - Yes
   - I don’t mind
   - No
**THE MEDIA AND NATIONAL PUBLICITY**

6. Many GP practices have told us that NATIONAL PUBLICITY CAMPAIGNS (from the NHS or the Department of Health) make people MORE likely to come in for their vaccination. However, last year there was no national campaign to tell people about the flu vaccine.

To what extent do you think that previous national campaigns about the flu vaccine have encouraged you to get vaccinated yourself (if applicable)?

- [ ] Strongly encouraged me
- [ ] Slightly encouraged me
- [ ] Made no difference
- [ ] Slightly discouraged me
- [ ] Strongly discouraged me

7. Many GP practices have told us that national PRESS STORIES about flu or the flu vaccine can change how likely it is that people will come in for their vaccination.

Have media stories about flu or the flu vaccine ever influenced your feelings about having a flu vaccine?

- [ ] Yes
- [ ] No
- [ ] I don't know

8. If you answered YES, how have media stories on the whole changed how likely you are (or were) to have a flu vaccine?

- [ ] Made me more likely to get the flu vaccine
- [ ] Made no difference to me
- [ ] Made me less likely to get the flu vaccine

**YOUR VIEWS ABOUT THE FLU VACCINE**

9. The Department of Health advises that all front-line health care staff should receive the vaccine too, in order to protect them and their patients. Our studies show that practices whose staff promote and receive the flu vaccine amongst themselves are more likely to achieve higher rates of uptake in their patients.

Is it important to you to know whether staff at your practice have received the flu vaccine themselves?

- [ ] Yes
- [ ] I don't mind
- [ ] No

**THAT'S IT!**

11. If you are happy to do so, please tell us ...

<table>
<thead>
<tr>
<th>Question</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do you normally receive an invitation to receive the flu vaccine?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Are you under 65 years of age?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
ANNEX 3

Tables of results

(see overleaf)
### Planning a flu vaccination campaign: patients aged 65 years and over

<table>
<thead>
<tr>
<th>Question</th>
<th>Respondents</th>
<th>Baseline</th>
<th>Comparator</th>
<th>Regression co-efficient</th>
<th>95% CI</th>
<th>p-value</th>
<th>Number of clusters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Does your practice have a lead member of staff for planning seasonal influenza vaccination?</td>
<td>PM 568</td>
<td>PN 336</td>
<td>GP 105</td>
<td>Yes</td>
<td>No</td>
<td>0.185</td>
<td>0.075 – 0.295</td>
</tr>
<tr>
<td>Do you hold one or more meeting(s) to plan your practice’s seasonal flu vaccination campaign?</td>
<td>PM 565</td>
<td>PN 334</td>
<td>GP 104</td>
<td>Yes</td>
<td>No</td>
<td>0.039</td>
<td>-0.021 – 0.099</td>
</tr>
<tr>
<td>If yes, who attends this meeting?</td>
<td>PM 565</td>
<td>PN 334</td>
<td>GP 106</td>
<td>GP</td>
<td>No GP</td>
<td>-0.004</td>
<td>-0.043 – 0.036</td>
</tr>
<tr>
<td>If yes, who attends this meeting?</td>
<td>PM 565</td>
<td>PN 334</td>
<td>GP 106</td>
<td>District Nurse</td>
<td>No District Nurse</td>
<td>-0.006</td>
<td>-0.068 – 0.056</td>
</tr>
<tr>
<td>How many practice nurses (WTE) work at your surgery?</td>
<td>PM 407</td>
<td>PN 234</td>
<td>GP 107</td>
<td>Increasing WTE rate per 1000 registered patients</td>
<td>0.140</td>
<td>-0.028 – 0.309</td>
<td>0.102</td>
</tr>
<tr>
<td>How many practice nurses (WTE) work at your surgery?</td>
<td>PM 407</td>
<td>PN 234</td>
<td>GP 107</td>
<td>Increasing WTE rate per 1000 registered patients corrected for practice size</td>
<td>0.086</td>
<td>-0.076 – 0.249</td>
<td>0.297</td>
</tr>
<tr>
<td>How many health care support workers (WTE) work at your surgery?</td>
<td>PM 385</td>
<td>PN 229</td>
<td>GP 107</td>
<td>Increasing WTE rate per 1000 registered patients</td>
<td>0.022</td>
<td>-0.166 – 0.209</td>
<td>0.822</td>
</tr>
<tr>
<td>How many health care support workers (WTE) work at your surgery?</td>
<td>PM 385</td>
<td>PN 229</td>
<td>GP 107</td>
<td>Increasing WTE rate per 1000 registered patients corrected for practice size</td>
<td>-0.002</td>
<td>-0.186 – 0.182</td>
<td>0.986</td>
</tr>
<tr>
<td>How many receptionists (WTE) work at your surgery?</td>
<td>PM 395</td>
<td>PN 221</td>
<td>N/A</td>
<td>Increasing WTE rate per 1000 registered patients</td>
<td>-0.004</td>
<td>-0.065 – 0.056</td>
<td>0.886</td>
</tr>
<tr>
<td>How many receptionists (WTE) work at your surgery?</td>
<td>PM 395</td>
<td>PN 221</td>
<td>N/A</td>
<td>Increasing WTE rate per 1000 registered patients corrected for practice size</td>
<td>-0.045</td>
<td>-0.105 – 0.014</td>
<td>0.136</td>
</tr>
<tr>
<td>How many patients are registered at the practice?</td>
<td>PM 3808</td>
<td>Practices</td>
<td>Increasing total practice population size</td>
<td>-0.0001</td>
<td>-0.0002 – -8.8 x 10^{-6}</td>
<td>&lt;0.001</td>
<td>N/A</td>
</tr>
<tr>
<td>How many patients are registered at the practice?</td>
<td>PM 3808</td>
<td>Practices</td>
<td>Increasing total practice population size, corrected for eligible practice population numbers</td>
<td>-4.08 x 10^{-6}</td>
<td>-5.22 x 10^{-6} – -2.94 x 10^{-6}</td>
<td>&lt;0.001</td>
<td>N/A</td>
</tr>
<tr>
<td>Is your practice accredited for GP training?</td>
<td>PM N/A</td>
<td>N/A</td>
<td>GP 104</td>
<td>No</td>
<td>Yes</td>
<td>0.050</td>
<td>-0.072 – 0.173</td>
</tr>
<tr>
<td>What practice software is used?</td>
<td>PM 3807</td>
<td>Practices</td>
<td>EMIS</td>
<td>TPP SystmOne</td>
<td>-0.005</td>
<td>-0.011 – 0.000</td>
<td>0.063</td>
</tr>
<tr>
<td>What practice software is used?</td>
<td>PM 3807</td>
<td>Practices</td>
<td>EMIS</td>
<td>INPS</td>
<td>-0.082</td>
<td>-0.089 – -0.075</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>What practice software is used?</td>
<td>PM 3807</td>
<td>Practices</td>
<td>EMIS</td>
<td>iSoft Synergy</td>
<td>-0.027</td>
<td>-0.038 – -0.015</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Question</td>
<td>Respondents</td>
<td>Baseline</td>
<td>Comparator</td>
<td>Regression co-efficient</td>
<td>95% CI</td>
<td>p-value</td>
<td>Number of clusters</td>
</tr>
<tr>
<td>--------------------------------------------------------------------------</td>
<td>-------------</td>
<td>----------------</td>
<td>------------------------------------------------</td>
<td>-------------------------</td>
<td>-----------------</td>
<td>-----------</td>
<td>-------------------</td>
</tr>
<tr>
<td>Is there a dedicated member of staff who is responsible for identifying the eligible patients in your practice population?</td>
<td>414</td>
<td>N/A</td>
<td>No</td>
<td>Yes</td>
<td>0.087</td>
<td>0.005 – 0.169</td>
<td>0.038</td>
</tr>
<tr>
<td>Do you use a pre-built / standard software program to identify patients who are eligible for influenza vaccination?</td>
<td>551</td>
<td>N/A</td>
<td>Yes – unmodified system supplier’s search used</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Do you use a pre-built / standard software program to identify patients who are eligible for influenza vaccination?</td>
<td>551</td>
<td>N/A</td>
<td>Yes – unmodified system supplier’s search used</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Do you use a pre-built / standard software program to identify patients who are eligible for influenza vaccination?</td>
<td>551</td>
<td>N/A</td>
<td>Yes – unmodified system supplier’s search used</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Do you use a pre-built / standard software program to identify patients who are eligible for influenza vaccination?</td>
<td>551</td>
<td>N/A</td>
<td>Yes – unmodified system supplier’s search used</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>When, approximately, do you run the main search(es) to identify your eligible patients?</td>
<td>548</td>
<td>N/A</td>
<td>Once</td>
<td>More than once</td>
<td>0.028</td>
<td>-0.018 – 0.074</td>
<td>0.235</td>
</tr>
<tr>
<td>Do you have a mechanism to identify patients who become eligible to receive vaccination after the initial search has been performed?</td>
<td>546</td>
<td>N/A</td>
<td>No</td>
<td>Yes</td>
<td>0.031</td>
<td>-0.056 – 0.117</td>
<td>0.484</td>
</tr>
<tr>
<td>To what extent do you agree: I can easily identify care home residents from my practice list</td>
<td>474</td>
<td>N/A</td>
<td>Do not agree</td>
<td>Agree</td>
<td>0.014</td>
<td>-0.065 – 0.093</td>
<td>0.727</td>
</tr>
<tr>
<td>To what extent do you agree: I can easily identify non-professional carers from my practice list</td>
<td>443</td>
<td>N/A</td>
<td>Do not agree</td>
<td>Agree</td>
<td>-0.001</td>
<td>-0.570 – 0.569</td>
<td>0.999</td>
</tr>
<tr>
<td>To what extent does vaccine price affect your choice of vaccine supplier?</td>
<td>458</td>
<td>N/A</td>
<td>Does not strongly affect choice</td>
<td>Strongly affects choice</td>
<td>0.023</td>
<td>-0.029 – 0.074</td>
<td>0.386</td>
</tr>
<tr>
<td>To what extent does choice / availability of delivery date(s) affect your choice of vaccine supplier?</td>
<td>458</td>
<td>N/A</td>
<td>Does not strongly affect choice</td>
<td>Strongly affects choice</td>
<td>-0.018</td>
<td>-0.069 – 0.033</td>
<td>0.484</td>
</tr>
<tr>
<td>Question</td>
<td>Respondents</td>
<td>Baseline</td>
<td>Comparator</td>
<td>Regression co-efficient</td>
<td>95% CI</td>
<td>p-value</td>
<td>Number of clusters</td>
</tr>
<tr>
<td>--------------------------------------------------------------------------</td>
<td>-------------</td>
<td>----------</td>
<td>------------</td>
<td>-------------------------</td>
<td>--------------</td>
<td>---------</td>
<td>-------------------</td>
</tr>
<tr>
<td>Do you allocate separate funding for patient call and recall activity?</td>
<td>408</td>
<td>N/A</td>
<td>No</td>
<td>Yes</td>
<td>0.025</td>
<td>-0.057 - 0.108</td>
<td>0.548</td>
</tr>
<tr>
<td>Do you allocate separate staff time for patient call and recall activity?</td>
<td>411</td>
<td>N/A</td>
<td>No</td>
<td>Yes</td>
<td>-0.212</td>
<td>-0.079 - 0.037</td>
<td>0.474</td>
</tr>
<tr>
<td>Do you allocate separate administration capacity for patient call and recall activity?</td>
<td>408</td>
<td>N/A</td>
<td>No</td>
<td>Yes</td>
<td>-0.053</td>
<td>-0.129 - 0.022</td>
<td>0.167</td>
</tr>
<tr>
<td>Are appointment bookings for influenza vaccination identified by a dedicated IT code on the patient record?</td>
<td>411</td>
<td>N/A</td>
<td>No</td>
<td>Yes</td>
<td>0.006</td>
<td>-0.054 - 0.066</td>
<td>0.844</td>
</tr>
<tr>
<td>How do you encourage patients to attend for vaccination?</td>
<td>412</td>
<td>302</td>
<td>106</td>
<td>General publicity only</td>
<td>General publicity plus personal invitation for all</td>
<td>0.105</td>
<td>0.032 - 0.177</td>
</tr>
<tr>
<td>How do you encourage patients to attend for vaccination?</td>
<td>412</td>
<td>302</td>
<td>106</td>
<td>General publicity plus personal invitation for non-responders</td>
<td>General publicity plus personal invitation for all</td>
<td>0.074</td>
<td>0.025 - 0.124</td>
</tr>
<tr>
<td>Which general publicity methods do you use to encourage patients to attend for vaccination?</td>
<td>383</td>
<td>N/A</td>
<td>N/A</td>
<td>More than 3 different methods</td>
<td>Less than 3 different methods</td>
<td>0.037</td>
<td>-0.022 - 0.096</td>
</tr>
<tr>
<td>Which general publicity methods do you use to encourage patients to attend for vaccination?</td>
<td>383</td>
<td>N/A</td>
<td>N/A</td>
<td>Local media (radio or newspaper)</td>
<td>No local media (radio or newspaper)</td>
<td>-0.221</td>
<td>-0.110 - 0.066</td>
</tr>
<tr>
<td>Who produces most of your promotional material?</td>
<td>403</td>
<td>N/A</td>
<td>N/A</td>
<td>Vaccine supplier</td>
<td>Department of Health / NHS</td>
<td>-0.018</td>
<td>-0.136 - 0.099</td>
</tr>
<tr>
<td>Who produces most of your promotional material?</td>
<td>400</td>
<td>N/A</td>
<td>N/A</td>
<td>Vaccine supplier</td>
<td>Own in-house materials used</td>
<td>-0.041</td>
<td>-0.108 - 0.027</td>
</tr>
<tr>
<td>Are these materials available in languages other than English, if required?</td>
<td>396</td>
<td>N/A</td>
<td>N/A</td>
<td>No – corrected for ethnicity</td>
<td>Yes – corrected for ethnicity</td>
<td>0.005</td>
<td>-0.062 - 0.072</td>
</tr>
<tr>
<td>Which personal invitation methods do you use to invite patients to attend for vaccination?</td>
<td>362</td>
<td>N/A</td>
<td>N/A</td>
<td>Letter and telephone calls</td>
<td>Letter or telephone calls</td>
<td>0.011</td>
<td>-0.051 - 0.073</td>
</tr>
<tr>
<td>Question</td>
<td>Respondents</td>
<td>Baseline</td>
<td>Comparator</td>
<td>Regression co-efficient</td>
<td>95% CI</td>
<td>p-value</td>
<td>Number of clusters</td>
</tr>
<tr>
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</tr>
<tr>
<td>Are personal invitations provided in languages other than English, if required?</td>
<td>376</td>
<td>N/A</td>
<td>N/A</td>
<td>No, corrected for ethnicity</td>
<td>Yes, corrected for ethnicity</td>
<td>-0.037</td>
<td>-0.105. - 0.031</td>
</tr>
<tr>
<td>Do you explain why the patient is eligible to receive flu vaccination?</td>
<td>376</td>
<td>N/A</td>
<td>N/A</td>
<td>No</td>
<td>Yes</td>
<td>-0.002</td>
<td>-0.094 - 0.091</td>
</tr>
<tr>
<td>Do you have an automatic system to generate reminders if a patient does not respond?</td>
<td>376</td>
<td>N/A</td>
<td>N/A</td>
<td>No</td>
<td>Yes</td>
<td>0.002</td>
<td>-0.061 - 0.064</td>
</tr>
<tr>
<td>How many reminders, after the initial invitation, do you provide if the patient does not respond?</td>
<td>339</td>
<td>N/A</td>
<td>N/A</td>
<td>Increasing numbers of reminders to patients in a QOF group</td>
<td>-0.018</td>
<td>-0.047 - 0.011</td>
<td>0.225</td>
</tr>
<tr>
<td>How many reminders, after the initial invitation, do you provide if the patient does not respond?</td>
<td>339</td>
<td>N/A</td>
<td>N/A</td>
<td>Increasing numbers of reminders to patients not in a QOF group</td>
<td>-0.0006</td>
<td>-0.024 - 0.024</td>
<td>0.961</td>
</tr>
<tr>
<td>Do you collaborate with other practices when promoting the flu campaign?</td>
<td>390</td>
<td>N/A</td>
<td>N/A</td>
<td>No</td>
<td>Yes</td>
<td>0.003</td>
<td>-0.083 - 0.089</td>
</tr>
</tbody>
</table>
### Carrying out the vaccinations: patients aged 65 years and over

<table>
<thead>
<tr>
<th>Question</th>
<th>Respondents</th>
<th>Baseline</th>
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<th>Regression co-efficient</th>
<th>95% CI</th>
<th>p-value</th>
<th>Number of clusters</th>
</tr>
</thead>
<tbody>
<tr>
<td>What is the earliest date on which patients can attend for flu vaccination this year?</td>
<td>PM 559</td>
<td>Dates in Aug/Sep</td>
<td>Dates in Oct/Nov</td>
<td>0.018</td>
<td>-0.030 – 0.065</td>
<td>0.468</td>
<td>511</td>
</tr>
<tr>
<td>Do you allocate individual timed appointments?</td>
<td>PN N/A</td>
<td>No</td>
<td>Yes</td>
<td>-0.046</td>
<td>-0.095 – 0.002</td>
<td>0.063</td>
<td>597</td>
</tr>
<tr>
<td>Do you allocate timed appointment blocks?</td>
<td>GP N/A</td>
<td>No</td>
<td>Yes</td>
<td>-0.014</td>
<td>-0.061 – 0.032</td>
<td>0.547</td>
<td>588</td>
</tr>
<tr>
<td>Do you offer open/walk up sessions?</td>
<td>PM 395</td>
<td>No</td>
<td>Yes</td>
<td>-0.026</td>
<td>-0.076 – 0.024</td>
<td>0.304</td>
<td>593</td>
</tr>
<tr>
<td>Is vaccination available before 8am?</td>
<td>PN 295</td>
<td>No</td>
<td>Yes</td>
<td>0.014</td>
<td>-0.041 – 0.069</td>
<td>0.625</td>
<td>596</td>
</tr>
<tr>
<td>Is vaccination available after 6pm?</td>
<td>GP N/A</td>
<td>No</td>
<td>Yes</td>
<td>0.015</td>
<td>-0.030 – 0.061</td>
<td>0.506</td>
<td>595</td>
</tr>
<tr>
<td>Is vaccination available at weekends?</td>
<td>PM 395</td>
<td>No</td>
<td>Yes</td>
<td>-0.005</td>
<td>-0.054 – 0.044</td>
<td>0.834</td>
<td>594</td>
</tr>
<tr>
<td>When do you stop offering vaccination?</td>
<td>PN 565</td>
<td>NOT when QOF target reached</td>
<td>When QOF target reached</td>
<td>0.078</td>
<td>0.001 – 0.155</td>
<td>0.048</td>
<td>791</td>
</tr>
<tr>
<td>When are housebound patients vaccinated, on the whole?</td>
<td>GP 334</td>
<td>Before main campaign</td>
<td>During main campaign</td>
<td>0.083</td>
<td>0.002 – 0.165</td>
<td>0.046</td>
<td>589</td>
</tr>
<tr>
<td>When are care home residents vaccinated, on the whole?</td>
<td>PM 565</td>
<td>Before main campaign</td>
<td>After main campaign</td>
<td>0.082</td>
<td>-0.027 – 0.191</td>
<td>0.140</td>
<td>589</td>
</tr>
<tr>
<td>To what extent do you agree: my local district nurses are active in recommending vaccination to housebound and care home residents?</td>
<td>PN 565</td>
<td>Before main campaign</td>
<td>During main campaign</td>
<td>0.008</td>
<td>-0.062 – 0.078</td>
<td>0.825</td>
<td>568</td>
</tr>
<tr>
<td>To what extent do you agree: my local district nurses are active in providing vaccination to housebound and care home residents?</td>
<td>GP 290</td>
<td>Before main campaign</td>
<td>After main campaign</td>
<td>0.023</td>
<td>-0.094 – 0.141</td>
<td>0.695</td>
<td>568</td>
</tr>
<tr>
<td>To what extent do you agree: my local district nurses are active in recommending vaccination to housebound and care home residents?</td>
<td>PM 389</td>
<td>Do not agree</td>
<td>Agree</td>
<td>-0.055</td>
<td>-0.110 – 0.001</td>
<td>0.053</td>
<td>375</td>
</tr>
<tr>
<td>To what extent do you agree: my local district nurses are active in providing vaccination to housebound and care home residents?</td>
<td>PN N/A</td>
<td>Do not agree</td>
<td>Agree</td>
<td>-0.005</td>
<td>-0.058 – 0.048</td>
<td>0.858</td>
<td>375</td>
</tr>
</tbody>
</table>
## Reviewing performance: patients aged 65 years and over

<table>
<thead>
<tr>
<th>Question</th>
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<th>Comparator</th>
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<th>95% CI</th>
<th>p-value</th>
<th>Number of clusters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do you know, or are you able to find out, how many eligible patients are on your practice list?</td>
<td>352 PM, 565 PN, 191 GP</td>
<td>No</td>
<td>Yes</td>
<td>0.024</td>
<td>-0.033 – 0.082</td>
<td>0.412</td>
<td>342</td>
</tr>
<tr>
<td>Do you know, or are you able to find out, what percentage of 65 year old + patients you vaccinated in 2010-11?</td>
<td>565 PM, 334 PN, 191 GP</td>
<td>No</td>
<td>Yes</td>
<td>0.047</td>
<td>0.007 – 0.087</td>
<td>0.022</td>
<td>743</td>
</tr>
<tr>
<td>Do you know, or are you able to find out, what percentage of 65 year old + patients you vaccinated in 2010-11?</td>
<td>N/A PM, N/A PN, 50 GP</td>
<td>No</td>
<td>Yes</td>
<td>0.024</td>
<td>-0.153 – 0.201</td>
<td>0.789</td>
<td>47</td>
</tr>
<tr>
<td>Do you know, or are you able to find out, what percentage of 65+ year old patients you vaccinated in 2010-11?</td>
<td>191 PM, 106 GP</td>
<td>No</td>
<td>Yes</td>
<td>-7.579 (mean difference in actual vs. reported rate)</td>
<td>0.016</td>
<td>187</td>
<td></td>
</tr>
<tr>
<td>Do you know, or are you able to find out, what percentage of 65+ year old patients you vaccinated in 2010-11?</td>
<td>191 PM, 106 GP</td>
<td>No</td>
<td>Yes</td>
<td>14.144 (mean difference in actual vs. reported rate)</td>
<td>0.014</td>
<td>187</td>
<td></td>
</tr>
<tr>
<td>Are you aware of the flu vaccination rates achieved by other local practices?</td>
<td>565 PM, 334 PN, 106 GP</td>
<td>No</td>
<td>Yes</td>
<td>0.028</td>
<td>-0.024 – 0.080</td>
<td>0.290</td>
<td>571</td>
</tr>
<tr>
<td>Are you aware of the flu vaccination strategies used by other local practices?</td>
<td>352 PM, 93 PN</td>
<td>No</td>
<td>Yes</td>
<td>-0.012</td>
<td>-0.067 – 0.044</td>
<td>0.682</td>
<td>406</td>
</tr>
<tr>
<td>How frequently, on average, did you or other staff review your flu vaccination rates during your 2010-11 vaccination season?</td>
<td>352 PM, 257 PN</td>
<td>Less than monthly</td>
<td>Monthly or more</td>
<td>-0.021</td>
<td>-0.078 – 0.035</td>
<td>0.462</td>
<td>497</td>
</tr>
<tr>
<td>After the 2010-11 flu vaccination season, how did you review your flu vaccination uptake rates?</td>
<td>565 PM, 334 PN, 106 GP</td>
<td>No written report</td>
<td>Written report</td>
<td>0.057</td>
<td>0.016 – 0.098</td>
<td>0.006</td>
<td>791</td>
</tr>
<tr>
<td>After the 2010-11 flu vaccination season, how did you review your flu vaccination strategy?</td>
<td>543 PM, 87 PN</td>
<td>No written report</td>
<td>Written report</td>
<td>0.076</td>
<td>-0.005 – 0.158</td>
<td>0.067</td>
<td>559</td>
</tr>
<tr>
<td>To what extent do you agree: my reception and/or telephone staff are able to explain the benefits of vaccination, if required?</td>
<td>349 PM, 254 PN, 106 GP</td>
<td>Do not agree</td>
<td>Agree</td>
<td>0.015</td>
<td>-0.034 – 0.065</td>
<td>0.546</td>
<td>576</td>
</tr>
<tr>
<td>To what extent do you agree: I encourage my staff / colleagues to receive vaccination?</td>
<td>350 PM, 253 PN, 106 GP</td>
<td>Do not agree</td>
<td>Agree</td>
<td>0.079</td>
<td>0.026 – 0.132</td>
<td>0.004</td>
<td>575</td>
</tr>
<tr>
<td>Question</td>
<td>Respondents</td>
<td>Baseline</td>
<td>Comparator</td>
<td>Regression co-efficient</td>
<td>95% CI</td>
<td>p-value</td>
<td>Number of clusters</td>
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</tr>
<tr>
<td>To what extent do you agree: as a healthcare worker I am happy to have the flu vaccine myself?</td>
<td>PM: 347</td>
<td>PN: 253</td>
<td>GP: 106</td>
<td>Do not agree</td>
<td>Agree</td>
<td>0.019</td>
<td>-0.029 - 0.067</td>
</tr>
<tr>
<td>For GPs: what is your main motivation for providing influenza vaccination?</td>
<td>N/A</td>
<td>N/A</td>
<td>86</td>
<td>Not more clinical than financial</td>
<td>More clinical than financial</td>
<td>-0.015</td>
<td>-0.177 - 0.146</td>
</tr>
</tbody>
</table>
Planning a flu vaccination campaign: patients aged under 65 years

<table>
<thead>
<tr>
<th>Question</th>
<th>Respondents</th>
<th>Baseline</th>
<th>Comparator</th>
<th>Regression coefficient</th>
<th>95% CI</th>
<th>p-value</th>
<th>Number of clusters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Does your practice have a lead member of staff for planning seasonal influenza vaccination?</td>
<td>568 336 105</td>
<td>No</td>
<td>Yes</td>
<td>0.220</td>
<td>0.069 – 0.371</td>
<td>0.004</td>
<td>783</td>
</tr>
<tr>
<td>Do you hold one or more meeting(s) to plan your practice’s seasonal flu vaccination campaign?</td>
<td>567 330 105</td>
<td>No</td>
<td>Yes</td>
<td>-0.005</td>
<td>-0.096 – 0.086</td>
<td>0.911</td>
<td>784</td>
</tr>
<tr>
<td>If yes, who attends this meeting?</td>
<td>568 336 107</td>
<td>No GP</td>
<td>GP</td>
<td>0.049</td>
<td>-0.011 – 0.109</td>
<td>0.109</td>
<td>791</td>
</tr>
<tr>
<td>How many practice nurses (WTE) work at your surgery?</td>
<td>407 234 107</td>
<td>Increasing WTE rate per 1000 registered patients</td>
<td>0.089</td>
<td>0.011 – 0.167</td>
<td>0.026</td>
<td>613</td>
<td></td>
</tr>
<tr>
<td>How many practice nurses (WTE) work at your surgery?</td>
<td>407 234 107</td>
<td>Increasing WTE rate per 1000 registered patients corrected for practice size</td>
<td>0.054</td>
<td>-0.003 – 0.110</td>
<td>0.063</td>
<td>613</td>
<td></td>
</tr>
<tr>
<td>How many health care support workers (WTE) work at your surgery?</td>
<td>385 229 107</td>
<td>Increasing WTE rate per 1000 registered patients</td>
<td>0.054</td>
<td>0.039 – 0.068</td>
<td>&lt;0.001</td>
<td>592</td>
<td></td>
</tr>
<tr>
<td>How many health care support workers (WTE) work at your surgery?</td>
<td>385 229 107</td>
<td>Increasing WTE rate per 1000 registered patients corrected for practice size</td>
<td>0.028</td>
<td>-0.009 – 0.066</td>
<td>0.142</td>
<td>592</td>
<td></td>
</tr>
<tr>
<td>How many receptionists (WTE) work at your surgery?</td>
<td>395 221 N/A</td>
<td>Increasing WTE rate per 1000 registered patients</td>
<td>0.111</td>
<td>0.041 – 0.181</td>
<td>0.002</td>
<td>541</td>
<td></td>
</tr>
<tr>
<td>How many receptionists (WTE) work at your surgery?</td>
<td>395 221 N/A</td>
<td>Increasing WTE rate per 1000 registered patients corrected for practice size</td>
<td>0.040</td>
<td>-0.033 – 0.114</td>
<td>0.281</td>
<td>541</td>
<td></td>
</tr>
<tr>
<td>How many patients are registered at the practice?</td>
<td>3808 practices</td>
<td>Increasing total practice population size</td>
<td>-0.0007</td>
<td>-0.0009 – -0.0005</td>
<td>&lt;0.001</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>Is your practice accredited for GP training?</td>
<td>N/A N/A 105</td>
<td>No</td>
<td>Yes</td>
<td>0.001</td>
<td>-0.274 – 0.276</td>
<td>0.993</td>
<td>92</td>
</tr>
<tr>
<td>What practice software is used?</td>
<td>3808 practices</td>
<td>EMIS</td>
<td>TPP SystmOne</td>
<td>-0.054</td>
<td>-0.061 – -0.048</td>
<td>&lt;0.001</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td></td>
<td>INPS</td>
<td>-0.116</td>
<td>-0.124 – -0.108</td>
<td>&lt;0.001</td>
<td>N/A</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>iSoft Synergy</td>
<td>0.025</td>
<td>0.012 – 0.038</td>
<td>&lt;0.001</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>Question</td>
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<td>Baseline</td>
<td>Comparator</td>
<td>Regression co-efficient</td>
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<td>-------------------</td>
</tr>
<tr>
<td>Is there a dedicated member of staff who is responsible for identifying the eligible patients in your practice population?</td>
<td>417</td>
<td>No</td>
<td>Yes</td>
<td>0.080</td>
<td>-0.048 – 0.208</td>
<td>0.218</td>
<td>397</td>
</tr>
<tr>
<td>When do you run the main search(es) to identify your eligible patients?</td>
<td>548</td>
<td>Once</td>
<td>More than once</td>
<td>0.003</td>
<td>-0.068 – 0.074</td>
<td>0.929</td>
<td>503</td>
</tr>
<tr>
<td>Do you use a pre-built / standard software program to identify patients who are eligible for influenza vaccination?</td>
<td>554</td>
<td>Yes – unmodified system supplier’s search used</td>
<td>No software search used</td>
<td>-0.068</td>
<td>-0.172 – 0.034</td>
<td>0.192</td>
<td>507</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Modified system supplier’s search used</td>
<td>0.016</td>
<td>-0.054 – 0.087</td>
<td>0.650</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Alternative or add-on software used</td>
<td>-0.014</td>
<td>-0.244 – 0.216</td>
<td>0.902</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Own software search created</td>
<td>-0.014</td>
<td>-0.122 – 0.094</td>
<td>0.799</td>
<td></td>
</tr>
<tr>
<td>Do you have a mechanism to identify patients who become eligible to receive vaccination after the initial search has been performed?</td>
<td>546</td>
<td>No</td>
<td>Yes</td>
<td>0.157</td>
<td>-0.090 – 0.405</td>
<td>0.213</td>
<td>503</td>
</tr>
<tr>
<td>To what extent do you agree: I can easily identify eligible asthmatic patients from my practice list</td>
<td>430</td>
<td>Not agree (vs uptake in respiratory disease risk group)</td>
<td>Agree (vs uptake in respiratory disease risk group)</td>
<td>0.042</td>
<td>-0.044 – 0.129</td>
<td>0.338</td>
<td>405</td>
</tr>
<tr>
<td>To what extent do you agree: I can easily identify pregnant patients from my practice list</td>
<td>452</td>
<td>Not agree (vs uptake in pregnancy risk group)</td>
<td>Agree (vs uptake in pregnancy risk group)</td>
<td>0.116</td>
<td>-0.036 – 0.268</td>
<td>0.135</td>
<td>425</td>
</tr>
<tr>
<td>To what extent do you agree: I can easily identify non-professional carers from my practice list</td>
<td>443</td>
<td>Not agree (vs uptake in carer risk group)</td>
<td>Agree (vs uptake in carer risk group)</td>
<td>-0.001</td>
<td>-0.570 – 0.569</td>
<td>0.999</td>
<td>416</td>
</tr>
<tr>
<td>To what extent does vaccine price affect your choice of vaccine supplier?</td>
<td>461</td>
<td>Does not strongly affect choice</td>
<td>Strongly affects choice</td>
<td>0.063</td>
<td>-0.010 – 0.136</td>
<td>0.092</td>
<td>434</td>
</tr>
<tr>
<td>To what extent does choice / availability of delivery date(s) affect your choice of vaccine supplier?</td>
<td>461</td>
<td>Does not strongly affect choice</td>
<td>Strongly affects choice</td>
<td>0.053</td>
<td>-0.022 – 0.127</td>
<td>0.165</td>
<td>434</td>
</tr>
</tbody>
</table>
## Inviting patients to attend for vaccination: patients aged under 65 years

<table>
<thead>
<tr>
<th>Question</th>
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<th>95% CI</th>
<th>p-value</th>
<th>Number of clusters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do you allocate separate funding for patient call and recall activity?</td>
<td>411</td>
<td>N/A</td>
<td>No</td>
<td>Yes</td>
<td>0.045</td>
<td>-0.813 – 0.171</td>
<td>0.485 380</td>
</tr>
<tr>
<td>Do you allocate separate staff time for patient call and recall activity?</td>
<td>414</td>
<td>N/A</td>
<td>No</td>
<td>Yes</td>
<td>-0.008</td>
<td>-0.093 – 0.077</td>
<td>0.853 391</td>
</tr>
<tr>
<td>Do you allocate separate administration capacity for patient call and recall activity?</td>
<td>411</td>
<td>N/A</td>
<td>No</td>
<td>Yes</td>
<td>-0.028</td>
<td>-0.137 – 0.081</td>
<td>0.613 388</td>
</tr>
<tr>
<td>Are appointment bookings for influenza vaccination identified by a dedicated IT code on the patient record?</td>
<td>414</td>
<td>N/A</td>
<td>No</td>
<td>Yes</td>
<td>0.092</td>
<td>0.005 – 0.179</td>
<td>0.038 380</td>
</tr>
<tr>
<td>How do you encourage patients to attend for vaccination?</td>
<td>415</td>
<td>304</td>
<td>107</td>
<td>General publicity only</td>
<td>0.010</td>
<td>-0.019 – 0.226</td>
<td>0.097 662</td>
</tr>
<tr>
<td>(continued)</td>
<td></td>
<td></td>
<td></td>
<td>General publicity plus personal invitation for all</td>
<td>0.218</td>
<td>0.007 – 0.429</td>
<td>0.043 662</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>General publicity plus personal invitation for non-responders</td>
<td>0.042</td>
<td>-0.243 – 0.109</td>
<td>0.215 595</td>
</tr>
<tr>
<td>Which general publicity methods do you use to encourage patients to attend for vaccination?</td>
<td>386</td>
<td>N/A</td>
<td>N/A</td>
<td>More than 3 different methods</td>
<td>0.083</td>
<td>-0.001 – 0.166</td>
<td>0.053 369</td>
</tr>
<tr>
<td>(continued)</td>
<td></td>
<td></td>
<td></td>
<td>Less than 3 different methods</td>
<td>0.026</td>
<td>-0.085 – 0.137</td>
<td>0.641 369</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>No local media (newspaper or radio)</td>
<td>0.071</td>
<td>-0.050 – 0.193</td>
<td>0.250 383</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Department of Health</td>
<td>-0.034</td>
<td>-0.127 – 0.598</td>
<td>0.479</td>
</tr>
<tr>
<td>Who produces most of your promotional material?</td>
<td>403</td>
<td>N/A</td>
<td>N/A</td>
<td>Vaccine supplier</td>
<td>Yes</td>
<td>0.107</td>
<td>0.011 – 0.204</td>
</tr>
<tr>
<td>(continued)</td>
<td></td>
<td></td>
<td></td>
<td>Own in-house materials used</td>
<td>0.108</td>
<td>0.013 – 0.203</td>
<td>0.026 317</td>
</tr>
<tr>
<td>Are these materials available in languages other than English, if required?</td>
<td>549</td>
<td>N/A</td>
<td>No</td>
<td>Yes</td>
<td>0.108</td>
<td>0.013 – 0.203</td>
<td>0.026 317</td>
</tr>
<tr>
<td>Question</td>
<td>Respondents</td>
<td>Baseline</td>
<td>Comparator</td>
<td>Co-efficient</td>
<td>95% CI</td>
<td>p-value</td>
<td>Number of clusters</td>
</tr>
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<td>------------------------------------------------------------------------</td>
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<td>-------------------</td>
</tr>
<tr>
<td>Which personal invitation methods do you use to invite patients to attend for vaccination?</td>
<td>362</td>
<td>N/A N/A</td>
<td>Letter or telephone calls</td>
<td>-0.009</td>
<td>-0.107 – 0.882</td>
<td>0.852</td>
<td>338</td>
</tr>
<tr>
<td>Are personal invitations provided in languages other than English, if required?</td>
<td>378</td>
<td>N/A N/A</td>
<td>No</td>
<td>0.019</td>
<td>-0.082 – 0.120</td>
<td>0.712</td>
<td>334</td>
</tr>
<tr>
<td>Do you explain why the patient is eligible to receive flu vaccination?</td>
<td>378</td>
<td>N/A N/A</td>
<td>No</td>
<td>-0.057</td>
<td>-0.155 – 0.042</td>
<td>0.260</td>
<td>519</td>
</tr>
<tr>
<td>Do you have an automatic system to generate reminders if a patient does not respond?</td>
<td>378</td>
<td>N/A N/A</td>
<td>No</td>
<td>0.046</td>
<td>-0.046 – 0.138</td>
<td>0.331</td>
<td>361</td>
</tr>
<tr>
<td>How many reminders, after the initial invitation, do you provide if the patient does not respond?</td>
<td>320</td>
<td>N/A N/A</td>
<td>Increasing numbers of reminders to patients in a QOF group</td>
<td>0.014</td>
<td>-0.027 – 0.056</td>
<td>0.489</td>
<td>309</td>
</tr>
<tr>
<td>How many reminders, after the initial invitation, do you provide if the patient does not respond?</td>
<td>320</td>
<td>N/A N/A</td>
<td>Increasing numbers of reminders to patients not in a QOF group</td>
<td>0.041</td>
<td>0.002 – 0.079</td>
<td>0.038</td>
<td>309</td>
</tr>
<tr>
<td>How are your pregnant patients usually offered flu vaccination?</td>
<td>560</td>
<td>298 N/A</td>
<td>Midwife not involved</td>
<td>0.095</td>
<td>-0.228 – 0.018</td>
<td>0.129</td>
<td>601</td>
</tr>
<tr>
<td>Do you collaborate with other practices when promoting the flu campaign?</td>
<td>393</td>
<td>N/A N/A</td>
<td>No</td>
<td>0.144</td>
<td>0.017 – 0.271</td>
<td>0.027</td>
<td>368</td>
</tr>
</tbody>
</table>
### Carrying out the vaccinations: patients aged under 65 years

<table>
<thead>
<tr>
<th>Question</th>
<th>Respondents</th>
<th>Baseline</th>
<th>Comparator</th>
<th>Co-efficient</th>
<th>95% CI</th>
<th>p-value</th>
<th>Number of clusters</th>
</tr>
</thead>
<tbody>
<tr>
<td>What is the earliest date on which vaccination appointments can be attended this year?</td>
<td>542 PM</td>
<td>Nov/Dec</td>
<td>Aug/Sep</td>
<td>0.034</td>
<td>-0.032 – 0.101</td>
<td>0.314</td>
<td>511</td>
</tr>
<tr>
<td>Do you allocate individual timed appointments?</td>
<td>398 PM 287 PN</td>
<td>No</td>
<td>Yes</td>
<td>0.089</td>
<td>-0.007 – 0.186</td>
<td>0.069</td>
<td>597</td>
</tr>
<tr>
<td>Do you allocate timed appointment blocks?</td>
<td>398 PM 287 PN</td>
<td>No</td>
<td>Yes</td>
<td>0.047</td>
<td>-0.031 – 0.124</td>
<td>0.236</td>
<td>588</td>
</tr>
<tr>
<td>Do you offer open/walk up sessions?</td>
<td>398 PM 287 PN</td>
<td>No</td>
<td>Yes</td>
<td>-0.070</td>
<td>-0.158 – 0.018</td>
<td>0.120</td>
<td>597</td>
</tr>
<tr>
<td>Is vaccination available before 8am?</td>
<td>398 PM 287 PN</td>
<td>No</td>
<td>Yes</td>
<td>-0.032</td>
<td>-0.111 – 0.048</td>
<td>0.434</td>
<td>597</td>
</tr>
<tr>
<td>Is vaccination available after 6pm?</td>
<td>398 PM 287 PN</td>
<td>No</td>
<td>Yes</td>
<td>0.011</td>
<td>-0.054 – 0.077</td>
<td>0.733</td>
<td>597</td>
</tr>
<tr>
<td>When do you stop offering vaccination?</td>
<td>568 PM 336 PN 107</td>
<td>Not based on attaining QOF targets</td>
<td>Based on attaining QOF targets</td>
<td>0.070</td>
<td>-0.014 – 0.153</td>
<td>0.100</td>
<td>791</td>
</tr>
<tr>
<td>When are housebound patients vaccinated, on the whole?</td>
<td>392 PM 294 PN</td>
<td>Before the main campaign</td>
<td>During or after the main campaign</td>
<td>0.181</td>
<td>0.047 – 0.315</td>
<td>0.008</td>
<td>721</td>
</tr>
<tr>
<td>When are care home residents vaccinated, on the whole?</td>
<td>388 PM 280 PN</td>
<td>Before the main campaign</td>
<td>During or after the main campaign</td>
<td>0.043</td>
<td>-0.057 – 0.142</td>
<td>0.400</td>
<td>717</td>
</tr>
<tr>
<td>To what extent do you agree: my local district nurses are active in recommending vaccination to housebound and care home residents?</td>
<td>392 PM N/A 369 N/A 356 N/A</td>
<td>Do not agree</td>
<td>Agree</td>
<td>0.023</td>
<td>-0.064 – 0.110</td>
<td>0.605</td>
<td>375</td>
</tr>
<tr>
<td>To what extent do you agree: my local district nurses are active in providing vaccination to housebound and care home residents?</td>
<td>392 PM N/A 369 N/A</td>
<td>Do not agree</td>
<td>Agree</td>
<td>0.062</td>
<td>-0.015 – 0.140</td>
<td>0.116</td>
<td>375</td>
</tr>
<tr>
<td>To what extent do you agree: my local midwives are active in recommending vaccination to pregnant patients?</td>
<td>369 PM N/A N/A</td>
<td>Do not agree</td>
<td>Agree</td>
<td>0.050</td>
<td>-0.087 – 0.187</td>
<td>0.474</td>
<td>356</td>
</tr>
<tr>
<td>To what extent do you agree: my local midwives are active in providing vaccination to pregnant patients?</td>
<td>376 PM N/A N/A</td>
<td>Do not agree (vs uptake in pregnancy risk group)</td>
<td>Agree (vs uptake in pregnancy risk group)</td>
<td>0.178</td>
<td>0.024 – 0.333</td>
<td>0.023</td>
<td>356</td>
</tr>
</tbody>
</table>
### Reviewing performance: patients aged under 65 years

<table>
<thead>
<tr>
<th>Question</th>
<th>Respondents</th>
<th>Baseline</th>
<th>Comparator</th>
<th>Co-efficient</th>
<th>95% CI</th>
<th>p-value</th>
<th>Number of clusters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do you know, or are you able to find out, how many eligible patients there are on your practice list?</td>
<td>354</td>
<td>N/A</td>
<td>N/A</td>
<td>No</td>
<td>Yes</td>
<td>0.012</td>
<td>-0.004 – 0.027</td>
</tr>
<tr>
<td>Do you know, or are you able to find out, what percentage of at-risk under 65 year old patients you vaccinated in 2010-11?</td>
<td>568</td>
<td>336</td>
<td>N/A</td>
<td>No</td>
<td>Yes</td>
<td>0.00007</td>
<td>-0.008 – 0.008</td>
</tr>
<tr>
<td>Do you know, or are you able to find out, what percentage of at-risk under 65 year old patients you vaccinated in 2010-11?</td>
<td>N/A</td>
<td>N/A</td>
<td>51</td>
<td>No</td>
<td>Yes</td>
<td>0.127</td>
<td>-0.057 – 0.310</td>
</tr>
<tr>
<td>What percentage of at-risk under 65 year old patients did your practice vaccinate in 2010-11?</td>
<td>191</td>
<td>N/A</td>
<td>N/A</td>
<td>Not using EMIS software</td>
<td>Using EMIS software</td>
<td>-7.579 (mean difference between actual rates)</td>
<td>0.016</td>
</tr>
<tr>
<td>What percentage of at-risk under 65 year old patients did your practice vaccinate in 2010-11?</td>
<td>191</td>
<td>N/A</td>
<td>N/A</td>
<td>Not using INPS software</td>
<td>Using INPS software</td>
<td>14.143 (mean difference between actual rates)</td>
<td>0.014</td>
</tr>
<tr>
<td>Are you aware of the flu vaccination rates achieved by other local practices?</td>
<td>354</td>
<td>249</td>
<td>94</td>
<td>No</td>
<td>Yes</td>
<td>0.052</td>
<td>-0.016 – 0.121</td>
</tr>
<tr>
<td>Are you aware of the flu vaccination strategies used by other local practices?</td>
<td>354</td>
<td>N/A</td>
<td>94</td>
<td>No</td>
<td>Yes</td>
<td>0.046</td>
<td>-0.037 – 0.129</td>
</tr>
<tr>
<td>How frequently, on average, did you or other staff review your flu vaccination rates during your 2010-11 vaccination season?</td>
<td>354</td>
<td>259</td>
<td>N/A</td>
<td>Less than monthly</td>
<td>Monthly or more</td>
<td>0.019</td>
<td>-0.067 – 0.106</td>
</tr>
<tr>
<td>After the 2010-11 flu vaccination season, how did you review your flu vaccination uptake rates?</td>
<td>568</td>
<td>336</td>
<td>107</td>
<td>No written report</td>
<td>Written report</td>
<td>0.119</td>
<td>0.044 – 0.195</td>
</tr>
<tr>
<td>After the 2010-11 flu vaccination season, how did you review your flu vaccination strategy?</td>
<td>545</td>
<td>N/A</td>
<td>88</td>
<td>No written report</td>
<td>Written report</td>
<td>0.175</td>
<td>0.019 – 0.330</td>
</tr>
<tr>
<td>To what extent do you agree: my reception and/or telephone staff are able to explain the benefits of vaccination, if required?</td>
<td>351</td>
<td>256</td>
<td>107</td>
<td>Do not agree</td>
<td>Agree</td>
<td>0.062</td>
<td>-0.015 – 0.138</td>
</tr>
<tr>
<td>To what extent do you agree: I encourage my staff / colleagues to receive vaccination?</td>
<td>352</td>
<td>255</td>
<td>107</td>
<td>Do not agree</td>
<td>Agree</td>
<td>0.055</td>
<td>-0.030 – 0.139</td>
</tr>
<tr>
<td>Question</td>
<td>Respondents</td>
<td>Baseline</td>
<td>Comparator</td>
<td>Co-efficient</td>
<td>95% CI</td>
<td>p-value</td>
<td>Number of clusters</td>
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<td>--------------------</td>
</tr>
<tr>
<td>To what extent do you agree: as a healthcare worker I am happy to have the flu vaccine myself?</td>
<td>349 255 107</td>
<td>Do not agree</td>
<td>Agree</td>
<td>0.060</td>
<td>-0.029 – 0.149</td>
<td>0.185</td>
<td>574</td>
</tr>
<tr>
<td>For GPs: what is your main motivation for providing influenza vaccination?</td>
<td>N/A N/A 87</td>
<td>Not more clinical than financial</td>
<td>More clinical than financial</td>
<td>0.091</td>
<td>-0.126 – 0.308</td>
<td>0.412</td>
<td>77</td>
</tr>
</tbody>
</table>
Plots indicating the association between deprivation, or ethnicity, and flu vaccination uptake rates

Seasonal flu vaccination rate in patients aged 65+ years

Regression coefficient: -0.0009
95% CI: -0.0015 to -0.0007
p <0.001

Seasonal flu vaccination rate in patients aged <65 years

Regression coefficient: 0.0001
95% CI: -0.0017 to 0.0004
p = 0.380
Ethnicity, represented by proportion of white patients

Seasonal flu vaccination rate in patients aged 65+ years

Regression coefficient: 0.015
95% CI: -0.014 to 0.043
p = 0.305

Seasonal flu vaccination rate in patients aged <65 years

Regression coefficient: -0.140
95% CI: -0.167 to -0.114
p < 0.001
ANNEX 4

Results of public and patient feedback

\( n \leq 11 \)
Our studies show that some GP practices use publicity materials which are supplied by the vaccine manufacturers, whereas other use publicity information supplied by the NHS. What source of publicity information you would prefer to be used?

- Would strongly prefer to see information from the vaccine manufacturer
- Would slightly prefer to see information from the vaccine manufacturer
- No preference
- Would slightly prefer to see information from the NHS
- Would strongly prefer to see information from the NHS

Our studies show that GP practices that give patients a timed appointment for getting their vaccine have better uptake than those who operate open or “walk-up” sessions. Do you agree that all practices should offer timed appointments for getting their vaccine?
Our studies show that GP practices that offer flu vaccinations in the evenings or at weekends DO NOT achieve higher rates than those who do not offer appointments at these times. Is it important to you to be able to get an evening or weekend appointment for the flu vaccine?

- Yes: 5
- I don't mind: 2
- No: 2

Many GP practices have told us that NATIONAL PUBLICITY CAMPAIGNS (from the NHS or the Department of Health) make people MORE likely to come in for their vaccination. However, last year there was no national campaign to tell people about the flu vaccine. To what extent do you think that previous national campaigns about the flu vaccine have encouraged you to get vaccinated yourself (if applicable)?

- Strongly encouraged me
- Slightly encouraged me
- Made no difference to me
- Slightly discouraged me
- Strongly discouraged me
Many GP practices have told us that national PRESS STORIES about flu or the flu vaccine can change how likely it is that people will come in for their vaccination. Have media stories about flu or the flu vaccine ever influenced your feelings about having a flu vaccine?

If you answered YES, how have media stories on the whole changed how likely you are (or were) to have a flu vaccine?
The Department of Health advises that all front-line health care staff should receive the vaccine too, in order to protect them and their patients. Our studies show that practices whose staff promote and receive the flu vaccine amongst themselves are more likely to achieve higher rates of uptake in their patients. Is it important to you to know whether staff at your practice have received the flu vaccine themselves?

If you are happy to do so, please tell us ...

- Do you normally receive an invitation to receive the flu vaccine?
- Are you under 65 years of age?