Midwives’ influenza vaccine uptake and their views on vaccination of pregnant women

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ABSTRACT

Background Pregnant women in England are now offered seasonal influenza vaccine. Midwives could be influential in promoting this, but specific information on their views on the policy and their role in its implementation is lacking.

Methods London midwives were surveyed for their views on the new policy and their own vaccine uptake, using an anonymously self-completed semi-structured online survey via a convenience sampling approach.

Results In total, 266 midwives responded. Sixty-nine percent agreed with the policy of vaccinating all pregnant women. Seventy-six percent agreed that midwives should routinely advise pregnant women on vaccination, but only 25% felt adequately prepared for this role. Just 28% wished to be vaccinators, due to concerns about increased workload and inadequate training. Forty-three percent received seasonal influenza vaccine themselves. Major reasons for non-uptake were doubts about vaccine necessity (34%), safety (25%) and effectiveness (10%); and poor arrangements for vaccination (11%). Suggested strategies for improving their own uptake included better access to evidence of effectiveness (67%) and improved work-based vaccination (45%).

Conclusions London midwives support influenza vaccination of pregnant women, but are more willing to give advice on, than to administer, the vaccine. Midwives’ own influenza vaccine uptake could improve with more information and easier access to vaccination in their workplace.

Keywords influenza, London, midwives, policy, pregnant, survey, uptake, vaccine

Introduction

Pregnancy is a risk factor for severe influenza and complications, particularly the 2009 (A)H1N1 strain associated with increased risks of hospitalization,1 preterm delivery2 and mortality3 among pregnant women. Influenza vaccination is recognized as a safe intervention in pregnancy that significantly protects pregnant women4–6 and their babies.7 Therefore, in October 2010, the government expert advisory body (the Joint Committee on Vaccination and Immunisation, JCVI) in England recommended that all pregnant women should be routinely offered seasonal influenza vaccination.8

In healthcare workers, evidence suggests that seasonal influenza vaccination protects the workers9 and improves outcomes in patients, including evidence of mortality reduction.10–12 However, healthcare workers generally have low uptake of seasonal influenza vaccination.13 While much is known about healthcare workers in general, there is very limited information specifically on midwives, who are probably the most influential group of healthcare workers with regard to pregnant women. A Canadian survey found that seasonal influenza vaccine uptake by midwives (27%) was much lower than among all healthcare workers in the same area.14 It is, therefore, important to understand the views of midwives in England on influenza vaccination, particularly regarding routinely offering seasonal influenza vaccination to pregnant women.

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The survey was based on a service-driven need for information to help shape local services and support planning and policy delivery in London. The primary objective was to assess the views of midwives on seasonal influenza vaccination of pregnant women and their own role in implementing the policy. The secondary objective was to explore the factors influencing the uptake of seasonal influenza vaccine among midwives in London in 2010/11.

**Methods**

The London Regional Epidemiology Unit of the Health Protection Agency (HPA) conducted a survey of midwives working in London, using a convenience sampling approach whereby senior midwives were requested to forward an electronic survey link to their staff.

The survey instrument was an anonymously self-completed, semi-structured questionnaire on the SurveyMonkey platform. The questions were developed from a review of the relevant literature and an existing influenza vaccination survey instrument that was validated among London healthcare workers during the 2009 pandemic. Some questions were adopted from a section of the ‘Flu Watch’ survey instrument on determinants of vaccination in healthcare workers. The questionnaire was pre-tested by health protection and midwifery colleagues. The survey questions are presented in Table 1.

In accordance with the guidelines of the National Research Ethics Service, no ethical review was required as the work was undertaken primarily for service development and improvement.

An invitation e-mail (containing a link to the Web-based questionnaire) was sent to the head of each London Midwifery Unit. They were asked to forward the e-mail to all the midwives in their Units, with two subsequent reminder e-mails. The survey ran from June to August 2011.

The responses were exported into Microsoft Excel. The results are presented as proportions of responders to individual questions. Unless otherwise stated, statistical procedures were conducted with QuickCalcs (GraphPad, Inc., http://www.graphpad.com/quickcalcs/).

**Results**

**Survey responses and characteristics of respondents**

In total, 266 midwives responded to the survey. As the number of midwives who received the invitation to participate could not be determined (due to limitations of the goodwill-based convenience sampling approach), an actual response rate could not be computed. Using the Midwifery Local Supervising Authority (LSA) estimate of midwives in London, the survey’s margin of error is 5.8% at the 95% confidence level (Raosoft tool http://www.raosoft.com/samplesize.html).

Most of the respondents were women (233/237, 98%). It was noted that 82% (193/237) worked in hospital and 35% (82/237) in the community, with some working across more than one setting. The mean age of respondents was 43.4 years (SD 10.49; 95% CI 42.0–44.7), very close to the average age of midwives of 43.0 years in England. The respondents had a broad range of professional experience as judged by the number of years worked as a midwife (Table 2), 64% having >10 years of experience.

**Views on influenza vaccine policy**

Just over two-thirds of respondents (183/266, 69%) agreed that the policy of vaccinating all pregnant women with seasonal influenza vaccine is justified by current influenza knowledge and evidence; a fifth (52/266, 19%) were unsure, while ≏1 in 10 (31/266, 12%) disagreed. Only 58% (154/266) said that they would themselves accept seasonal influenza vaccine if they were pregnant; 31% (83/266) would reject it while 11% (29/266) were neutral.

**Views on the role of midwives in advising pregnant women on influenza vaccination**

Views varied as to whether midwives should have a routine role in giving influenza vaccine advice and information to pregnant women. The majority 76% (203/266) agreed that this should be the case, while the rest either disagreed or were neutral. On the question of who should have the main responsibility for this function (with multiple responses allowed), most of the respondents (81%, 214/266) felt that general practice was the appropriate setting for advice, 61% (161/266) thought it should be a routine midwifery function and 21% (57/266) preferred it as a specialist role within midwifery. Just 44% (118/266) said that they had been specifically asked to take up this function as part of their work. Nevertheless, 65% (173/266) reported that they had indeed given such information or advice during 2010/11; yet just 26% (68/266) felt well prepared to perform the role.

**Views on the role of midwives in vaccinating pregnant women**

The respondents showed much less enthusiasm for the role of vaccinating pregnant women: only 35% (92/262) felt that midwives should routinely undertake this role, with 46% (121/262) saying no, while others were neutral. Just 28% (73/262) preferred to be vaccinators; 46% (120/262) did...
Table 1 Questions

On the policy
In view of current knowledge about Flu and Flu vaccine, do you personally feel that giving Flu vaccination to pregnant women is really justified? Yes/No/Neutral.
If you were pregnant, would you have the Flu vaccine? Yes/No/Neutral

Giving advice
Do you think that midwives (after appropriate training) should be routinely expected to give advice or information on Flu vaccination to pregnant women? Yes/No/Neutral
Who should have the main responsibility for giving advice or information on Flu vaccination to pregnant women who access midwifery services? (Please tick all the answers that apply). Routine role for midwives in maternity services/Specialist role within maternity services/General Practice/Don’t know/Other (please specify)
Have you been specifically instructed that it is part of your role to give advice or information on Flu vaccination to pregnant women? Yes/No
Do you believe that you are well prepared to give advice or information on Flu vaccination to pregnant women? Yes/No/Neutral
Have you given advice or information on Flu vaccination to any pregnant women during the 2010/11 Flu season? Yes/No

Giving vaccine
Do you think that midwives (after appropriate training) should be routinely expected to administer Flu vaccination to pregnant women? Yes/No/Neutral
Who should have the main responsibility for administering Flu vaccination to pregnant women who access midwifery services? (Please tick all the answers that apply). Routine role for midwives in maternity services/Specialist role within maternity services/General Practice/Other (please specify)
In your own work as a midwife, would you like to participate in giving Flu vaccination to pregnant women? Yes/No/Neutral
If NO: Please indicate why you would not like to participate in giving Flu vaccination to pregnant women. (Please tick all the answers that apply). I do not feel adequately trained in vaccination and immunization/I am not convinced that Flu vaccination is safe for pregnant women/I am not convinced that pregnant women need Flu vaccination/I am not sure about the governance issues in vaccination and immunization/I just prefer not to participate in giving vaccination/If something goes wrong, midwives would be blamed/It would overload my workload/It would involve too much extra administrative work/It would mean more work without any additional pay/I believe GPs already get paid to perform this role/My particular work setting makes it difficult/Other (please specify)
Did you give the seasonal Flu vaccine to any pregnant women in the 2010/11 Flu season? Yes/No
If YES: did you encounter any of the following reactions or feedback from pregnant women that you offered Flu vaccine to? (Please tick all the answers that apply). Surprise at being offered Flu vaccine (they were unaware that it was needed)/Anxiety about the safety of Flu vaccine/Anxiety about having any kind of vaccine while pregnant/Complete refusal to have the vaccine/Early response and quick acceptance even though they were previously unaware of it/Early response and quick acceptance as they were already aware of it/Other (please specify)
If YES: looking back now, do you think that you were adequately prepared for the role of giving Flu vaccine to pregnant women? Yes/No/Neutral

Uptake
Have you had the seasonal Flu vaccine since September 2010? Yes/No
If YES: where did you get the seasonal Flu vaccine? Your own GP/Occupational Health service provided by your employer/Provided informally by a colleague/Other (please specify)
If YES: at the time that you received the seasonal Flu vaccine, did you feel that: you had sufficient information about the vaccine/The vaccine was given at a time that was convenient for you/The physical environment allowed your privacy and confidentiality to be maintained/Other (please specify)
If YES: why did you have the seasonal Flu jab? (Please tick all the answers that apply). To protect myself from flu/To protect my family from flu/To protect patients from flu/To help protect the NHS from staff sickness and associated service pressures/To set an example to patients/work colleagues/I believe the vaccine is safe/I am convinced that the vaccine is effective in preventing flu/My own doctor recommended that I have the vaccine/Other (please specify)
If NO: what was your SINGLE most important reason for not having the seasonal Flu vaccine in the 2010/11 Flu season? (Please tick only ONE answer). It was not offered to me/I simply didn’t have the time to go for it/The location for vaccination was not convenient for me/Vaccination was offered at inconvenient times of the day/Vaccination was by appointment only. I needed a drop-in session/I intended to have it, but I forgot to go/I did not think that I was eligible to get it/I did not think that I was at risk of getting flu/I did not think that I was at high risk of getting complications of flu, even if I got the illness/I have had Flu vaccine before and it made me feel ill/I was not convinced about its clinical effectiveness/I was worried about side effects/I was concerned that the vaccine itself could cause me to get flu/I have a specific medical contraindication to this vaccine/I was not given enough information about the vaccine/I am very hygienic in my practice, so I present no risk to others and therefore I do not need vaccine/I am a healthy person with a good immune system/I believe that natural infection provides me with stronger immunity than vaccination/I just do not trust vaccines/I was pregnant at the time and was concerned about the vaccine’s safety in pregnancy/Other (please specify)
not want to vaccinate; and others took a neutral stance. The reluctance to vaccinate was attributed to a range of concerns, including anxieties about workload, compensation, training, safety and potential liabilities (Table 3). In a question with multiple answers permitted, most midwives (216/266, 82%) felt that general practitioners should be routinely tasked with administering the vaccine to pregnant women, while smaller proportions felt that the main responsibility should be with midwives in either a routine (78/262, 30%) or specialist role (75/262, 29%).

Only a small proportion (15%, 38/259) of respondents reported having actually vaccinated pregnant women. Further responses from this small group showed that most of them (23/37), in hindsight, did not feel (or were unsure) that they were adequately prepared for the responsibility. These midwives also indicated that many of the pregnant women that they offered vaccine to responded with a range of unfavourable reactions, most commonly with anxieties about the safety of vaccines in pregnancy and surprise at being offered this vaccine.

Views on vaccine uptake by midwives

Of the midwives who answered whether they received seasonal influenza vaccination in 2010/11, fewer than half (43%, 107/249) indicated that they had. Among those who received vaccine and indicated where they received it, most (83/105, 79%) had obtained it from occupational health services at their workplace; 14% (15/105) received it at their own general practice surgery; and 7% (7/105) through other arrangements such as informal provision by colleagues and special campaigns. For vaccinated midwives, the most common reasons given for accepting seasonal influenza vaccination were a wish to protect themselves (88/105, 84%), their patients/clients (79/105, 75%) and their own family (55/105, 52%), as well as wanting to contribute to maintaining a healthy healthcare workforce during the influenza season (61/105, 58%). The vast majority (>85%) agreed that they had received sufficient information about seasonal influenza vaccination and that vaccine had been made available to them at a convenient location and time. Receiving vaccination in the 2010/11 season was strongly associated with the willingness to accept it if pregnant ($\chi^2$ test, $P<0.0001$). It was also significantly associated with a positive response to whether midwives should play an active role in...
implementing the policy, by providing advice to pregnant women \( (P = 0.017) \) or administering vaccine \( (P = 0.041) \).

Those respondents who had not received seasonal influenza vaccine were asked to give the single most important reason for their decision, which fell into three broad categories (Table 3). The most common category comprised a range of beliefs that made the midwife conclude that influenza vaccination was not appropriate for them. This large category included doubts about the necessity for the vaccine \( (49/143, 34\%) \), concerns regarding its safety \( (36/143, 25\%) \) and uncertainty about its effectiveness \( (14/143, 10\%) \).

The second category comprised logistical issues that prevented or discouraged vaccine uptake \( (16/143, 11\%) \)—such as vaccination only being offered at inconvenient times or simply not having time to attend a vaccination session. The third category involved difficulties around information and communication, with some respondents not having been offered vaccine, while others having received insufficient information.

On the views of midwives regarding how to improve their personal uptake of seasonal influenza vaccine, the key suggestions were for midwives to receive more information on vaccine effectiveness and for employers to deliver more practical and accessible vaccination clinics in the workplace as well as special campaigns to promote uptake (Table 3).

**Discussion**

**Main findings of this study**

The majority of survey respondents agreed with the UK policy of universal influenza vaccination of pregnant women. However, they expressed significant reservations about their own role in delivering the policy. While there was healthy support for midwives to routinely advise pregnant women on influenza vaccination, there was less support for midwives to be vaccinators, due to a range of concerns about increased workload, lack of training and worries about governance issues.

The survey found a seasonal influenza vaccination rate of 43% among responding midwives. The key reasons for uptake were to protect themselves, their patients and their own family. The main reasons for declining vaccination were the belief that the vaccine was unnecessary or unsafe and poor arrangements for workplace vaccination. On the basis
of the respondents’ key views on measures that employers could adopt to boost uptake included providing access to information and evidence of the benefits of vaccination, effectively publicizing workplace vaccination, making vaccination available at more convenient times and places and where appropriate, providing mobile vaccinators.

**What is already known about this topic?**

Low uptake of seasonal influenza vaccine by healthcare workers is well recognized, with rates ranging from <10% to ~40%. In 2010/11, the official vaccine uptake rates in frontline healthcare workers were 35% across England and 31% in London. Previously reported factors for the low uptake by healthcare workers include a belief that workers are immune and therefore do not need vaccination; doubts about vaccine efficacy and safety; dislike of injections; and vaccination clinics for staff being unavailable or inconveniently delivered.

**What this study adds**

First, this work provides some early insight into a relatively new public health policy and service delivery area. To our knowledge, there is no published work specifically assessing the views of midwives on a policy of universal vaccination of pregnant women. Mass vaccination of pregnant women is a recent development, and represents a policy shift from the previously accepted view that routine vaccination in pregnancy should be avoided. The survey indicates that London midwives have a largely favourable view of this new policy. This is crucial, since midwives are uniquely placed to advise on, and hence influence, the healthcare decisions of pregnant women. Midwives’ views will, therefore, impact on the outcomes of any vaccination programme in pregnant women. The survey findings also reveal midwives’ key concerns about what part they might play in implementing the policy.

Secondly, this is one of the few surveys (to our knowledge the first in the UK) to specifically seek the views of midwives on their own uptake of seasonal influenza vaccination. Although there is a body of literature on influenza vaccination in healthcare workers in the UK, it has focussed mostly on sectors such as acute settings and care homes. The lack of emphasis on midwives is understandable because until recently, healthy pregnant women were not recommended for routine seasonal influenza vaccination. Accordingly, vaccination data on healthcare workers in England for 2010/11 did not consider midwives separately, but instead they were embedded within the broad category of ‘all qualified nurses’. For local service leads and employers of midwives, the survey findings could aid planning and policy implementation, having raised key issues that need to be addressed if local managers are to expect midwives to give vaccine advice (and/or administer vaccine) to pregnant women. Surprisingly, most respondents indicated that they were not specifically asked to give vaccine advice as part of their work. Employers and regulators need to issue clear and specific information, direction and guidance to midwives, and provide them with appropriate and effective training.

It is significant that midwives largely felt that general practice would be the appropriate place for vaccination of pregnant women. Local midwifery service planners need to explore means of actively engaging general practitioners (GPs), and joint work between the relevant GP and midwifery professional bodies may help to raise awareness and enhance the quality of information to pregnant women. Also of note is that some pregnant women were indeed surprised to be offered seasonal influenza vaccine (as reported by midwives who had functioned as vaccinators). While this is not wholly unexpected for a relatively new policy, it highlights a need for healthcare workers (whether GPs and/or midwives) to discuss the benefits of influenza vaccination at the first ante-natal visit.

Although the influenza vaccine uptake rate of 43% by midwives in this study is low in absolute terms, it is still higher than that for the ‘all qualified nurses’ category (31% nationally and 26% in London). In contrast, a Canadian survey on the uptake of seasonal influenza vaccine in midwives showed an uptake rate of only 26.9%, which was much lower than the general level of 60% among all healthcare workers in the same study. However, those data were obtained prior to the influenza pandemic and its attendant impact on pregnant women, and may therefore not reflect current views.

On the one hand, it is encouraging that 58% of midwives would themselves accept seasonal influenza vaccine if they were pregnant, which is an appreciable positive response for a new policy that contradicts the established tendency to avoid vaccination during pregnancy. On the other hand, however, it is also important to note this implies that a sizeable proportion of midwives would decline vaccination if they were pregnant, indicating that there remains a significant public health communication gap that needs to be addressed. Our findings have contributed to recommendations for local policy makers and employers on how to boost vaccine uptake levels, including proposals for better engagement with midwives through direct, open and transparent communication, and practical suggestions for working with staff to develop more effective publicity and provision arrangements for work-based seasonal influenza vaccination.

Finally, contrary to suggestions that seasonal influenza vaccination of healthcare workers should be considered as an ethical responsibility or indeed an obligatory
requirement,\textsuperscript{25} most midwives in this survey did not agree with mandatory influenza vaccination. This is a controversial area, and there is evidence that some health administrators do not favour this position.\textsuperscript{26}

**Limitations of the study**

Surveys are a common research method amongst midwives,\textsuperscript{27} and this study allows a valuable snapshot of the respondents’ views. However, the limits of any cross-sectional study apply to this survey; for example, it is unable to assess possible changes and shifts in views and opinions over time, such as any attitude changes due to the on-going impact of influenza on pregnant women. Surveys are also subject to selection and representation bias; for example, the respondents in this survey might be largely those who are particularly interested in immunization issues.

Almost two-thirds of this survey’s respondents had >10 years of midwifery experience, contrasting with \(~70\%\) of midwives in England being in the entry level to moderately experienced cadres.\textsuperscript{22} This suggests that senior, more experienced practitioners were disproportionately represented among the respondents compared with the general population of midwives.

A convenience sampling approach was used, based on access to midwives via an email cascade sent through the 27 heads of London midwifery units. Thus, invitations to participate in this survey were cascaded to midwives primarily via the goodwill of seniors, and so it was not feasible to compute a conventional response rate as the denominator (the number of midwives who actually received survey invitations) was unknown. It is difficult, therefore, to state how representative the sample is of all midwives. Nevertheless, the findings provide a useful insight into midwifery views for local policy makers. The data presented here would also serve as a baseline from which to further explore this subject in the future.

**Early impact of the survey and lessons learned**

Notwithstanding the limitations, the findings of this survey have engaged the attention of local service leads and helped to contribute to developing a comprehensive pack of support materials for London midwives. There has been some wider interest from service planners outside London who have enquired about aspects that they consider potentially applicable to their locality. Initial dissemination of the survey findings to health protection practitioners also generated some national media interest.

Going forward, this study provides a useful baseline and key lessons for planning future surveys in this area; particularly to expand response and improve representativeness, e.g. by focussing on systematically selected midwifery units and directly engaging Unit Heads for a more comprehensive sampling strategy.

**Conclusion**

The majority of midwives agreed with the policy to vaccinate pregnant women and welcomed a role in providing information and advice. However, only a limited minority wished to be vaccinators due to concerns about workload and gaps in training. For employers and local service planners, the findings indicate areas of opportunity for improved engagement with midwives to meet mutual needs and enhance services. Adequate information and training are needed to better support midwives for a more proactive public health role to encourage influenza vaccination. This will be crucial in coming years as the views and practices of midwives are likely to become increasingly important under the emerging health service framework in England, with the growing shift to community-based services leading to greater roles, responsibilities and influence for frontline staff.

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