

Factors influencing the uptake of influenza vaccine vary among different groups in the hard-to-reach population

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Influenza continues to cause significant morbidity and mortality in Australia.¹ Certain groups within the population are identified as being at higher risk of complications related to influenza infection. They include people aged >65 years; children aged <5 years; Aboriginal and Torres Strait Islander Peoples; people with Down syndrome; pregnant women; homeless people; smokers; and those with chronic diseases and other health conditions such as cardiac disease, obesity, chronic respiratory conditions, chronic neurological conditions, immunocompromised conditions, chronic liver disease and diabetes mellitus.^{2,3} While there is no unified definition of 'hard-to-reach' populations, studies exploring influenza vaccine coverage for this group have generally included ethnic minorities, immigrants and homeless people.⁴⁻⁶ For the purpose of this study, we have defined 'hard-to-reach' population as those who do not access healthcare services due to a number of factors, such as being from an ethnic minority, homeless or in financial crisis. This population will invariably overlap with those who are at higher risk of severe influenza due to the conditions outlined prior.

Under the National Immunisation Program, influenza vaccines are funded for individuals with certain comorbidities predisposing them to severe influenza such as diabetes, severe asthma, cardiac or respiratory comorbidities; peoples aged >65 years; pregnant women; and since 2019, Aboriginal and Torres Strait Islander Peoples aged six months and above.⁷

Abstract

Objective: This report describes a mobile outreach influenza immunisation program for vulnerable populations in a resource-rich setting. It explores vaccine recipients' demographics, comorbidities and vaccination histories, and the factors influencing their decision to receive vaccine during outreach.

Methods: Teams of nurse immunisers visited and provided influenza vaccines to clients from 21 sites (18 community centres for migrants, refugees and the homeless; and three outpatient clinics). Risk factors for severe influenza, vaccination histories and perceived barriers and facilitators to vaccines were collected from vaccine recipients.

Results: A total of 1,032 vaccine recipients participated in the survey with responses collected from April to October 2018. Of these, 54% reported at least one risk factor for severe influenza. Sixty per cent of recipients had not received an influenza vaccine in 2017, with most of them reporting 'not worried about influenza' as a reason. Pregnant participants most frequently reported a healthcare provider's recommendation as the reason to receive the vaccine.

Conclusion: An outreach program comprising of a means of taking vaccines to the population was a successful strategy to deliver influenza vaccines to high-risk populations. It needs to be considered in the full range of delivery models to improve influenza vaccine coverage, even in resource-rich settings.

Implication for public health: Strategies reaching out to vulnerable populations are crucial to maximise vaccine uptake.

Key words: influenza, immunisation, vaccine uptake, hard-to-reach population, outreach programs

Despite the availability of free influenza vaccine for these high-risk groups, there is still a significant gap in vaccine coverage. In a 2015 Australian study of those admitted to hospital with influenza, Cheng and colleagues estimated vaccine coverage of 80% in patients aged >65 years, 58% in non-elderly adults with medical comorbidities; and 27% in children <16 years old with medical comorbidities.⁸ They further estimated that complete vaccination would have resulted

in 85 (9%) fewer admissions of people aged >65 years, 82 (19%) fewer admissions of non-elderly patients with comorbidities and 41 (32%) fewer paediatric admissions with confirmed influenza (based on the 956 elderly, 551 non-elderly and 138 paediatrics patients screened in the study).⁸ Furthermore, vaccination coverage has been shown to be significantly lower in the immigrant population aged >49 years as compared to Australian-born residents of the same

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age.⁹ Influenza vaccine coverage among pregnant women is also an area where improvement could be achieved. The annual Victorian Perinatal Services Performance Indicators report a state-wide influenza vaccine coverage of 54%, with the vaccine coverage in certain health services as low as 30%.¹⁰ Despite a strong recommendation in the Australian Immunisation Handbook for homeless people to receive the vaccine, there is a lack of influenza vaccine coverage data in this group.² However, a UK study has shown that influenza vaccine coverage of homeless people with other risk factors for severe influenza was 23.7% in those aged 16–64 years, and 42.9% in those aged 65 years and older. This is lower than the UK national coverage in the corresponding age group with risk factors for severe influenza (53.2% in those aged 16–64 years, and 74% in those aged 65 years and older).⁶

Factors that influence influenza vaccine uptake are complex in hard-to-reach populations and groups at high risk of severe influenza, given these two groups are heterogeneous and they frequently overlap. A survey looking at the determinants of influenza vaccine coverage in the hard-to-reach populations in New York City included people from the ethnic minorities group, undocumented immigrants, sex workers and injecting drug users.⁵ This survey reported that, among this population, having access to routine medical care and receipt of social services were significantly associated with receiving influenza vaccines in the previous year. More than 70% of those not vaccinated previously were interested in being vaccinated, and the covariates that were significantly associated with interest in vaccination included being from a racial minority, having a low annual income, having ever been homeless, not receiving routine medical care, and having no health insurance or government insurance. This finding suggests that having access to medical care and immunisation service is an important determinant of vaccine uptake in hard-to-reach populations. On the other hand, factors identified in the published literature that reduce vaccine uptake in the at-risk population include vaccine recipients' underestimation of risk and morbidity of influenza and lack of recommendation by healthcare workers.^{11–13} Overall, the complexity and variability in the factors influencing influenza vaccine uptake in hard-to-reach and at-risk populations warrant

innovative, context-specific vaccine delivery programs that involve local stakeholders to optimise vaccine uptake.

Adults and children in Australia can receive vaccinations from a range of different healthcare providers including their general practitioners (GP), hospital clinics, pharmacists (for people aged 16 years and over) or community centres.¹¹ However, gaps in coverage remain for high-risk groups who do not have a GP, do not attend hospital clinics or are unaware of council vaccination delivery programs.¹⁴ In 2017, The Southern Eastern Melbourne Primary Health Network (SEMPHN) and Monash Immunisation initiated a mobile immunisation project 'VaxReach' with the aim of identifying hard-to-reach populations and providing a mobile immunisation service to this population. Key stakeholders met and discussed priority populations and potential community sites that would benefit from this initiative.¹⁴ These key stakeholders included those funding the program, those with knowledge about hard-to-reach and high-risk populations and those delivering the program.

This pilot immunisation program delivered 520 influenza vaccines to clients from the selected community sites where priority populations were based.¹⁴ Based on self-completed questionnaires by these clients, 45% of them had a risk factor for severe disease and 61% of them had not received influenza vaccination in the past 12 months. This pilot project demonstrated that with engagement and collaboration among key stakeholders, influenza vaccines can be successfully delivered to hard-to-reach populations at risk of severe influenza.

The aim of the study reported in this paper was to better understand the factors associated with uptake among vulnerable populations and differences between these groups.

Methods

The establishment of primary healthcare networks is an Australian Government initiative to improve primary healthcare. The SEMPHN covers the south-eastern suburbs of metropolitan Melbourne in Victoria, Australia. Monash Health is a multi-site tertiary health network providing in-patient, outpatient and community health services across the same region within Melbourne. Monash Immunisation is an immunisation program run by Monash Health. Building on the 2017

VaxReach program project, key stakeholders from these two organisations created a list of potential community centres and hospital-based clinics to participate in the 2018 mobile influenza vaccination program.¹⁴ Sites in the list were selected based on the key stakeholders' perceived potential of these sites to access hard-to-reach populations at risk of severe influenza. The three residential aged care facilities from the 2017 program were not included in the shortlist, as these sites were noted in the pilot project to already have established guidelines and existing infrastructure for vaccine delivery from their primary healthcare providers. The primary contact person of each site was contacted to seek their interest in participating in the 2018 program.

Sites that agreed to participate in the program were visited on at least one occasion, with promotional material sent to the site before each visit. Two nurse immunisers attended each site on the day of the visit. Influenza vaccines were offered and provided to clients at each site. Data including immunisation type and date of administration were entered into the Australian Immunisation Register, the electronic medical record at Monash Health, and the Immunisation Program System. In addition, all of the vaccine recipients were invited to complete a 10-question anonymous questionnaire that collected information about their vaccination history, perceived barriers and facilitators to receiving vaccination, and risk factors for severe influenza. Data from the questionnaires were entered into the electronic platform Survey Monkey. All recipients received a text message within 72 hours of vaccination as part of safety surveillance via the SmartVax program.

Descriptive analysis was performed on the responses to questions in the survey. Differences in responses to vaccination history, and clients' perceived barriers and facilitators to receiving vaccination were then analysed according to groups as follows: 1) pregnancy status; 2) comorbidities; 3) smoking status; 4) age <5 years; 5) age >65 years; and 6) site where survey was conducted. The sites were categorised into three categories: community centres providing support for the homeless or those in crisis; community centres providing support for refugees and migrants; and hospital-based clinics for diabetic or pregnant outpatients.

Results

During the 2018 influenza season, 21 sites agreed to participate in the project. These included seven community centres providing support to refugee and migrant populations ('refugee and migrant community centre'), 11 community centres providing support to the homeless or those in crisis ('crisis community centre'), and three outpatient clinics run by Monash Health. Two of these clinics were affiliated with Dandenong Hospital (a major teaching and referral hospital in the south-east of the Melbourne metropolitan area) and targeted diabetic and pregnant patients, respectively. The third clinic was a general outpatient clinic in Pakenham, a south-eastern suburb of Melbourne.

In total, 1,069 vaccines were administered to clients across the 21 sites. Of the vaccine recipients, 1,032 completed the 10-item questionnaire. Out of the 1,031 participants who provided information on the location where surveys were conducted, 29% (295/1,031) were clients from crisis community centres, 34% (354/1,031) were from refugee and migrant community centres, 14% (145/1,031) were from the women's clinic, 9% were from the diabetes clinic, and 14% were outpatients of an unspecified location. Overall, 53% (546/1,032) of the participants had at least one risk factor for severe influenza. Twenty-two per cent (229/1,032) of participants had at least one comorbidity that is a risk factor for severe influenza, 16% (162/1,032) of participants were pregnant and 12% (119/1,032) reported being an active smoker. In addition, 10% (102/1,032) of the participants were aged 65 years and older. Those younger than 18 years of age made up only 12% of participants, with 6% (65/1,032) aged five or younger. Of the 295 participants recruited from crisis community centres, 51% (150/295) had at least one risk factor for severe influenza, as compared to 38% (135/354) of participants from refugee and migrant centres. On the other hand, the proportion of participants recruited from the women's clinic and diabetes clinic with at least one risk factor for severe influenza was 69% (100/145) and 81% (74/91), respectively (see Table 1).

Of the 1,032 participants, more than one third (n=376) had never previously received the influenza vaccine. In addition, almost 60% (602/1,032) of the clients reached by this program did not receive an influenza vaccine in 2017. The proportion of participants who

did not receive an influenza vaccine the previous year in each location was as follows: 49% (144/295) of the participants from crisis community centres, 61% (217/355) from refugee and migrant centres, 70% (102/145) from the women's clinic and 54% (49/91) from the diabetes clinic. In addition, 56% (66/119) of smokers also reported not having received a vaccine in 2017.

All participants were asked to provide a reason why they had not received an influenza vaccine in 2017. Of the 1,032 participants, 86 participants did not provide a response, while 388 participants selected 'Not applicable, I have already had my influenza vaccine' as a response. Of the remaining 558 responses, 13 participants provided a

contradictory response (i.e. they selected 'Yes' to receiving an influenza vaccine in 2017 but selected a response); and seven participants provided multiple responses. Of the remaining 538 responses, the most common reason provided was 'Not worried about getting influenza' (33%, 178/538), followed by 'Other' (29%, 154/538), 'Did not have time to go to the doctor' (18%, 97/538), 'It was not recommended by the doctor' (13%, 72/538), and 'I couldn't afford it' (7%, 37/538), see Table 2. Of the 154 participants who selected 'Other' as a response, 44% (38/154) did not specify a reason, 16% (25/154) cited having difficulty accessing vaccines, 14% (22/154) had misconceptions about influenza or the vaccine, 12% (19/154) were unaware of the

Table 1: Participants categorised by site of recruitment and risk factors for severe influenza.

Risk factors	Crisis centre (%) ^b	Refugee and migrant centre (%) ^b	Women's Clinic (%) ^b	Diabetes Clinic (%) ^b	Clinic (not specified) (%)	Total for each risk factor (%) ^a
No risk factors	145 (49)	219 (62)	45 (31)	17 (19)	59 (40)	485 (47)
At least one	150 (51)	135 (38)	100 (69)	74 (81)	87 (60)	546 (52)
Diabetes	38 (13)	30 (8)	10 (7)	53 (58)	24 (16)	155 (15)
Liver	5 (2)	3 (1)	2 (1)	4 (4)	1 (1)	15 (1)
Kidney	3 (1)	4 (1)	2 (1)	2 (2)	3 (2)	14 (1)
Heart	19 (6)	13 (4)	3 (2)	8 (9)	3 (2)	46 (4)
Lung	28 (9)	11 (3)	5 (3)	8 (9)	6 (4)	58 (6)
Other	0 (0)	0 (0)	0 (0)	0 (0)	1 (1)	1 (0)
Pregnant	4 (1)	7 (2)	78 (54)	27 (30)	46 (32)	162 (16)
Smoker	62 (21)	26 (7)	8 (6)	11 (12)	12 (8)	119 (12)
Age >65	39 (13)	42 (12)	0 (0)	14 (15)	7 (5)	102 (10)
Age <5	10 (3)	29 (8)	11 (8)	6 (7)	9 (6)	65 (6)
Total for each centre (%) ^a	295 (29)	354 (34)	145 (14)	91 (9)	146 (14)	

Notes:

a: Percentage over total participants who provides a location= 1,031

b: Percentage over total participants in each site

Table 2: Participants' reasons for not having influenza vaccine in 2017.

Site	Risk factor for severe influenza	Not worried about influenza (%)	Did not have time (%)	It was not recommended (%)	I couldn't afford it	Other (%)
Total (n=538)		178 (33)	97 (18)	72 (13)	37(7)	154 (29)
Crisis centre	Total (n=124)	52 (42)	22 (18)	11 (9)	5 (4)	34 (27)
	At least one risk factors (n=53)	22 (42)	8 (15)	4 (8)	1 (2)	18 (34)
	No risk factors (n=71)	30 (42)	14 (20)	7 (10)	4 (6)	16 (23)
Refugees and Migrant Centre	Total (n=198)	49 (25)	42 (21)	29 (15)	25 (13)	53 (27)
	At least on risk factor (n=62)	12 (19)	7 (11)	12(19)	5(8)	26(42)
	No risk factor (n=136)	37 (27)	35(26)	17 (13)	20(15)	27 (20)
Women's Clinic	Total (n=92)	35 (38)	13(14)	16 (17)	6(7)	22 (24)
	At least one risk factor (n=68)	26 (38)	7(10)	14 (21)	2 (3)	19 (28)
	No risk factor (n=24)	9 (38)	6(25)	2 (8)	4 (17)	3 (13)
Diabetes Clinic	Total (n=42)	13 (31)	7(17)	7 (17)	0(0)	15 (36)
	At least one risk factor (n=40)	12 (30)	7(18)	7 (18)	0(0)	14 (35)
	No risk factor (n=2)	1 (50)	0 (0)	0 (0)	1(0)	1 (50)
Clinic Not specified	Total (n=82)	29(35)	13(16)	9(11)	1(1)	30(37)
	At least one risk factor (n=48)	15(31)	5(10)	4(8)	0(0)	24(50)
	No risk factor (n=34)	14(41)	8(24)	5(15)	1(3)	6(18)

availability of the influenza vaccine, and the reasons provided by the remaining 6% (10/154) were not clear. The breakdown of responses according to the site of recruitment can be found in Table 2.

The main reason reported by participants for receiving an influenza vaccination in 2018 was concern about getting influenza (41%, 426/1,032). When responses were analysed according to sites, concern about getting influenza remained the most commonly reported reason except in the diabetes and women's clinic. In the diabetes clinic, an equal proportion (25%, 23/91) of participants selected 'I am worried' and 'It was recommended by doctors' as the main reason for receiving the vaccine in 2018. In comparison to the 24% (35/145) of participants who cited being worried about influenza as the main reason to receive the vaccine in 2018, 34% (49/145) of participants from the women's clinic cited doctor's recommendation as the main reason to be immunised in 2018 (see Table 3). Furthermore, in the group of participants who did not receive a vaccine in 2017, being concerned about influenza remained the most common reason given to receive influenza vaccination in 2018 (39%, 233/602).

Discussion

The results from the survey conducted for the vaccine recipients of the 2018 VaxReach initiative demonstrated the feasibility of a mobile outreach immunisation program to deliver influenza vaccines to a large number of vulnerable and hard-to-reach populations.

In the population reached, awareness about the severity of influenza was the most common reason given that motivated the participants to receive the influenza vaccine. Similarly, being unaware of the severity of influenza infection was also cited as a reason for not having received the influenza vaccine previously. This finding is similar to a study of a 2017 community survey conducted in Australia, where 55% of the respondents cited self-protection as the main trigger to receive influenza vaccination.¹¹ In the same study, responses indicating the three most commonly reported barriers to getting the influenza vaccine were: 'didn't think I need it'; 'don't get sick'; and 'I am not worried about getting the flu'. This observation shows that awareness and knowledge of the benefits of influenza vaccines play an essential role in facilitating influenza vaccine uptake. It is also interesting to note that in our study, 40% of the participants who did not receive an influenza vaccine in 2017 received one in 2018 because they were worried about influenza. While our survey did not ask participants what exactly had triggered their concern about influenza in 2018, it is possible that the widely-reported high number of influenza cases in 2017 may have contributed to this.¹ This could also have potentially contributed to the influenza vaccine shortage in 2018 due to increased demand.¹⁵

Within the sub-populations within our program, pregnant women differed from other groups in terms of the main reason reported for accepting the vaccine. Pregnant women were more likely to receive the vaccine because their healthcare providers

had recommended it. This is in contrast to the non-pregnant participants, the majority of whom reported being worried about influenza as the main reason. This finding is consistent with the literature around maternal influenza vaccination: that the lack of healthcare worker recommendations is frequently identified as the main barrier for pregnant women to receive vaccines in pregnancy.^{12,16} Similarly, recommendation by healthcare provider is often the most important determinant of vaccine uptake among pregnant women.^{12,17,18} This finding reinforces the importance of ongoing involvement of healthcare workers in promoting influenza vaccination among pregnant women. Most pregnant women are likely to be healthy before pregnancy and perceive themselves to be at low risk of severe influenza. Given that the risk for severe influenza increases with pregnancy, healthcare workers play an important role in communicating the benefit of influenza vaccination to pregnant women for both themselves and their unborn child.¹⁹

Despite influenza vaccine being recommended to homeless people due to their living conditions and potential prevalence of underlying medical conditions, approximately 50% of the participants from crisis centres did not receive an influenza vaccine in 2017. Among these, 42% reported not being worried about getting influenza as the main reason for not having the vaccine. Homelessness has been associated with low influenza vaccine uptake in a number of studies.^{6,20} It is also likely that participants attending a crisis centre are likely to be worried about more pressing needs such as food, water and shelter, with preventive health measures less of a concern.²¹ This finding reinforces the need to reach out and bring influenza vaccines to this population to improve their vaccine uptake.

Similar to those in the homeless group, 56% of participants who smoked did not previously receive an influenza vaccine, with 38% of them reporting that they were not worried about influenza. Previous studies have shown that current smokers are more likely to have fewer health-conscious behaviours including receiving an influenza vaccine.²² Furthermore, a recent meta-analysis has demonstrated that smoking is consistently associated with a higher risk of hospital admissions after influenza infection.³ While we have only captured a small number of smokers in our program, smokers'

Table 3: Responses to reason for receiving influenza vaccine in 2018.

Site	Risk factor for severe influenza	Worried about influenza (%)	Convenient to get vaccine (%)	Recommended by Doctors (%)	Other (%)
Crisis centre	Total (n=295)	152 (52)	37 (13)	26 (9)	59 (20)
	At least one risk factors (n=150)	76 (51)	18 (12)	14 (9)	33 (22)
	No risk factors (n=145)	76 (35)	19 (13)	12 (8)	26 (18)
Refugees and Migrant Centre	Total (n=354)	183 (52)	36 (10)	33 (9)	75 (21)
	At least on risk factor (n=135)	70 (52)	17 (13)	14 (10)	26 (19)
	No risk factor (n=219)	113 (52)	19 (9)	19 (9)	49 (22)
Women's Clinic	Total (n=145)	35 (24)	6 (4)	49 (34)	52 (36)
	At least one risk factor (n=100)	17 (17)	1 (1)	44 (44)	37 (37)
	No risk factor (45)	18 (40)	5 (11)	5 (11)	15 (33)
Diabetes Clinic	Total (n=91)	23 (25)	7 (8)	23 (25)	32 (35)
	At least one risk factor (n=74)	19 (26)	5 (7)	21 (28)	24 (32)
	No risk factor (n=17)	4 (23)	2 (12)	2 (12)	8 (47)
Total number responses per question for all sites (%)^a	Not applicable	426 (41)	102 (10)	163 (16)	275 (27)

Note:

a: Percentage over total participants = 1,032

understanding of influenza severity could be a potential area of intervention to improve uptake of influenza vaccines.

Seasonal influenza affects children <5 years of age disproportionately, as they have been shown to have a higher rate of hospitalisation and case notifications.²³ Since early 2018, free influenza vaccines have been made available to all children aged between six months and five years in the state of Victoria. However, only 12% of those included in the survey were aged less than 18 years, of which 49% were younger than five years. There are some possible reasons for this. Firstly, 2018 was the first year that influenza vaccines were funded for this age group, therefore many parents may not have been aware of its availability. Secondly, the sites selected in 2018 were built on established sites from the 2017 VaxReach pilot project, when paediatric influenza vaccinations were not funded, nor was the paediatric population a target group. Thirdly, the paediatric population was vaccinated opportunistically. The sites chosen in 2018 were not catering to the paediatric group specifically; however, if children within this group presented with their parents, they were offered vaccination. Lastly, vaccine hesitancy among parents could contribute to this finding, although this was not explored in this outreach program. A systematic review on vaccine hesitancy identified that the lack of recommendations from medical personnel to parents for children to receive vaccine, the lack of perceived benefit of vaccine by the parents, and inconvenience to receive vaccine have contributed to vaccine hesitancy among parents.²⁴ In future outreach programs, the strategies that could be explored to optimise delivery to this population include targeting sites where children under five years of age frequently attend (such as the maternal child health clinics), and providing education to parents about the availability and benefit of the vaccines to children of this age group.

While this program vaccinated many people from high-risk groups, there were still limitations that could be addressed. Firstly, the at-risk population aged between six months and five years was under-represented in our cohort. Secondly, the questions asked of people attending to receive the vaccine relied on recall. Thirdly, we could not establish the history of risk factors for severe influenza prior to 2018 to reliably interpret the responses regarding vaccination history, as the survey questions were targeting at-risk factors in 2018. Participants who had risk

factors such as smoking at the time of the survey may not previously have had those factors. Also, by nature of the methodology, the participants of this survey were people in contact with the service and received the vaccines at the same time. Therefore, the findings from this group do not necessarily represent the clients who attended the sites such as crisis centres and decided to not be vaccinated.

Traditionally, outreach vaccination programs have been used in low- and middle-income countries. Some communities in these countries frequently have difficulty accessing vaccines due to geographical barriers to healthcare facilities.²⁵⁻²⁷ Since early 2000, the World Health Organization advocated using the 'Reaching Every District' (RED) strategy to reach out to under-served, un-reached communities.²⁸ This has been successfully rolled out in certain countries.^{29,30} Our study demonstrated that a similar approach could be used successfully in a resource-rich country such as Australia. Notably, there have been previous influenza vaccine outreach programs in high-income countries. By using a street-based vaccination method, Project VIVA in New York City was successful in delivering influenza vaccines to members of hard-to-reach populations, of whom many had difficulties accessing healthcare.³¹ Outreach immunisation programs such as our project and Project VIVA could also be a potential platform to be scaled up to deliver both seasonal or pandemic influenza vaccines.³¹

Moreover, there is potential for this outreach program to be a platform for delivering other health initiatives. Reports from both resource-limited and resource-rich settings have demonstrated the use of vaccination programs as a way to deliver other maternal or child health initiative or cancer screening programs.^{32,33} With more than 60% of participants in our study recruited from a crisis centre or refugee and migrant centre, an influenza vaccine outreach program could be an opportunity to undertake other health promotion initiatives. However, pregnant women are likely to be an exception to this. It is likely that pregnant women attend antenatal clinics for antenatal care and thus antenatal clinics could be a better platform to deliver influenza vaccines. An outreach program to improve and integrate influenza vaccine delivery into an existing antenatal care delivery model could be an effective way to improve influenza vaccine coverage

among pregnant women. Interventions that could be implemented in the antenatal care setting include: encouraging healthcare providers to recommend influenza vaccines to pregnant women, ensuring availability of vaccines and empowering midwives to administer vaccines.

Conclusion

This outreach service is an innovative model of vaccine delivery to community organisations and healthcare centres that have limited capacity to provide influenza vaccines themselves. It serves as a platform in which gaps in seasonal influenza vaccine delivery can be identified and acted upon, ultimately improving the uptake of seasonal influenza vaccines in high-risk populations.

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