

# Mapping the maternal vaccination journey and influencing factors for Māori women in Aotearoa New Zealand: a qualitative study

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The authors of the above-mentioned paper regret to inform readers that, in the original version of their paper, the iwi affiliations of the second and third authors were wrongly included in parentheses between first and surname rather than after their full name. The author list was published as below:

*Natalie Gauld, Samuel (Ngā Puhī) Martin, Owen (Te Rarawa) Sinclair, Felicity Dumble, Helen Petousis-Harris, Cameron C. Grant*

The author list should instead appear as follows (note: for this corrigendum, the corrected names are in bold):

*Natalie Gauld, **Samuel Martin (Ngā Puhī)**, **Owen Sinclair (Te Rarawa)**, Felicity Dumble, Helen Petousis-Harris and Cameron C. Grant*


We apologise for the error and any confusion this may have caused. This has been corrected online.

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# Mapping the maternal vaccination journey and influencing factors for Māori women in Aotearoa New Zealand: a qualitative study

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## ABSTRACT

**Introduction.** Uptake of maternal vaccinations (MVs) is suboptimal in Aotearoa New Zealand, particularly for Māori. **Aim.** To describe Māori women's journeys regarding maternal pertussis and influenza vaccinations and explore influences on uptake. **Methods.** Semi-structured interviews were conducted in Waikato, Aotearoa New Zealand, with pregnant or recently pregnant Māori women, and separately with Māori healthcare professionals (HCPs) to understand women's decisions regarding MVs and enablers and barriers to uptake. **Results.** Nine women and nine HCPs were interviewed. Verbal communications from midwives, general practice and pharmacy strongly influenced women's journeys. Women's decisions appeared largely straight-forward, with influences including awareness, knowledge, underlying beliefs and previous MVs. Enablers for MV uptake included HCPs' discussions, pro-vaccination beliefs, and accessibility. Barriers for MV uptake included poverty (and transport), lack of awareness, insufficient knowledge of benefits, late presentation to the midwife and other commitments or challenges in the women's lives affecting prioritisation of the vaccine. Misconceptions, seasonality, and lower HCP emphasis impaired influenza vaccination uptake. **Discussion.** With multiple barriers to accessing MVs, HCPs who see pregnant women are the primary resource to improve awareness, knowledge, and access through kōrero (discussions) with the woman and, where possible, being able to administer the vaccinations. These HCPs need to be well-informed, aware of likely concerns women may have and how to address them, encourage these discussions and preferably be trusted.

**Keywords:** access to medicines, health equity, healthcare professionals, Indigenous population, influenza vaccination, Māori, maternal vaccination, midwifery, pertussis vaccination, vaccine hesitancy.

## Introduction

Pertussis (whooping cough) and influenza vaccinations during pregnancy are recommended and funded in Aotearoa New Zealand (NZ).<sup>1</sup> Pertussis causes hospitalisations and deaths of young infants,<sup>2,3</sup> disproportionately affecting Māori infants.<sup>2</sup> A tetanus-diphtheria-acellular pertussis (Tdap) vaccination during pregnancy protects young infants.<sup>4</sup>

Increased influenza-associated mortality and hospitalisations,<sup>5</sup> and adverse foetal outcomes are associated with influenza during pregnancy,<sup>6</sup> disproportionately affecting Māori.<sup>5</sup> Maternal influenza vaccination is associated with reduced risk of influenza infection<sup>7</sup> and influenza-associated hospitalisation of pregnant women<sup>8</sup> and infants.<sup>9</sup>

Uptake of maternal pertussis and influenza vaccinations is low in NZ (48 and 31%, respectively in 2018), particularly in Māori.<sup>10</sup>

In NZ, most women enrol with a general practice for primary health care, which provides a free antenatal consultation. A lead maternity carer (LMC; usually a self-employed midwife) typically provides care during pregnancy and childbirth and to young infants. Primary maternity care is fully funded; private specialists have a patient charge.<sup>11</sup> Maternal

## WHAT GAP THIS FILLS

**What is already known:** Uptake of maternal vaccinations in New Zealand is low, particularly for Māori. This qualitative research identifies possible reasons for this inequity and possible solutions.

**What this study adds:** Māori women who are pregnant are sometimes insufficiently informed by HCPs of the need for or benefits of maternal vaccinations, affecting uptake. Pharmacists can help raise awareness of maternal vaccinations and aid access. Improving HCPs' *kōrero* (discussion) about maternal vaccinations, enabling early engagement with midwives and improving accessibility of maternal vaccinations including through funding transport may help uptake.

vaccinations are typically not provided by midwives for logistical reasons,<sup>12</sup> but are fully funded in general practice, hospitals and, more recently, in pharmacy (influenza nationally and pertussis only in Waikato, Aotearoa New Zealand).

Non-uptake of maternal pertussis vaccination in NZ arises from lack of awareness, safety or effectiveness concerns, or discouragement from healthcare professionals (HCPs).<sup>13,14</sup> Significant health inequities exist for Māori, with health services less accessible for Māori, and many Māori finding public health services 'hostile and alienating'.<sup>15</sup> Factors underpinning inequitable maternal health in Aotearoa New Zealand are cultural factors, geographical access, political context, inequitable maternal health, colonialism, acceptability and the maternity care system.<sup>16</sup>

Despite Māori women preferring Māori midwives,<sup>16</sup> and comprising about 20% of those giving birth,<sup>17</sup> Māori midwives comprise only 10% of the midwifery workforce, with concerns about being under-resourced and at risk of burn-out, and insufficient use of Māori research to inform midwifery activities.<sup>18</sup> Government support in 2021 aimed to increase Māori and Pacific midwifery numbers.<sup>17</sup> Increasingly, Hapū Wānanga, a free kaupapa Māori antenatal educational service for Māori hapū māmā (pregnant women), is being offered around Aotearoa New Zealand.

With a lower uptake of MVs in Māori<sup>19</sup> and disproportionately greater hospitalisation for Māori infants with pertussis,<sup>2</sup> research is needed to help address deficiencies in the system and maximise the use of enablers, increasing uptake for Māori and subsequently reducing incidence and harms of a vaccine-preventable disease in Māori infants. Therefore, we aimed to describe the Māori woman's journey regarding MVs and ascertain facilitators and barriers to uptake.

## Methods

The NZ Ministry of Health Northern B Health and Disability Ethics Committee granted ethical approval (18/NTB/43).

## Study setting

The Waikato District Health Board (DHB) includes over 426 000 people,<sup>20</sup> 58% living in urban areas.

## Recruitment and interviews

As part of a larger study exploring the effects of funding and promoting MVs through pharmacies,<sup>21</sup> and barriers and enablers to MVs, this manuscript analyses interviews from nine Māori women and nine Māori HCPs for Māori women's journey to having MVs. Eligible participants were women aged  $\geq 16$  years who were pregnant or had a young infant; and midwives, community pharmacists and general practice staff. Whānau were welcome to join for the interview.

Using maximal variation,<sup>22</sup> we selected women with variation in age, geographical location, MV status, place of vaccination and number of previous pregnancies. Four women were recruited and interviewed at a small-town pharmacy where the interviewer worked, and five at an extended hours city pharmacy with a large catchment. The NZ College of Midwives and snowballing aided midwife recruitment. The Māori HCPs comprised five midwives, a practice nurse, a general practitioner, a pharmacist, and a practice manager. Three participants worked in practices with a Māori focus and predominantly Māori clientele.

Following informed consent, semi-structured interviews were conducted face-to-face (*kanohi ki te kanohi*) in a private room (all women's interviews) or face-to-face or by telephone (HCPs) between November 2018 and May 2019. Key topic discussions were awareness of and knowledge about MV during pregnancy, pertussis and influenza diseases, the woman's journey to having MVs, barriers and enablers to MVs, and demographics (Supplementary File S1). A *koha* (a New Zealand Māori custom that can be translated as a gift, present, offering, donation or contribution) of a NZ\$30 voucher was provided to participants after all interviews.

## Recording and analysis

Interviews were audio-recorded, transcribed verbatim, checked, then coded by NG using NVIVO Pro (QSR International). Audio files were deleted after transcripts were checked, and the transcriptionist deleted all files. NG had access to all audio files and transcripts, and SM had access to the Māori wāhine interview audio files and transcripts. Files were stored on a password-controlled computer. Coding nodes included specific topics asked about in the interview (eg enablers and barriers (deduction) and emerging themes (induction, not reported here)). Analysis was qualitative descriptive, and involved mapping the journey and systematically working through all barriers and enablers in the coding nodes, looking for differences and similarities between interviews (between women, and between the women and the HCPs), using a deductive approach and

qualitative description. The journey is described below, with barriers and enablers discussed as they affected the journey. Reporting specifies the vaccination (ie pertussis or influenza) when specifically mentioned.

## Researchers' roles

Following training (face-to-face with the first author, and going through an interview together), the second author, a male Māori pharmacist, interviewed the women using an interview guide, receiving feedback following initial interviews. An experienced interviewer, a female NZ European pharmacist (the first author), conducted HCP interviews, coded all transcripts, conducted analysis, and reported findings. These findings were reviewed by SM and OS before being finalised.

## Results

Interviews took 10–23 min (average 16 min) with each of the nine Māori women and 19–52 min (average 34 min) with each of the nine Māori HCPs. The characteristics of

the Māori women participants (Table 1) and Māori HCP participants (Table 2) are presented below.

## The journey

Fig. 1 shows the participants' vaccination/non-vaccination journeys for pertussis and influenza MVs. Most women indicated MV awareness came verbally from a HCP (some had multiple HCPs mention it, one recalled no mentions), but not from family or friends.

Women decided their MV actions, apparently influenced primarily by their beliefs, knowledge, perception of personal risk and HCP information or emphasis. MV posters, pamphlets or information online appeared unimportant for awareness or decisions.

## Knowledge and HCPs as enablers or barriers

Women frequently mentioned HCPs' influence, particularly midwives, primarily raising awareness, and therefore enabling uptake (Table 3).

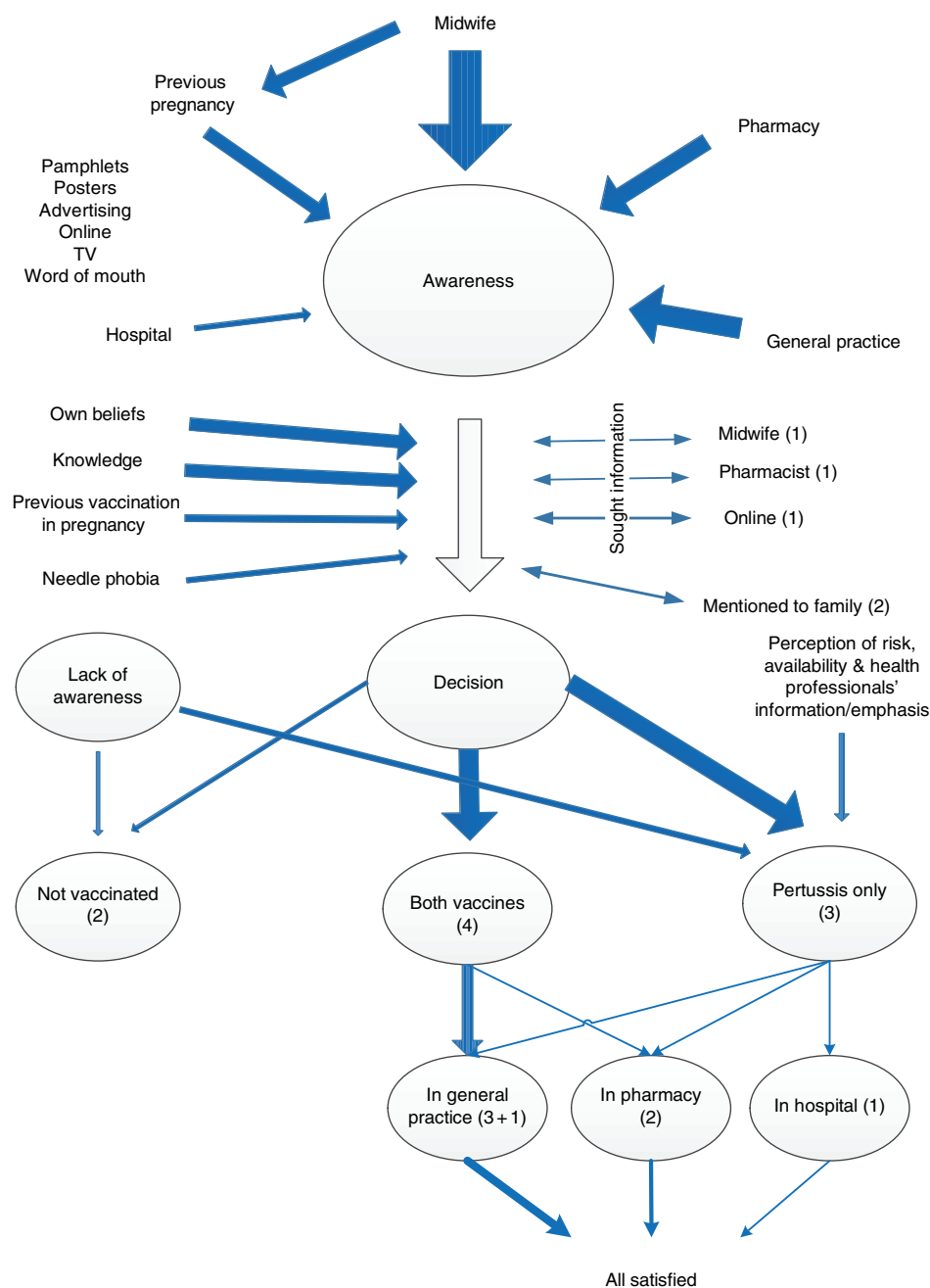
... [my midwife] gave a lot of information. (W14)

**Table 1.** Characteristics of Māori women participants.

Characteristic	Details
Naming	Called 'women participants' or 'women' with participant codes starting with 'W'.
Ages	18–31 years, average 25 years.
Number of children	Three women had four other children (additional to this pregnancy/infant); one woman had three other children; one woman had two other children, two women had one other child; and two women had no other children.
Rural/urban split	Two lived in rural areas, three lived in small towns and four lived in the city (Hamilton).
First visit to midwife	The women reported being 4–27 weeks' gestation when first presenting to the midwife. Five women presented first under 8 weeks' gestation; two presented at 12–15 weeks' gestation and two presented at 26–27 weeks' gestation.
Living situation	Most women lived with their partner and other children. One woman lived only with another child, no partner, and another woman lived with her parents.
Status when interviewed	Four women were pregnant at the time of the interview (one 22 weeks' gestation, the others 32–39 weeks' gestation). Five women had infants (aged 5–12 weeks).
Interview	All interviews were face-to-face.

**Table 2.** Characteristics of Māori healthcare provider participants.

Characteristic	Details
Role	Five were midwives (coded M), three worked in general practice (a practice nurse (coded N), a general practitioner (coded D) and a practice manager (coded PM)), and one was a pharmacist (coded P).
Years' experience	Participants had 1–26 years' experience; six had <10 years' experience.
Rural/urban split	Four worked in the city and five in rural or small-town locations.
Māori health providers	Three people worked in Māori healthcare providers – providers primarily focused on delivery of healthcare services to Māori.
Gender	Eight were female and one was male.
Clientele	Eight participants estimated ≥80% of their clientele were Māori, and one participant estimated 30% of her clientele were Māori. Eight participants reported working in a high-deprivation area.
Interview	Seven face-to-face, two by telephone.



**Fig. 1.** The woman's journey to receiving a maternal vaccination based on Māori women participants' interviews. The weighting of lines reflects the number of participants mentioning these. The bracketed numbers indicate how many women had them. 3 + 1 indicates three women who received maternal vaccination/s in general practice and one expecting to.

Sometimes influenza vaccination uptake was affected by the HCP's lack of emphasis. W15 heard about both MVs from the pharmacist, but only had the pertussis vaccination because 'the hospital never said to get [influenza vaccination]' and the pharmacist had no stock, and indicated little need in summer. Another had the pertussis vaccination on the midwife's advice, but not influenza, indicating the midwife's support was less for influenza: '...it was sort of if you want to you can, but...'.

Awareness was an important facilitator. Most women participants knew of one or both MVs (Fig. 1); however, some HCPs reported many clients had little or no awareness.

A newly qualified midwife managing mainly young Māori first-time mothers, reported no awareness. The pharmacist reported many women late in pregnancy were unaware of MVs. Supporting this, W2 only became aware of MVs and had them in late pregnancy because of the pharmacist's recommendation, despite previous pregnancies and early midwife engagement. A rural GP who discussed MV in antenatal appointments also commented on low awareness. Conversely, a midwife reported high awareness, but had mainly repeat clients and reported mentioning MVs multiple times.

A couple of midwives reported that women engaging the midwife late or missing scheduled appointments might not

**Table 3.** Enablers to maternal vaccinations for Māori women.

Enablers	Comments
HCP raising awareness and providing reminders	Women reported awareness of one or both MVs from HCP mentions, and some indicated multiple mentions from the midwife, or mentions from multiple HCPs were helpful.  'I got little text reminders on my phone from the doctors to remind me when my appointment was due to go and get them done.' (W12)
Having trust in the HCP offering the vaccination/providing information	Trust was an enabler. Trust was helped by having an ongoing relationship, and confidence that the HCP was well-informed. W13 noted her midwife was much better informed than her GP about pertussis vaccination timing, trusting her midwife for MV advice over the GP who informed her she could have the pertussis vaccination at any time.  '...obviously my midwife's more trained or like specialises more with pregnant women so she's naturally going to know more than what my doctor would.' (W13)  '...it's a ripple effect with, with their partners, with the Nurses. So as long as that Whānau feels safe from point one to point two and then exit they'll, they're more inclined to respond.' (N5)  Trust was also thought to be aided by having Māori providing the services or talking the right language.  'I think a lot of our patients choose to come to us because it's, visibly it's, it's Māori.' (PM1)  'We would generally use the word pepi.... talk to us [Māori] properly, with the right wording.' (N5)
Having MV previously	Having had MVs in a previous pregnancy provided a reassurance about safety and made the decision easy.  'I've just had them with every pregnancy so it's normal to me.' (W16)
MVs immediately available	The pharmacist found offering MVs when discussing them helped make it easy for women. Some women had it when it was mentioned and offered.  'It was [a quick decision] but I also asked all the questions right then and there and I didn't think about 'oh where would I go for that vaccine'.' (W2)
Belief that the vaccination would help the baby	Where women believed the vaccination would protect the baby, this helped them to have it. This was particularly for pertussis vaccination, but some women recognised that influenza vaccination would benefit the baby also:  'The benefits to the health and safety of my child and myself being the one carrying that child.' (W13)
Underlying belief in vaccinations	Many women were pro-vaccination, which appeared to make their decision about MVs straight-forward.  'I immunise my kids ... I always make sure I safeguard my kids so when it comes up with me doing the whooping cough and flu jab and stuff like that in pregnancy I was more worried about my unborn baby than myself. So I was like yeah why not, it couldn't hurt.' (W2)
Agency	A feeling of proactivity, being happy to ask questions of HCPs, sometimes repeatedly, strongly emerged from several women's interviews.  'I honestly think it comes down to being proactive as well. Because like I can sit here and be like I'm pretty well informed but as I said I like to ask questions as well. So like you won't know unless you ask questions...' (W13)  'I don't think I trust much on Facebook myself. I'd be more inclined to probably book an appointment with the doctor or something and ask all those questions. But then again that's me, that's my personality. I'm more than happy to kind of ask if I'm not sure.' (W1)

receive MV information (eg W3 engaging the midwife at 27 weeks' gestation; Table 4).

Knowledge of benefits, risks, and the infection the vaccination prevented strongly influenced decisions, which linked with beliefs. Most women knew pertussis vaccination protected the baby. Others were less informed, despite HCPs mentioning MVs (Table 4). One woman knowing 'nothing' of MVs (first presenting to her midwife at 27 weeks), had neither MV, but wanted more information on the benefits and risks.

Yeah I would like to know a bit more about them. Like when you do give out information out about them do you give the good side and the bad side? (W3)

Several HCPs suggested insufficient or incorrect knowledge about safety discouraged women from having MVs (eg from rumours from whānau or online anti-vaxxers (although neither arose in women's interviews)).

A GP and some midwives worried that overwhelming information in consultations could hinder MV information uptake. Several HCPs observed that women who were more educated or who worked in health care were often more informed and on-board with MVs, but many clients reportedly had low health literacy.

Most women reported that they sought no information about MVs, although one woman researched online, another questioned the pharmacist, and one questioned her midwife. Two women reported brief discussion with family, but none



**Table 4.** Barriers to maternal vaccinations for Māori women.

Barriers	Comments
Knowledge gaps	<p>Some women were unaware of MVs, or had insufficient information about benefits of MVs or risks of not being vaccinated.</p> <p>W1, unvaccinated despite advice from her midwife, GP, pharmacy and mother, felt uninformed on MV benefits and had many other knowledge gaps:</p> <p>'...with my first [pregnancy], I was very, very late in the pregnancy so I don't believe it was really necessary .... With this one I've... I guess I've been told about it, I've been told that the offer is there and whatnot. I still have that fear of injections so my first thought is always no but then obviously coming to my children I do open my mind a little bit more. I guess I've never really had it explained to me though what the side effect or the bad effect could be if I didn't.' (W1)</p> <p>'I've never really had to deal with much whooping cough so even though I feel that it's a serious sort of a cough, it's not something I really worry about...' (W1)</p> <p>W6, self-described 'pro-vaccine', stated:</p> <p>'I don't know why, I just don't want a flu one. I guess I don't know – enough about the flu one.' (W6)</p> <p>The midwife and nurse mentioned MVs, and the participant sought no further information.</p> <p>One HCP observed that some women were unaware MVs were recommended in each pregnancy, although this did not emerge from the women's interviews.</p> <p>Some women were unaware of MVs, and reported no MV information provided by any HCP. A HCP raising awareness without discussing benefits and risks may not convince a woman of the need for MVs.</p> <p>'...some midwives don't give you all the information you need.' (W12)</p>
Lack of emphasis/ambivalence from HCPs	<p>Women picked up on ambivalence from HCPs (eg one woman had only the pertussis vaccine because her midwife emphasised it more than influenza).</p> <p>'[Whooping cough vaccine] was quite like... not put on us but they pushed for it quite a bit to... that it was an important one. .... [influenza vaccination] was sort of if you want to you can, but...' (W14)</p>
Late presentation to the midwife	<p>Several midwives suggested women presenting late may not be aware of or have MVs. Women who first presented very late in pregnancy had other pressing matters and the midwife may not discuss MVs given the visits are long and there is a limit to what information can be provided to and taken in by the woman.</p> <p>One midwife suggested late presentation might indicate a different perspective for the woman:</p> <p>'...if you had women who turned up late to the midwife, that's a good indication that they're not going to look after themselves as well.... They know [about MVs]. It's just a matter of them getting there and doing it.' (M11)</p>
Poverty	<p>Midwives particularly spoke about the how poverty affected MV uptake for some clients, especially rural clients. Examples included transport and housing challenges, which could make MVs difficult to access or a low priority.</p> <p>'Māori ... have a very low income, it's a big deal to go to town to have things done.' (M7)</p> <p>'[a woman] living on the couch of another family member and she's got three kids and they want her out.' (M7)</p>
Busyness with work and/or other children	<p>Full-time work and/or having other children created time challenges or lower priority for MVs. This was reported by HCPs primarily and some women participants, but could be overcome by convenience (eg the midwives providing vaccination or pharmacy).</p> <p>'I've got four other babies as well, I don't like having to drag them around and sitting and waiting, so it'd be easier to just pop into the pharmacy and wait maybe 5-10 minutes and get it done then sit there and off I go.' (W12)</p>
No vaccination in the previous pregnancy	<p>Having no MVs in previous pregnancies was thought to predict no MVs in the current pregnancy. W1 had no MV in the previous or current pregnancy (quote above).</p> <p>'...your Māori mum having her fifth baby she'll probably be like 'well I didn't get it with the other kids and I didn't die'.' (M3)</p>
Needle phobia	<p>Two women reported needle phobia. Perceived benefits of vaccination helped one woman overcome this to have a pertussis but not influenza vaccination. The other (who was less informed) had neither vaccination:</p> <p>'I still have that fear of injections so my first thought is always no but then obviously coming to my children I do open my mind a little bit more. I guess I've never really had it explained to me though what the side effect or the bad effect could be if I didn't [have MVs].' (W1)</p>

(Continued on next page)

**Table 4.** (Continued)

Barriers	Comments
Overwhelming information	Midwives and a doctor spoke of overwhelming information in pregnancy, at the antenatal appointment in general practice, and within midwifery visits, potentially affecting what was remembered. It was exacerbated when women presented to the midwife late in pregnancy.  '...they get a little bit overwhelmed with all of the information they get given [at the antenatal appointment].' (D4)
Safety	Two women expressed safety concerns about MVs.  'I just think there's always a bad side to medicines.' (W3)
Access to MVs	Some midwives noted women's challenges having to make an appointment with general practice for MVs. Pharmacy was considered easier, but one midwife thought clients would not look up which pharmacies provided vaccinations.
Influenza vaccination unavailable	Some women did not receive the influenza vaccination because they heard about it over summer when it was unavailable.
Mistrust of the health system	Although mistrust in the health system did not arise from the women, HCPs reported mistrust could be a barrier to having MVs.

appeared to seek advice or be directly influenced by family or friends. However, some HCPs interviewed noted family sometimes influenced the decision to have vaccinations.

Trust could aid the HCPs influence. Some women spoke of trust regarding where they were vaccinated. The pharmacist reported recommending a MV had greater success with known than casual clients. A nurse and a practice manager reported Māori and their whānau (family) need to feel safe and that mistrust could be a barrier to uptake. The practice manager stressed some Māori preferred a Māori provider and suggested a need to understand the people, take time with them, and understand the person's situation. Most participants supported pharmacy MV provision for awareness and access.

Seven women received at least one MV. Enablers and barriers affected uptake, many of which were linked (Tables 3, 4). For example, influence of HCPs was affected by trust and relationships.

Most women suggested decisions about having MVs involved minimal consultation with or influence from partners, family, or friends, as they or their partner considered it was the woman's decision alone ('my body, my decision'). Some women did not discuss MVs with family, friends, or their partner. Even an 18-year-old woman living with her parents and partner, did not discuss MVs with them except to mention her concern about possible pain.

Families' or friends' views sometimes opposed the participants' actions. A first-time mother receiving the pertussis vaccination indicated she was uninfluenced by friends suggesting MVs were unnecessary. One participant receiving both vaccinations noted their family 'don't believe in getting them'. W1 had no vaccinations despite having a 'pro-vaccination' mother who 'pushed it', whereas the partner was '... quite open to me kind of making the decision, being my body ... and... pregnancy being a new thing to him ...', recognising W1's greater knowledge from having had a previous pregnancy.

However, one participant, her sister and mother all went together to receive the influenza vaccination. Another woman told her family and pregnant cousin about MVs to raise awareness.

Midwife M11 noted 'Māori women are a little bit more independent', not needing whānau input. Another midwife noted considerable variability in whānau involvement in the pregnancy, from being 'super involved' to having no involvement. However, a couple of HCP participants considered the whānau important given the importance of women in the Māori world and the sacred time of being hapū (pregnant), a concept that was not discussed by the women. N5 suggested Māori women would check with their whānau about MVs, because '...they're making a decision for their whole whānau.'

Decisions about MVs usually appeared easy and straightforward without women seeking information, confirmed also by several midwives.

I chose not to look up the good and bad because I feel like there's pros and cons in both and I just made up my mind that I think they're good. (W6)

Having MVs in previous pregnancies normalised it, making the decision easy. Participant W1 appeared influenced by previously having had no MVs.

However, one participant researched whooping cough online, and another, after hearing about MVs from the pharmacist, 'asked all the questions right then and there', and then had it:

... I didn't know anything before I got the whooping cough one and the flu jab in pregnancy and ... thought you couldn't get anything while you were pregnant ... and I was actually quite happy that I got it done. (W2)



## Motivated by protecting the baby

An important enabler was the motivation to be vaccinated to protect the baby, particularly with pertussis.

... I was keen for it because ... anything to help my baby. (W4)

Two women articulated that maternal protection from influenza would keep them well for the baby, one noting her increased risk as an asthmatic, and another reporting low immunity (Table 3). However, most focused on the baby.

... in pregnancy I was more worried about my unborn baby than myself... (W2)

## Underlying beliefs

Underlying beliefs regarding vaccination generally or influenza vaccination commonly influenced participants' decisions.

I quite like being vaccinated, especially during pregnancy and for baby after baby's born... I find it most important that my babies are vaccinated [on-time]. (W12)

Awareness of a young child affected badly by an illness motivated two participants to have a pertussis MV. Some women believed that influenza vaccination could cause influenza or make a person sick, that influenza was not serious, or they were healthy as reasons for not having influenza vaccination.

... I have some women who just say 'I never get the flu, I'm not going to have that' and I say 'you really need to read the information.' (M7)

W1 considered the vaccinations unnecessary, raising various reasons, including '... females were made to do it [carry a baby] I suppose.' Similarly, the GP noted women's concerns about over-medicalisation during pregnancy. A midwife reported most clients received no MVs (despite awareness) because their personality was to 'actively be healthy', and other midwives reported some women were against vaccination. W3 received no MVs believing '... there's always a bad side to medicines...'. Needle phobia contributed to one participant's decision against MVs and another to only have the pertussis vaccination.

## Lack of prioritisation as a barrier

Some women's non-prioritisation of MVs strongly emerged from HCPs, particularly midwives. Challenges to prioritising vaccinations arose from: the busyness of pregnancy, other children, or work; chaotic lives; and/or poverty (eg transportation and housing insecurity). HCPs observed some women would struggle booking a vaccination appointment

or finding which pharmacies provided vaccinations, making access difficult where there were challenges to prioritising maternal vaccination.

... it's hard enough to make an appointment with the GP... let alone make time to get there... and if they're not employed they often don't have the resources to get... to the GP. (M9)

They ring me 'Oh I'm pregnant again, having a baby in a couple of months...'... they just have a different attitude towards their self-care, and sometimes they don't have good influences.... ... their financial situation ... doing vaccinations and looking after themselves is their lowest priority. (M11)

...it's not so much that they don't want to do it, it's just... not a priority. (M11)

One midwife noted that a client whose child was hospitalised with pertussis was unvaccinated in her next pregnancy, being young with post-natal depression '...trying to get through just the basics was complicated for her'. (M9)

Some women prioritised a vaccine to protect her baby over protecting herself, or put other children's needs over getting a MV.

## Participants' recommendations

Asked for their recommendations, women suggested MV awareness be raised further through midwives, pharmacy and general practice, and pamphlets and online information be available on MVs.

## Discussion

MV rates are lower for Māori, those with greater deprivation and greater parity (number of births), and in women with no LMC or who have few antenatal visits.<sup>10</sup> Our findings revealed multiple barriers, including insufficient awareness and knowledge about MVs and access challenges. Prioritisation by women was important, and often related to poverty and/or busyness with work or children. However, enablers included knowledge, pro-vaccination beliefs, easy access to MVs, and informative, trusted HCPs.

Decisions regarding MVs appeared straightforward, based particularly on beliefs, knowledge, and influenced by previous MVs and emphasis from HCPs. Knowledge gaps and misinformation existed, but women participants usually sought no further information.

Other studies have also found HCPs strongly influenced MV uptake in Indigenous women,<sup>23–25</sup> although our finding that pharmacists helped with this was new. Protection of the baby has arisen as an enabler of MV in similar research,<sup>23</sup>

and could be better used to aid MV prioritisation. Like our research, other studies have found that Māori rated trust and relationships as important for maternal care.<sup>26</sup> Mistrust has emerged elsewhere in marginalised groups regarding MVs, but did not emerge from the women participants in this research, possibly because the group was small and recruited through a pharmacy.

Although whānau are often important in Māori pregnancies,<sup>27</sup> as some HCPs observed, this did not come through from women when they discussed MVs, possibly reflecting the small participant numbers, or the ease of MV decisions and the concept of 'my body–my decision'.

Vaccinating outside of general practice (eg in schools, or community outreach) aids with access for Māori.<sup>28,29</sup> MV administration by antenatal care providers aided uptake in rural Aboriginal women,<sup>23</sup> but has logistical barriers in NZ.<sup>12</sup> Funded pharmacy availability aids uptake by Māori,<sup>30</sup> but few rural pharmacies provide vaccinations, and barriers need addressing.<sup>31</sup> Co-locating midwives with providers who vaccinate, vaccination outreach, and providing petrol vouchers through midwives might help with uptake.

Recommending MVs without discussion of benefits may be insufficient for women to prioritise vaccination. For example, misconceptions about influenza vaccine and illness were common, as found by another study.<sup>32</sup> Other studies have found differences between perceptions of maternal influenza and pertussis vaccinations.<sup>33</sup> HCP maternal influenza vaccination discussions could focus on keeping the hapū woman well for her pēpe [baby].

Māori women in our study appeared more influenced by oral communication than leaflets, which is similar to other research regarding MVs.<sup>33</sup> Multiple discussions aiming to address knowledge gaps by different well-informed, trusted HCPs is recommended. Early presentation to the midwife enables MV discussion opportunities. Barriers to accessing a midwife such as midwifery shortages,<sup>34,35</sup> poverty,<sup>26</sup> and navigating the system,<sup>26,35</sup> need addressing. A culturally safe environment,<sup>26</sup> sufficient numbers of midwives and proactive support on the maternity pathway from the first health provider antenatal contact may encourage early access. Relationships and trust would be aided by early midwife presentation, more Māori HCPs and culturally competent HCPs. NZ's model of a single LMC is likely to help with both relationship and trust.<sup>34,35</sup>

## Strengths and limitations

Women participants varied in age, parity, first midwife engagement, and MV status. Interviewing Māori HCPs working predominantly with Māori provided breadth in understanding MV uptake, including indirect insights for the highest-needs women.

A Māori pharmacist interviewed the Māori women. Existing relationships with some could aid trust, but they may have

provided answers to please the interviewer. Two Māori co-authors reviewed the findings.

Pharmacy-based recruitment missed those unengaged with the health system, and only two women received no MVs (although a further four did not receive an influenza vaccination). However, almost all women have a midwife, and we spoke to Māori midwives who provided useful insights on women who were not vaccinated. Snowballing, recruiting women through midwives or Māori health providers, and more interviews, particularly of women who did not receive the pertussis MV, could have broadened the participant range and found further barriers and enablers and we recommend this for future research. Two interviews with women were short at 10 min each, limiting the richness of data, and potentially reflecting the challenges for women of making time for an interview when they have young children and other demands. For some women, the interviews found a fast decision without a lot of additional consideration, no discussion with the family, no looking for information, typically little discussion with anyone, limiting the potential length of the interview. For example, in one 10-min interview, the woman was unaware of MVs, and no MVs were given and the interview was short because of the lack of experience and knowledge about MVs to explore. This still provided useful insights because the person indicated underlying relevant beliefs and had presented very late (27 weeks) to the midwife following challenges accessing midwifery care, potentially limiting time to be told about MVs. We were not aiming for data saturation, but rather a breadth of perspectives including both the women and Māori HCPs who see them. We relied on MV self-report.

## Implications for research

Further research could usefully include more Māori women who have not had MVs, rangatahi wāhine (young women), and women who have low engagement with health services. There is also a need to explore how to optimise HCP messaging about MVs to Māori, and the effect on MV uptake by enabling early access to midwives.

## Conclusion

We found decisions around MVs were often fairly straightforward for Māori women, but multiple barriers to uptake include lack of awareness, misinformation, prioritisation and access issues, but HCPs and pro-vaccination beliefs strongly influenced uptake. Maximising opportunities for well-informed (and preferably trusted) HCPs to raise awareness and build knowledge about MVs could help Māori women access and prioritise MVs. Vaccinations without an appointment at convenient locations, enabling early presentation to midwives, and overcoming transport barriers could also help.

## Supplementary material

Supplementary material is available [online](#).

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**Data availability.** Data from this study are not available as per the information sheet and consent form for the participants, and also because of potential to identify participants.

**Conflicts of interest.** N.G. was a member of the National Executive of the Pharmaceutical Society of New Zealand during the research and has received funding from Green Cross Health (a provider of primary healthcare services including pharmacy and general practice), the Pharmacy Guild of New Zealand and the Pharmaceutical Society of New Zealand for reclassifying vaccinations to allow pharmacist administration. S.M. is a partner in a community pharmacy and received funding for conducting interviews in this study. H. P.-H. has participated in expert advisory boards to the GSK group of companies, Merck, and Pfizer, but has not personally received honorarium. She has also led investigator-led studies funded by the GSK group of companies. C.C.G. was a member of the Immunisation Subcommittee of the Pharmacology and Therapeutics Advisory Committee 2012–19. He is a named investigator on this project and has been an investigator on other immunisation-related projects funded by the GSK group of companies. O.S. has no conflicts of interest to report other than funding from the GSK group of companies for this project. F.D. has no conflicts of interest to report.

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