P3-MumBubVax intervention adaptation for general practitioners

A qualitative interview study

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Background and objective
General practitioners (GPs) are often the first source of vaccine information for expectant parents. A multicomponent intervention package (P3-MumBubVax) has been designed for midwives, but interventions to support GPs' vaccine discussions are limited. This qualitative study explored Australian GPs' attitudes, practices and educational needs to inform adaptation of the P3-MumBubVax intervention for primary care.

Methods
Semi-structured interviews with 30 GPs explored attitudes towards recommending maternal vaccines, vaccine communication approaches and training preferences. Data were analysed using thematic template analysis.

Results
Vaccination was central to the role of GPs and most felt confident discussing vaccines. GPs had opportunities to discuss maternal vaccines before and during pregnancy using a variety of communication techniques. GPs preferred convenient, interactive training with examples and up-to-date maternal vaccine resources.

Discussion
Findings informed adaptation of the P3-MumBubVax intervention, which offers GPs tailored vaccine resources, online communication training and interactive quizzes for individual or group learning.

MATERNAL AND CHILDHOOD VACCINATION is vital to ensure the health of women and children, but optimal vaccine coverage remains a pressing issue globally.[1] Maternal vaccination coverage in Australia is sub-optimal: influenza coverage is estimated to be between 34% and 61%,[2,3] well below the World Health Organization target of 75%.[4] Pertussis vaccine uptake is higher, between 64% and 82%,[5,6] but still needs improvement. Availability of maternal vaccines and practical barriers to vaccination play significant roles in vaccine coverage,[7,8] but many expectant parents also report concerns about vaccine safety and effectiveness.[9] Expectant parents begin making decisions about childhood vaccines during pregnancy, with first-time parents more likely to report concerns and a desire to discuss these vaccines with their antenatal care providers.[10]

The most important predictor of maternal and childhood vaccine uptake is receiving a recommendation from a trusted healthcare provider.[11–13] In Australia, most public antenatal care is provided by midwives or general practitioners (GPs), or formalised 'shared care' arrangements where antenatal care is shared between a community and hospital provider.[14] GPs see women before and in the earliest stages of pregnancy, and they are often the first source of vaccine information for expectant parents. GPs who are confident in discussing the risks and benefits of vaccines in turn increase the confidence of expectant parents.[15] However, in addition to sharing information about vaccines, effective communication skills are also required to address vaccine concerns during pregnancy.[16]

While resources are available help healthcare providers discuss childhood vaccination, several studies highlight the need for further GP training and education to provide information on risks and benefits of maternal vaccines,[17] and to support discussion and delivery of maternal vaccines.[11,18]

We originally developed the P3-MumBubVax multicomponent intervention package to help midwives discuss and recommend maternal and childhood vaccines in the Australian public antenatal setting.[19] The P3-MumBubVax intervention uses the novel 'P3' approach developed in the US, incorporating interventions at all three levels of the clinical encounter: the Practice, Provider, and Parent levels.[20] The midwife-specific P3-MumBubVax package included stickers to record vaccine discussions and/or offsite delivery of vaccines on maternal records; a 40-minute online communication training module; an interactive learning exercise; downloadable vaccine fact sheets; and links to resources to support discussions of childhood vaccines.[21,22] The P3-MumBubVax package for midwives was pilot tested with midwives and pregnant women at the Royal Women's

Hospital in Melbourne, and was found to be feasible and acceptable for midwives and pregnant women.[21]

Based on the promising pilot study findings with midwives, we sought to adapt the P3-MumBubVax intervention to suit the needs and preferences of GPs. In this qualitative study, we aimed to explore the vaccination attitudes, communication practices and educational needs of Australian GPs in order to inform adaptation of an intervention to promote maternal and childhood vaccination in primary care.

Methods

Participants and recruitment

This was a descriptive qualitative interview study with GPs who provide care to pregnant women in primary care. Eligible participants were Australian GPs who saw pregnant women as part of their regular practice in the past 12 months. We purposively recruited and sampled participants from various practice sizes and locations, and with varying years of experience and frequency of antenatal care provision. We recruited participants with digital advertisements distributed through VicREN, the practice-based research and education network of the University of Melbourne Department of General Practice. We also sent email study invitation letters to GPs practising shared antenatal care, identified via public lists available from most major hospitals. Finally, we encouraged participants to invite other colleagues to participate (ie snowballing).

Data collection

We conducted all interviews via Zoom or telephone between 1 April and 1 July 2020. The interviewers followed a semi-structured interview guide with questions about the model of antenatal care provided, the GP's attitude towards recommending maternal vaccines and their preferred communication approaches. Additionally, questions asked about the type of resources assisting them with current maternal vaccine discussions and what their 'ideal' future resources would look like. Data collection ceased when saturation was reached, defined as no additional unique responses. The interviews were audio recorded and professionally transcribed.

Data analysis

Interview transcripts were analysed using thematic template analysis with NVivo 12 software.[23] Template analysis is a structured yet flexible form of thematic analysis that generally begins with some a priori themes, which are then adapted through initial analysis to form a coding template.[24] We used this approach successfully in the original, formative P3-MumBubVax research with midwives.[19] We derived the a priori template themes from the TIDieR (Template for Intervention Description and Replication) checklist, which outlines the key features to be reported when describing complex interventions.[25] Inductively derived sub-themes were added as needed to enrich the coding template.

Three authors (JK, JT, CJ) independently coded a sample of three interviews, meeting

Table 1. Characteristics of participants (n = 30)

Characteristic	n (%)
Gender	
Male	6 (20%)
Female	24 (80%)
Years of clinical experience	
0–5	8 (27%)
6–10	9 (30%)
11–15	2 (6%)
16–20	5 (17%)
≥21	6 (20%)
Practice size	
Small (≤10 providers)	19 (63%)
Medium (11–19 providers)	10 (33%)
Large (≥20 providers)	1 (3%)
Model of antenatal care	
Primary care	11 (37%)
Shared care and primary care	19 (63%)
	Number of practices (number in regional areas)
Practice location	
Victoria	18 (6)
New South Wales	6 (1)*
Tasmania	2 (2)
Western Australia	2 (1)
South Australia	1 (1)*
Queensland	1 (–)

**Includes one general practitioner working in both metropolitan and regional locations*

to discuss and refine the coding framework between each analysis. Following this process, we agreed on a single customised coding template suitable for our study purpose. One author (CJ) then coded the remaining interviews with this template.

This study was approved by the Royal Children's Hospital Human Research Ethics Committee (HREC 62060).

Results

We interviewed 30 GPs. Interviews lasted between 15 and 45 minutes. GPs' experience (number of years in practice) ranged from two to 37 years (median 7.5 years), and 63% (19/30) offered shared care as a model of antenatal care (Table 1). Most GPs provided care across all age groups and socioeconomic groups. One GP practiced 'integrative medicine', which they defined as a combination of Western medicine and 'evidence-based complementary medicine'.

A priori themes in the coding template were:

1. Who are GPs and their patients?
2. How do GPs discuss and deliver vaccines?
3. When and how much vaccine information do GPs provide?
4. What training and resources are available or preferred?

Each main theme included several subthemes inductively derived from the transcripts. Supporting quotes for each theme can be found in Table 2.

1. Who are GPs and their patients?

Perceived role

Most participants felt that advising women about maternal and childhood vaccines was central to their role and identity as a GP. They saw themselves as the main source of vaccine information for most pregnant women ('I bear total responsibility for that role' [P23]). However, several GPs highlighted the important complementary role practice nurses played, as they were frequently responsible for delivering the vaccines.

Diversity of patients

All GPs saw pregnant women as part of their practice; however, their broader clientele varied. Relatively few participants regularly saw pregnant women from culturally and linguistically diverse (CALD) backgrounds for antenatal consultations. Of those who did, most conducted consultations in English and indicated that there were insufficient translated resources available. GPs described strategies to overcome language barriers such as providing information in a slow-paced manner, using images, and using phone interpreters.

Personal views about existing and forthcoming vaccines

All participants were supportive of vaccination and reported strongly recommending vaccines to all pregnant women. Most GPs supported the introduction of new maternal vaccines in the future, provided 'the evidence is well supported and it's in the national guidelines' (P9).

Perceived patient views about vaccination

Most GPs described their patients' attitudes towards maternal vaccination as 'quite accepting' (P18). They attributed this perceived lack of hesitancy to the demographics of their patients, and to the trust and rapport they built with their patients.

When GPs did encounter women with concerns, these were generally related to maternal vaccine safety and potential vaccine side effects. Common misconceptions included a fear of catching influenza from the influenza vaccine and a belief that a pertussis vaccine was not needed in every pregnancy. A few participants perceived that some pregnant women did not understand the severity of influenza disease, and this led to lower uptake of influenza vaccine compared to the pertussis vaccine.

On the topic of hypothetical new vaccines, some GPs felt that a vaccine's perceived safety shaped women's vaccination decisions more than the threat of the disease itself.

2. How do GPs discuss and deliver vaccines?

Common discussion techniques

The technique GPs used most commonly to discuss maternal vaccines with pregnant women was to simply share information about the vaccines, explaining that the vaccine is recommended to all pregnant women along with important facts about the benefits and risks. For influenza, GPs highlighted the serious pregnancy complications that could arise from influenza infection. In contrast, the pertussis vaccine was often presented primarily in terms of the protection it provides to the baby via placental transfer of antibodies.

Some participants drew upon personal experiences to further elaborate the importance of maternal vaccines and potential risks if they did not vaccinate their child. Another technique employed by a few participants was the use of unique analogies to discuss maternal vaccines: 'You don't expect it to happen but you still put your seatbelt on and a flu shot is a bit like a seatbelt' (P11). Several participants used presumptive communication techniques,[21] discussing vaccines as routine and presuming they would be delivered. These participants often used the initial visit to lay out the plan throughout the pregnancy, highlighting the optimum timepoints to receive maternal vaccines. Many GPs involved the woman's partner in vaccine discussions by sharing key statistics about disease transmission, in recognition of the shared nature of vaccine decision-making in pregnancy.

Dealing with hesitancy or questions

Participants described a range of techniques to address questions or concerns about vaccines, despite most GPs encountering hesitant women only rarely. Most made sure to acknowledge their patients' apprehensions. Some participants switched from presumptive communication to a participatory communication style,[22] in order to give patients autonomy to make the final decision.

Several participants preferred to discuss maternal vaccines over multiple conversations. They scheduled follow-up appointments to continue the discussion and avoid pressuring pregnant women to decide. Telehealth consults were seen

Table 2. Themes and supporting quotes from general practitioner (GP) interviews

1. Who are GPs and their patients?

Perceived role

- *My role is to advocate it and to give it to them at the appropriate time.* [Participant (P) 28]
- *A lot of women go straight to the nurse and she's outstanding and she knows far more about all the intricacies of all vaccines than I do.* [P3]

Diversity of patients

- *I speak Urdu. So we communicate in Urdu/Hindi and they seem to be much more comfortable with that.* [P30]
- *With almost like a theatrical performance so it's like a mix of charades and Pictionary just drawing it out, on the whole they understand.* [P4]

Personal views about existing and forthcoming vaccines

- *I feel like if someone was going to dispute [vaccines] … then I would feel well supported by the guidelines.* [P26]

Perceived patient views about vaccination

- *I think there's a certain level of trust in the doctor that they don't really need more information unless they very rarely do they ask for more.* [P4]
- *Both things [safety of new vaccine and disease the new vaccine is protecting against] are equally important, so knowing how prevalent a particular infection is tells them how relevant it is to get it and then the other thing is if there's minimal impact on baby's safety, that's another big reason for them to be interested in getting this vaccine.* [P30]
- *'What am I putting in my body, and is there any chance this could harm the baby?' That's probably the number one thing people would think about.* [P22]
- *I find women are more willing to take vaccines. A higher percentage of pregnant women take vaccines than want the vaccines for their kids.* [P7]
- *I think they are more motivated to get the whooping cough vaccine rather than the influenza vaccine.* [P4]
- *I think it's because the group that we are dealing with are very highly educated.* [P15]

2. How do GPs discuss and deliver vaccines?

Sharing information about vaccines

- *Your body makes a whole lot of antibodies against whooping cough and then these antibodies from the second trimester pass across the placenta to the baby.* [P22]
- *[I'll often say] Yes I always had it, or I had it in my pregnancies.* [P8]

Sharing information about vaccines (cont'd)

- *I'll often say that there is a higher hospitalisation rate for mother and the baby feels those high fevers.* [P8]

Presumptive communication

- *This is something we'll be doing is the whooping cough vaccine in second trimester.* [P22]
- *I'd say, 'Come on, we have to do this vaccination'.* [P23]

Personal experiences

- *… when I was a student working at [redacted], listening to children cough and splutter.* [P15]

Dealing with hesitancy or questions

- *We just focus on keeping a good relationship with them, so … hopefully they'll come back for the next one.* [P17]
- *I think what you do is stick to facts about the vaccine, you don't criticise behaviours or choices and indicate that person is open to making their own decision.* [P3]
- *Because often it's difficult I think to make a decision on the spot if you feel pressured, so probably my approach is to just take the pressure off.* [P9]
- *I've discovered over the years that hustling anti-vaxxers is definitely not productive.* [P3]

3. When and how much vaccine information do GPs provide?

Timing of vaccine discussions

- *They'll pop in for something else and I'll notice you know it's at a stage of pregnancy where they might be suitable to have their whooping cough [vaccine].* [P2]

4. What training and resources are available and preferred?

Training

- *… where you simulate a consult with an actor, and you can pause the scenario and get feedback.* [P9]

Resources

- *I probably don't particularly feel [anything missing] on the resource actually I think partly because of my demographic I think I probably have adequate stuff.* [P16]
- *The midwife who talked to her said to her, oh, that was given too early, and that she might need another one given at 28 weeks. And I showed her the recommendation.* [P28]
- *I think the thing I find useful about those two websites [Royal Children's Hospital and Royal Women's Hospital websites] is that they have both clinical guidelines and patient advice easily but separately and they are worded differently.* [P11]

as a useful way to extend the discussion, particularly in the COVID-19 pandemic.

Other techniques individual GPs used for dealing with hesitancy included enlisting the help of other healthcare providers to resume the conversation: 'I do sometimes set my nurse onto them, the passionate one' (P8). The GP who practiced 'integrative medicine' described offering the option of 'buffering the vaccine with supporting nutrients' (P29) to provide reassurance to the patient.

Very occasionally, GPs encountered women who were rigid in their refusal to vaccinate. In such cases, most did not push the issue.

3. When and how much vaccine information do GPs provide?

Timing of vaccine discussions

Several GPs saw preconception counselling as an opportunity to introduce the topic of maternal vaccines, but a few GPs were conscious of women experiencing trouble conceiving.

Most participants discussed the influenza vaccine during the first trimester of pregnancy and typically used the first or second antenatal visit to discuss and administer the vaccine. Some mentioned the difficulty in discussing the influenza vaccine when influenza is not in season. Pertussis vaccination was usually discussed in the second or third trimester but was sometimes discussed at the first consultation. Some conversations were opportunistic, but one GP who saw women under the care of a private obstetrician said they relied on the patient's obstetrician to remind the patient to come back to the GP and get vaccinated.

Length of discussions

GPs frequently reported that conversations about maternal vaccines were short with pregnant women who had no vaccine concerns, with these conversations reportedly lasting about 30 seconds. When GPs offered women additional information about the benefits and side effects of vaccines, conversations were often longer and broken up over multiple encounters.

4. What training and resources are available and preferred?

Training

Most participants cited face-to-face continuing professional development as their preferred training format as it enabled them to connect with colleagues and ask questions, especially when presented by credible specialist speakers. Several GPs also reported a preference for presentations that detailed 'real patient' scenarios to help 'model what these conversations are going to look like' (P25). The preferred length of face-to-face training varied based on the material being covered. However, most in-person sessions were several hours long, or up to a day.

Other participants preferred online modules, especially for dense topics. Some felt that presenting information succinctly made them 'pay extra attention' and allowed them to 'work through it' (P29) at their own pace. The preferred length for online modules varied depending on the topic – for complex topics, some GPs said a few hours was reasonable, but shorter modules of approximately half an hour were also valued for content that was straightforward.

Regardless of delivery format, most GPs highly valued training that included case studies and practical examples along with quizzes to reinforce their knowledge. Education about new vaccines was highlighted as critical, if additional vaccines were added to the schedule.

Resources

To support maternal vaccine discussions, most participants stated that they primarily use the guidelines in *The Australian immunisation handbook* as it is seen as a reputable source of evidence. A few participants mentioned providing printed resources to patients as they liked the ease of handouts that patients could read at their own pace, but others felt that handouts were less useful because they become outdated. This was a particular issue with the recently changed guidelines, shifting the recommended delivery of pertussis vaccine from 28 weeks' gestation to 20 weeks.

Web-based resources for patients were preferred by most participants, especially material that was easy to understand and provided relevant information to both the healthcare provider and patient. Additionally, GPs highlighted the value of websites with a 'search' function as it allowed them to quickly look for relevant content during consultations.

A few GPs who provided care for women from CALD backgrounds discussed how translated materials did not always address pregnant women's concerns and occasionally were targeted only to very specific CALD communities.

Whether resources were online or paper-based, participants wanted those that outlined the safety, possible side effects and rationale of vaccines, particularly if new vaccines were introduced in pregnancy. Many perceived that patients with concerns were seeking information about the safety of the vaccine, especially for the baby.

Discussion

The GPs interviewed felt that vaccination was central to their role, and most felt confident discussing maternal and childhood vaccines. They viewed their relationship with patients as long term. This offered them additional opportunities to discuss maternal vaccination, such as at preconception or non–pregnancy related encounters. However, to avoid engaging in what they saw as an unproductive debate, it also meant some did not press vaccine refusers. Participants preferred convenient training opportunities that included real-life examples or simulations and interactive learning exercises, and expressed a need for consistent, up-to-date maternal vaccine resources.

Comparison between midwives and GPs

Comparing the key findings from this qualitative study with those of our qualitative study with midwives,[21] we found subtle yet important differences. Overall, vaccination is central to GPs' professional role but only part of a midwife's role. For GPs, the provider–patient relationship with the pregnant woman is ongoing, whereas for midwives the relationship has a limited timeframe in which to build rapport and trust. Unlike GPs, midwives receive little training in vaccination and many expressed uncertainty or lack of confidence in discussing vaccines, particularly with hesitant women. GPs and midwives both tend to recommend vaccination with the passive voice ('It is recommended'), but GPs are more likely to use a presumptive communication approach. While most GPs and midwives discuss maternal vaccines at the first antenatal visit, vaccine delivery opportunities differ between settings. With vaccines readily available at all interviewed GPs' clinics, GPs offer vaccination from the first visit (influenza) and opportunistically. However, many midwives have to refer women offsite to receive the vaccines.

GPs and midwives equally expressed the value of online materials that were evidence-based, convenient and intuitive to navigate. Both groups voiced a preference for learning that was short (half hour) and broken into modules. They valued quizzes or learning exercises to reinforce learning, as well as role-playing

and/or practical examples. While GPs favoured printable online materials, midwives preferred printed fact sheets. Additionally, while GPs preferred online training, midwives valued face-to-face training sessions.

Implications for the P3-MumBubVax intervention

The P3-MumBubVax intervention package was adapted to capitalise on discussion opportunities and incorporate GP and midwife preferences for training and resources. The revised intervention includes practice-level interventions to record vaccine discussions and/or offsite delivery of vaccines, such as stickers in medical case notes or prompts in practice management software, and 'vaccine champions' identified in clinics/practices. Provider-level interventions include a password-protected 'I am a healthcare provider' portal on the MumBubVax website,[26] separated into general practice and midwives; seven tailored online communication training modules ('VaxChat Australia'), with written module summaries and interactive quizzes for each module; and midwife and GP resources to support discussions. At the parent level, the intervention has a parent-specific portal of the MumBubVax website providing tiered levels of vaccine information, infographics and printable fact sheets. Separate to the MumBubVax website, the intervention includes SMS reminders, sent using practice communication software to pregnant women to prompt them to receive influenza and pertussis vaccines.

Strengths and limitations

The study sample included a range of GPs from various practice sizes and locations from several states in Australia, and with varying years of experience and frequency of antenatal care provision. The sample size (n = 30) was adequate for this qualitative interview study, and data saturation was reached. However, as a qualitative study, the findings are not intended to be generalisable to all GPs in Australia. Additionally, most interviewed GPs did not regularly treat pregnant women from CALD communities, which may be due to the location or socioeconomic background of the areas in which the GPs practised.

While GPs raised the need for translated information that is tailored to address the concerns and questions of different CALD communities, our study did not have funding to produce translated resources. This is a limitation of our intervention adaptation that we intend to address if additional funding can be secured.

Reflexivity statement

This study was conducted by researchers with backgrounds in vaccine promotion and paediatric medicine. While the interview questions sought to explore the participants' viewpoints on vaccines, our professional roles and views could have had an impact on how these questions were asked or how participants responded.

Conclusion

With suboptimal rates of maternal vaccine coverage across Australia, it is clear that we need new, innovative strategies to increase maternal vaccine uptake. Based on the interviews conducted with GPs who provide antenatal care, we adapted the multi-component P3-MumBubVax intervention that provides videos, quizzes and informational resources to prepare GPs to have confident conversations about maternal vaccines.

We aim to test the effectiveness of the P3-MumBubVax intervention in a randomised controlled trial.

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